WASTE DISCHARGE IDENTIFICATION (WDID) NUMBER:

STORMWATER POLLUTION PREVENTION PLAN

for

Donlon Road Realignment Project

CALTRANS ENCROACHMENT PERMIT NUMBER FOR LOCAL AGENCY / PRIVATE ENTITY: 713-NRP-2032

CALTRANS ENCROACHMENT PERMIT NUMBER FOR CONTRACTOR: To Be Determined

RISK LEVEL: 2

Prepared for:

County of Ventura Public Works Agency Transportation Department

800 South Victoria Avenue

Ventura, CA 93009

Alison Sweet

(805) 477-1911

Submitted by:

To Be Determined

,

Project Site Address

North of State Route 118 at Donlon Road and State Route 34-Somis Road in Somis, California (VEN-118-PM 11.09)

Contractor's Water Pollution Control (WPC) Manager/Qualified S WPPP Developer(QSD)

Hugo E. De La Llave

(805) 729-8581

Contractor's Qualified SWPPP Developer (QSD) (if SWPPP not developed by WPC Manager)

Alison Sweet

Contractor's Qualified S WPPP Practitioner (QSP) (if different from WPC Manager)

Alison Sweet

SWPPP Developed by:

Rincon Consultants, Inc.

180 N. Ashwood Avenue

Ventura, CA 93003

Hugo E. De La Llave - Environmental Scientist

SWPPP Date

December 2014

Contents

SWPPP Attachments

SWPPP Appendices

SWPPP Files

File Category 20.01 .....Stormwater Pollution Prevention Plan (SWPPP)
File Category 20.02 .....Stormwater Pollution Prevention Plan Amendments
File Category 20.03 .....Water Pollution Control Schedule Updates
File Category 20.05 .....Notice of Construction or Notice of Intent
File Category 20.06 .....Legally Responsible Person Authorization of Approved Signatory
File Category 20.10 .....Correspondence
File Category 20.21 .....Subcontractor Contact Information and Notification Letters
File Category 20.22 .....Material Suppliers Contact Information and Notification Letters
File Category 20.23 .....Contractor Personnel Training Documentation
File Category 20.31 .....Contractor Stormwater Site Inspection Reports
File Category 20.32 .....Caltrans Stormwater Site Inspection Reports
File Category 20.33 .....Site Visual Monitoring Inspection Reports
File Category 20.34 .....Best Management Practices Monthly Status Reports
File Category 20.35 .....Corrective Actions Summary
File Category 20.40 .....Weather Monitoring Logs
File Category 20.45 .....Rain Event Action Plans
File Category 20.46 .....Rain/Storm Event Sampling and Analysis Plan
File Category 20.50 .....Non-Stormwater Discharge Sampling and Test Results
File Category 20.51 .....Non-Visible Pollutant Sampling and Test Results
File Category 20.52 .....Turbidity, pH and SSC Sampling and Test Results
File Category 20.53 .....Required Regional Water Board Monitoring Sampling and Test Results
File Category 20.54 .....ATS Monitoring Sampling and Test Results
File Category 20.55 .....Field Testing Equipment Maintenance and Calibration Records
File Category 20.61 .....Notice of Discharge Reports
File Category 20.62 .....Numeric Action Level Exceedance Reports
File Category 20.63 .....Numeric Effluent Limitation Violation Reports
File Category 20.70 .....Annual Certification of Compliance
File Category 20.80 .....Stormwater Annual Reports
File Category 20.90 .....Notice of Termination

SECTION 100
SWPPP Certifications and Approval

100.1 Legally Responsible Person Certification and Caltrans Approval

This SWPPP complies with the applicable requirements of the Construction General Permit (CAS000002, Order No. 2009-009-DWQ as ammended by Order 2010-0014-DWQ and 2012-006-DWQ) issued by the State Water Resources Control Board. This SWPPP was developed pursuant to the contract Special Provisions, Caltrans Standard Specifications and the Caltrans Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual. The Contractor and Local Agency are responsible and liable at all times for compliance with applicable requirements of the Construction General Permit (CAS000002, Order No. 2009-009-DWQ as ammended by Order 2010-0014-DWQ and 2012-006-DWQ) for which compliance is ultimately determined by the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB), and/or the U.S. Environmental Protection Agency (USEPA). Include copies of the SWRCB-issued WDID Number and NOI form as

"For Local Agency Use Only"

Local Agency Legally Responsible Person Certification of the Stormwater Pollution Prevention Plan

Project Name:	Donlon Road Realignment Project
Caltrans Encroachment Permit Number issued to Local Agency:	713-NRP-2032
Caltrans Encroachment Permit Number issued to Contractor:	To Be Determined
Local Agency Name:	County of Ventura Public Works Agency Transportation Department

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Legally Responsible Person's Signature	Date
Legally Responsible Person's Name	Telephone Number

Legally Responsible Person's Title

For Use by Caltrans Only

CALTRANS OVERSIGHT ENGINEER'S CONCURENCE OF SWPPP

I, and/or personnel acting under my direction and supervision, have reviewed this SWPPP and concur with the Legally Responsible Person's findings that it meets the requirements set forth in the contract Special Provisions, Caltrans Standard Specifications, and the Caltrans SWPPP/WPCP Preparation Manual.

Caltrans Oversight Engineer's Signature | Date of SWPPP Concurrence

Caltrans Oversight Engineer's Name | Telephone Number

100.2 Contractor and QSD SWPPP Certification

Contractor's Certification of SWPPP

Project Name:	Donlon Road Realignment Project
Caltrans Encroachment Permit Number issued to Local Agency / Private Entity:	713-NRP-2032
Caltrans Encroachment Permit Number issued to Contractor:	To Be Determined

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Contractor's Signature | Date

Contractor's Name | Telephone Number

To Be Determined

Contractor's Title

QSD's Certification of SWPPP

Project Name:	Donlon Road Realignment Project
Caltrans Encroachment Permit Number issued to Local Agency / Private Entity:	713-NRP-2032
Caltrans Encroachment Permit Number issued to Contractor:	To Be Determined

"I certify under penalty of law that I relied upon available project and site information, current watershed and basin plan maps and available soil data to develop this SWPPP so that Best Management Practices (BMPs) were designed and placed in accordance with industry standards and best professional judgment to reduce pollutants from leaving the job site. All other sources relied upon to gain information for this project's SWPPP were appropriate and dependable, based on my best professional judgment. To the best of my knowledge and belief, the information submitted in this SWPPP is in compliance with all requirements of the Construction General Permit (CAS000002, Order No. 2009-009-DWQ as ammended by Order 2010-0014-DWQ and 2012-006-DWQ). I certify that the 'required text' portions of this document are unaltered from the original required text and content."

QSD's Signature	Date
Alison Sweet	(805) 477-1911
QSD's Name	QSD's Telephone Number
Resident Engineer	
QSD's Title	

100.3 Amendments

100.3.1 SWPPP Amendments Certification and Approval

This SWPPP is meant to be a "living document," therefore, updated and additional information is expected to be added to the SWPPP as the project progresses, including information regarding changes in the field that do not require an amendment, such as the following:

- adding BMPs as required by a *Rain Event Action Plan*
- increasing or decreasing the quantity of BMPs in the field that are already part of the erosion control plan in the SWPPP,
- moving BMPs shown on the WPCDs to protect water quality during different phases of construction,
- updating WPCDs to reflect actual site conditions, and
- maintenance and repairs to BMPs.

This SWPPP shall be amended when:

- a change in construction or operations affects the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- a contract change order includes additional water pollution control practices, not already specified in the approved SWPPP;
- deemed necessary by the RE;
- SWPPP objectives to reduce or eliminate pollutants in stormwater discharges have not been achieved; or
- a CGP violation has occurred; when the RWQCB determines that a CGP violation has occurred, the SWPPP shall be amended and corrective actions implemented within 14 calendar days after notification by the RWQCB.

The following information shall be included in each amendment:

- who requested the amendment;
- the location of proposed change;
- the reason for the change;
- the original BMP proposed, if any;
- the new BMP proposed; and
- any existing implemented BMP(s).

Approved and certified amendments shall be inserted into the appropriate section or attachment of the SWPPP. All SWPPP amendments prepared by the WPC Manager and approved by the Contractor shall be accepted and certified by the LRP or Approved Signatory. A blank copy of the CEM-2008 SWPPP/WPCP Amendment Certification and Approval form is in Appendix A. For approved amendments, the signed SWPPP Amendment Certification and Approval form shall be attached to the SWPPP amendment.

A copy of each approved and certified amendment shall be inserted into Attachment AA. All SWPPP amendments shall be listed in the SWPPP Amendment Log, available in Appendix B. The Amendment Log shall be kept in SWPPP File Category 20.02 and a copy shall be inserted into Attachment AA.

The SWPPP will be completely revised if either the number of amendments or the amount of information contained in the amendments makes implementation of the SWPPP confusing, as determined by the RE, or the Contractor requests to revise the SWPPP based on planned changes in activities that would require a major SWPPP amendment.

100.3.2 Amendment Log

All approved and certified SWPPP amendments shall be shown on the SWPPP Amendment Log. A blank Amendment Log is available in Appendix B. The SWPPP Amendment Log shall include the following information:

- amendment number;
- amendment date;
- brief description of the amendment;
- name of individual requesting amendment; and
- approval date.

All SWPPP amendment(s) prepared and approved as discussed in Section 100.3.1 shall be documented in the Amendment Log and kept in SWPPP File Category 20.02: Stormwater Pollution Prevention Plan Amendments. A copy of the Amendment Log shall also be inserted into Attachment AA.

100.4 Annual Compliance and Approval

By July 15 of each year, the Local Agency / Private Entity shall submit an Annual Certification of Compliance to the Caltrans Oversight RE stating that the project is in compliance with the terms and conditions of the Permits and the SWPPP. By August 1 of each year, the Caltrans Oversight Engineer will review and accept the Annual Certification of Compliance. The Caltrans Oversight Engineer will document acceptance of the Annual Certificate of Compliance by completing and signing the Acceptance of Annual Certification of Compliance. A blank copy of the CEM-2070 SWPPP/WPCP Annual Certification of Compliance form is included in Appendix C. Completed Annual Certification of Compliance forms will be filed in SWPPP File Category 20.70: Annual Certification of Compliance.

SECTION 200
OBJECTIVES

This SWPPP has five (5) main objectives, which are listed below.

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion, and all other activities associated with construction activity, are controlled.

2. Where not otherwise required to be under a California Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated.

3. Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non- stormwater discharges from the construction activity to the best available technology (BAT) / best conventional technology (BCT) standard.

4. Calculations and design details for site run-on, as well as BMP controls, are complete and correct.

5. Stabilization BMPs designed to eliminate or reduce pollutants after construction is complete have been installed

This SWPPP was developed to conform to the required elements of the CGP (CAS000002, Order No. 2009-0009-DWQ as ammended by Order 2010-0014-DWQ and 2012-006-DWQ) issued by the SWRCB.

This SWPPP is designed to be a useful document for those who must implement the SWPPP on a daily basis in the field. Most of the information necessary for the daily implementation of the SWPPP is contained in Attachment BB: Water Pollution Control Drawings, Attachment CC: Water Pollution Control Best Management Practices List, and Attachment DD: Water Pollution Control Schedule.

This SWPPP is also a "living document" because updated and additional information is added to the SWPPP file categories as the project progresses, including:

- SWPPP Amendments;
- Subcontractor and Material Supplier Information;
- Contractor Personnel Training Documentation;
- Site Inspection Reports;
- Monthly Status Reports;
- Rain Event Action Plans;
- Sampling and Analysis Results; and
- Notice of Discharge Reports.

The SWPPP shall be readily available on site for the duration of the project.

SECTION 300
PROJECT AND CONTRACTOR INFORMATION

300.1 Project Description

This project involves the realignment of the Donlon Road/State Route 118 intersection to align Donlon Road with Somis Road. Approximately 1.57 acres of soil will be disurbed on the project site. The roadway realignment will transverse an existing nursery and cross over Coyote Canyon Creek and require the establishment of a new right-of-way through the nursery that would connect to Donlon Road to the north and to State Route (SR) 118/Somis Road intersection to the south. The roadway work will include traffic signal modifications at the intersection of SR 118 and Somis Road to accommodate the new configuration. Additionally, a large arch culvert will be constructed in Coyote Canyon Creek.

300.2 Project Risk Level

The risk level assessment of the project site was calculated to be Risk Level 2 . This risk level will determine the minimum level of BMPs that will be acceptable based on the project site and the project construction activities. The risk level is the basis for the minimum level of site-specific monitoring and reporting that will be required. The risk level is based on project duration, proximity to impaired receiving waters, and soil conditions. The Risk Level Determination is discussed in Section 500.1.3 and the calculations are included in Attachment C.

300.3 Construction Sites Estimates

The following are estimates of the construction site.

- Construction site area 1.57
- Percentage impervious area before construction 5%
- Runoff coefficient before construction 0.25
- Percentage impervious area after construction 60%
- Runoff coefficient after construction 0.52

Run-on from off-site areas anticipated: ◉ Yes ○ No

Anticipated stormwater run-on flow rate to the construction site:

Anticipated drainage patterns following the completion of grading activities are shown on the WPCDs from Attachment BB.

Only minor amounts of run-on are anticipated to be encountered such as at road shoulders where run-off from the roadway may be present. Run-on controls as mentioned in Section 500.3.1 shall be implemented. In general, such run-on is anticipated to be minimal. The contractor shall continually monitor for the presence of run-on and shall report it to the RE. All run-on shall be controlled by scheduling to avoid rain, preserving exisiting vegetation, and using gravel bag check dams.

Locations of potential run-on with the estimated flow rates shall be noted on the WPCDs. The BMPs designed to handle the run-on flows are included in Section 500.3.1.

300.4 Vicinity and Site Map

The construction project vicinity map showing the project location, surface water boundaries, geographic features, construction site perimeter, and general topography, is located in Attachment D. The project contract plan Title Sheet provides additional detail regarding the project location and is also included in Attachment D.

300.5 Unique Site Features

Project has Fill Material: ○ Yes ◉ No

Project has Native Material: ◉ Yes ○ No

Hydrologic Soil Group: ☐ A (high infiltration rate) ☐ B (moderate infiltration rate) ☑ C (slow infiltration rate) ☐ D (very slow infiltration rate)

Soil Erodibility: ☐ Slight ☑ Moderate ☐ Severe

Unique Features Onsite: ☑ Water Bodies ☑ Wetlands ☐ Endangered or Protected Species ☑ Environmentally Sensitive Areas ☐ Other ☐ None

According to the Jurisdiction Waters and Wetlands Delineation Donlon Road Realignment Project, Ventura County, California prepared by Rincon Consultants in September 2011 and March 27, 2014, the Coyote Canyon Creek flows parallel to (west) Donlon Road and crosses under SR 118 to the south via a drop culvert. This channel is under the regulatory and permitting authority of the Ventura County Watershed Protection District. The creek has been subject to prior modification during installation of the existing concrete-lined drop culvert that allows flows to pass under SR 118. A small tributary, denoted in this SWPPP as Tributary 2, flows southwest from an underground culvert into Coyote Canyon Creek near the intersection of Donlon Road and La Cumbre Road. Unnamed Drainage 1 runs perpendicular to and underneath SR 118, and connects with Coyote Canyon Creek approximately 600 feet downstream of SR 118. Two roadside ditches occur within the study area. One ditch (formerly denoted as Tributary 1) occurred along the northern edge of SR 118 and the other along northern edge of Donlon Road. Coyote Canyon Creek contains 0.31 acre of streambed and associated riparian habitat subject to the jurisdiction of California Department of Fish and Game (CDFG). This represents the furthest extent of jurisdictional area within the creek. The creek's measured width of riparian habitat and/or bank to bank ranged from 10 feet above the SR 118 culvert to approximately 84 feet below.

The soil at the project site consists of three mapped soil units: Salinas clay loam, Zamora loam, and gullied land. Salinas clay loam is mapped in the southwestern portion of the study area and consists of deep, well drained soils with 0 – 2 percent slopes that formed in alluvium weathered from sandstone and shale. These soils are characterized as having slow to medium runoff and moderately slow permeability. Zamora loam occurs in the central and eastern portions of the study area. These are well-drained soils with 9 – 15 percent eroded slopes that formed in alluvium from material weathered from mixed sedimentary rocks. Zamora loam soils have low to medium runoff and moderately slow permeability. Gullied land is mapped in the central and northwestern portions of the study area and is considered one of many "miscellaneous areas" by the USDA. Miscellaneous areas have essentially no soil and support little or no vegetation, which can be a result of active erosion, washing by water, unfavorable soil conditions, or human activities. Some miscellaneous areas can be made productive but only after major reclamation efforts. Gullied land consists of areas where erosion has cut a network of V-shaped or U-shaped channels and is the residuum weathered from igneous and sedimentary rock.

According to the First Quarter 2013 Groundwater Monitoring Report dated April 25, 2013, prepared by Environ Strategy Consultants, Inc. for the Former Somis Supply located at 5394 Los Angeles Avenue in Somis, California, depth to groundwater ranged from 25.97 to 30.32 feet below grade and was calculated to flow towards the south-southeast to southwest on March 20, 2013.

Rincon Consultants prepared a Phase II Environmental Site Assessment of the Proposed Donlon Road Realignment Project dated May 2010 for the project site. Rincon Consultants indicated total lead concentrations ranged from 3.42 to 416 mg/kg. Soluble lead concentrations (using citrate as the extract) ranged from 1.59 to 27.3 mg/L. Concentrations of soluble lead (using deionized water as the extractant) were not detected. Additionally, Rincon did not detect pesticides or herbicides in excess of their respective laboratory detection limits in the soil onsite or petroleum hydrocarbons or volatile organic compounds in excess of their respective laboratory detection limits in the groundwater onsite. Furthermore, Rincon is currently conducting an Initial Site Assessment (ISA) and soil analysis and results are pending. Soil analysis results will be discussed once results are reported.

300.6 Contact Information for Responsible Parties

The following parties are responsible for this SWPPP:

WPC Manager

Name:	**Hugo E. De La Llave**
Title:	**Water Pollution Control Manager**
Company:	**Rincon Consultants, Inc.**
Address:	**180 N. Ashwood Avenue**
	Ventura, CA 93003
Phone Number:	**(805) 644-4455**
Emergency Phone Number (24/7):	**(805) 729-8581**
Email address:	**edelallave@rinconconsultants.com**

Resident Engineer

Name:	**Alison Sweet**
Title:	**Resident Engineer**
Company:	**County of Ventura Public Works Agency Transportation Department**
Address:	**800 South Victoria Avenue**
	Ventura, CA 93009
Phone Number:	**(805) 477-1911**
Emergency Phone Number (24/7)	**(805) 477-1911**

Email address:	**alison.sweet@ventura.org**

Contractor

Name:	
Title:	**Contractor**
Company:	**To Be Determined**
Address:	
	,
Phone Number:	
Emergency Phone Number (24/7)	**To Be Determined**
Email address:	**To Be Determined**

Erosion and Sediment Control Provider

Name:	**To Be Determined When Contract Awarded**
Title:	**To Be Determined When Contract Awarded**
Company:	**To Be Determined When Contract Awarded**
Address:	**To Be Determined When Contract Awarded**
	,
Phone Number:	**To Be Determined When Contract Awarded**
Emergency Phone Number (24/7)	**To Be Determined When Contract Awarded**
Email address:	**To Be Determined When Contract Awarded**

Stormwater Sampling and Testing Agent

Name:	**To Be Determined When Contract Awarded**
Title:	**To Be Determined When Contract Awarded**
Company:	**To Be Determined When Contract Awarded**
Address:	**To Be Determined When Contract Awarded**
	,
Phone Number:	**To Be Determined When Contract Awarded**

Emergency Phone Number (24/7) **To Be Determined When Contract Awarded**

Email address: **To Be Determined When Contract Awarded**

300.7 List of Subcontractor and Materials Suppliers

The following subcontractors will be working on this project:

1 **To Be Determined**

SWPPP Responsibility:

2 **To Be Determined When Contract Awarded**

SWPPP Responsibility:

Contact information for each subcontractor will be provided in the SWPPP Notification log in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters. Contact information shall include subcontractor name, type of work performed, contact name, phone number and emergency telephone number (24/7).

The following materials suppliers will be delivering materials to the project site and must comply with pertinent SWPPP requirements:

1 **To Be Determined**

2 **To Be Determined When Contract Awarded**

Contact information for each material supplier will be provided in the SWPPP Notification log in SWPPP File Category 20.22: Material Supplier Contact Information and Notification Letters. Contact information shall include company name, type of material supplied, contact name and phone number.

All subcontractors and material suppliers shall be notified that the project is covered by the

- SWRCB Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ, NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, September 02, 2009 (Construction General Permit).

Each subcontractor and material supplier shall also be notified that the project has a SWPPP and the pertinent water pollution control BMPs with which the subcontractor or material supplier must comply. If subcontractors or material suppliers are added during the project, appropriate notification that the project has a SWPPP and the pertinent water pollution control BMPs shall be given to the subcontractor or materials supplier prior to working or supplying materials on the project site.

A SWPPP Notification Letter shall be sent to all subcontractors and material suppliers. A sample notification letter and notification letter log is provided in Appendix D. A copy of SWPPP Notification Letters sent to subcontractors and material suppliers are in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters or 20.22 Material Supplier Contact Information and Notification Letters. Notification letter logs and contact information are filed in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters and File Category 20.22: Material Supplier Contact Information and Notification Letters.

300.8 Training

The Contractor's WPC Manager is a QSD. The WPC Manager for this project, meets the qualifications and certification requirements of Section VII, Training Qualifications and Certification Requirements, of the CGP based on:

- CPSWQ #0890
- QSD/QSP #23668

The WPC Manager has received the following training:

- QSD training
- QSP training

The WPC Manager has the following SWPPP development and implementation experience:

- Mr. De La Llave has prepared SWPPPs throughout southern California.
- He has conducted numerous inspections for construction and industrial projects throughout southern California.
- He also has collected surface water samples and provided BMP recommendations to meet water quality objectives.

Ongoing, formal training sessions for individuals responsible for SWPPP development and implementation shall be selected from one of the following organizations.

- City of Los Angeles Storm Water Program
- County of Los Angeles Storm Water Program
- State of California RWQCB
- CASQA-, ABAG- and/or AGC-sponsored training
- USEPA-sponsored training
- Recognized municipal stakeholder organizations throughout California
- Professional organizations and societies in the building and construction field

Contractor or subcontractor employees responsible for water pollution control BMP installation, maintenance and repair have received the following training.

- To Be Determined When Contract Awarded

Contractor and subcontractor employees shall be trained prior to working on the site in the following subjects:

- water pollution control rules and regulations

- implementation and maintenance for:
    - temporary soil stabilization,
    - temporary sediment control,
    - tracking control,
    - wind erosion control,
    - material pollution prevention control,
    - waste management, and
    - non-stormwater management
- identification and handling of hazardous substances
- potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances

Informal employee training shall include tailgate site meetings to be conducted weekly; tailgate meetings should address the following topics:

- water pollution control BMP deficiencies and corrective actions;
- BMPs that are required for work activities during the week;
- spill prevention and control;
- material delivery, storage, use, and disposal;
- waste management; and
- non-stormwater management procedures.

A summary of formal and informal training of various personnel is shown in Attachment E. A copy of all training certificate(s) (e.g., Caltrans 24-Hour Training Class and CGP Training) for the WPC Manager and the Qualified SWPPP Developer are included in Attachment E.

Training records for project personnel shall be updated by completing the CEM-2023 Stormwater Training Record form, available in Appendix E, and the CEM-2024 Stormwater Training Log - Optional form, available in Appendix F. Records of training, with training certificates attached, when applicable, and the training log will be kept in SWPPP File Category 20.23: Contractor Personnel Training Documentation. Personnel training records, with required documentation attached and an updated training log, shall be submitted to the RE within five (5) days of completion of training.

Training information, consisting of the following items, shall be provided in the Stormwater Annual Report:

- documentation of all training for individuals responsible for all activities associated with compliance with CGP
- documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair, and
- documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.

SECTION 400
REFERENCES, OTHER PLANS, PERMITS AND AGREEMENTS

The documents listed below are made a part of this SWPPP by reference.

- Standard Plans and Specifications, dated To Be Completed When Project is Awarded.
- Contract Plans and Special Provisions for Contract No. To Be Completed When Project is Awarded, dated To Be Determined When Project is Awarded, prepared by To Be Determined When Project is Awarded.
- SWRCB-Order No. 2009-0009-DWQ, Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Construction General Permit), September 2009
- *Caltrans Statewide Storm Water Management Plan* (SWMP), dated June 2007
- *Caltrans SWPPP/WPCP Preparation Manual,* dated June 2012
- *Caltrans Construction Site Monitoring Program Guidance Manual,* January 2012

Attachment F includes copies of the Caltrans Statewide Permit, the CGP, and other local, state, and federal plans and permits. A list of the other local, state, and federal plans and permits included in Attachment F is provided below.

- RWQCB NPDES and Waste Discharge Requirements

SECTION 500
DETERMINATION OF CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

500.1 Pollutant Sources

500.1.1 Inventory of Materials and Activities that May Pollute Stormwater

The following table contains a list of construction activities that have the potential to contribute pollutants, including sediment, to stormwater discharges. All potential pollutants, except sediment, and their locations shall be listed in this section, and, where possible, the locations shall be shown on the WPCDs from Attachment BB. Details for controlling these pollutants using soil stabilization and sediment control BMPs are discussed in Sections 500.3.1 through 500.3.5. Potential non-storm water and waste management-related discharges are further described in Sections 500.4.1 and 500.4.2, respectively.

TABLE 500.1.1
ANTICIPATED CONSTRUCTION SITE ACTIVITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS

☑ Demolition	☑ Pavement Removal (asphalt concrete, concrete) ☑ Structure Demolition/Removal over or Adjacent to Water ☐ Building Demolition (Structure, HVAC, insulation) ☑ Hardscape Demolition (Parking areas, curbs, gutters, sidewalks)
☐ Earthwork	☑ Clearing and Grubbing ☑ Grading Activities ☑ Soil Import and Export ☑ Stockpiling ☑ Excavation ☑ Disturbance of Contaminated Soil ☑ Dewatering ☑ Temporary Stream Crossing ☑ Drainage Construction ☐ Dredging ☑ Pile Driving ☑ Utilities ☐ Line Flushing (hydrostatic test water, pipe flushing) ☑ Landscaping, Planting and Plant Maintenance, Amending of Soil and Mulching ☑ Material and Equipment Use over Water
☑ Masonry, Concrete, Asphalt Work	☑ Saw Cutting (cement and brick dust, saw cut slurries) ☑ Paving and Grinding

TABLE 500.1.1 ANTICIPATED CONSTRUCTION SITE ACTIVITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS	
	☑ Concrete Placement (colored chalks) ☑ Concrete Curing (curing and glazing compounds) ☑ Concrete Finishing (surface cleaners) ☑ Concrete Waste Management
☐ Building Construction	☐ Paint Preparation, Painting, Stenciling, and Etching ☐ Material Use ☐ Material Delivery and Storage ☐ Adhesives (glues, resins, epoxy synthetics, caulks, sealers, putty, sealing agents and coal tars) ☐ Cleaning, Polishing (metal, ceramic, tile), and Sandblasting Operations ☐ Plumbing [solder (lead, tin), flux (zinc chloride), pipe fitting] ☐ Framing (sawdust, particle board dust and treated woods) ☐ Interior Construction (tile cutting, flashing, saw-cutting drywall, galvanized metal in nails and fences, and electric wiring)
☑ Equipment Use	☐ Vehicle and Equipment Cleaning ☑ Vehicle and Equipment Fueling ☑ Vehicle and Equipment Maintenance
☑ Waste Management	☑ Hazardous Waste Management ☑ Solid Waste Management (litter, trash, and debris) ☐ Liquid Waste Management (wash water) ☑ Sanitary Septic Waste Management (portable toilets, disturbance of existing sewer lines)

The WPC Manager shall update the list of potential pollutants in accordance with onsite conditions, documenting all materials or equipment that have been received or produced onsite that are not designed to be outdoors and are potential sources of stormwater contamination.

Materials Management Plan

A list of construction materials that will be on site and have the potential to contribute pollutants, other than sediment, to stormwater runoff, which has been prepared to prevent or minimize the off-site discharge of those pollutants, are provided below.

The following stockpiles will be covered and bermed prior to likely precipitation events.

- Material waste from Metal Beam Guard Rail (MBGR)
- Excavated material
- Stockpiles containing aerially deposited lead
- Stockpiles determined to have a potential to contribute pollutants or a high potential of erosion

The following materials will be kept off the ground or bermed and covered prior to likely precipitation events.

- Asphaltic products, including cold plane asphalt concrete pavement

- Landscaping products
- ainting products including adhesives, sealant, and solvents

The following materials will be properly stored according to Material Safety Data Sheet requirements.

- Asphalt concrete products, including hot asphalt and asphalt concrete
- Portland Cement & Masonry products, including Portland Cement Concrete (PCC), masonry products, concrete rinse water, and non-pigmented curing compound
- Chemical waste from portable toilets
- Vehicle fluids including, antifreeze/coolant, batteries, fuels, oils, and lubricant

The following dumpsters shall be covered prior to likely precipitation events.

- ll dumpters not having permanent covers

The following areas will be inspected for leaks or spills prior to likely precipitation events.

- Portable Toilets
- Portable toilets
- Temporary concrete washouts
- Waste management areas
- Chemical and material storage areas
- Vehicle and equipment staging, fueling and maintenance areas

Potential pollutants shall not be stored within 50 feet of stormwater conveyance features or concentrated flow paths. In addition, non-stormwater discharges shall not be made within 50 feet of potential pollutants.

500.1.2 Potential Pollutants from Site Features or Known Contaminates

Former site usage or known site contamination may contribute pollutants to stormwater discharges from the site. Based on information available for the project site, the following site usage and historical contamination has been determined:

Former Industrial Operations: ○ Yes ◉ No

Description of Former Industrial Operations

Historic Contamination: ◉ Yes ○ No

- Historical lead contamination in the soil

The following contaminants are known to exist at the project site locations identified:

- Total lead concentrations ranged from 3.42 to 416 mg/kg

- Soluble lead concentrations (using citrate as the extract) ranged from 1.59 to 27.3 mg/L

Rincon Consultants prepared a Phase II Environmental Site Assessment of the Proposed Donlon Road Realignment Project dated May 2010 for the project site. Rincon Consultants indicated total lead concentrations ranged from 3.42 to 416 mg/kg. Soluble lead concentrations (using citrate as the extract) ranged from 1.59 to 27.3 mg/L. Concentrations of soluble lead (using deionized water as the extractant) were not detected. Additionally, Rincon did not detect pesticides or herbicides in excess of their respective laboratory detection limits in the soil onsite or petroleum hydrocarbons or volatile organic compounds in excess of their respective laboratory detection limits in the groundwater onsite. Furthermore, Rincon is currently conducting an ISA and soil analysis and results are pending. Soil analysis results will be discussed once results are reported.

500.1.3 Risk Level Determination

The risk level assessment of the project site was calculated to be Risk Level 2. This risk level will determine the minimum level of BMPs that will be acceptable based on the project site and the project construction activities. The risk level is the basis for the minimum level of site specific monitoring and reporting that will be required. The risk level is based on the project duration, proximity to impaired receiving waters, and soil conditions. The Risk Level Determination calculations are included in Attachment C.

500.2 Pre-Construction Existing Stormwater Control Measures

The following are existing (pre-construction) control measures encountered within the project site.

- Drainage culverts

Drainage areas will be modified as detailed in the Project Drainage Plans (Sheet No. To Be Determined). Final landscaping will be installed per the project special provisions.

500.3 BMP Selection for Erosion and Sediment Control

The Contractor shall control construction site erosion through the implementation of effective erosion and sediment control measures in accordance with the CGP. The Contractor and the WPC Manager shall develop a schedule that includes the sequencing of construction activities and the implementation of effective erosion control BMPs while taking local climate (rainfall, wind, etc.) into consideration, thereby reducing the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. The SWPPP schedule shall: describe when work activities will be performed that could cause the discharge of pollutants in stormwater; describe the water pollution control practices associated with each construction phase; and identify the soil stabilization and sediment control practices for all disturbed soil areas. Effective soil cover shall be provided for:

- Soil distrubance during reconstructing MBGR, bridge installation, culvert construction, retaining wall construction, grading, concrete barrier placement, drainage construction and highway widening

Additional erosion and sediment control BMPs may be required in other locations on the project site as work progresses in order to prevent sediment from leaving the construction site. These measures shall be determined by the Contractor and the WPC Manager in the field. As long as the water pollution control measures consist of additions to the BMPs already selected in the approved SWPPP, then these additional measures do not require a SWPPP amendment and the WPC Manager shall simply show the additional measures on the WPCDs. If erosion control or sediment control BMPs must be changed because of field conditions or because they are determined to be ineffective, the SWPPP must be amended. Once deemed necessary, corrective actions/design changes to the SWPPP shall be reviewed and signed by the WPC Manager, implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). Immediate corrective action is required for numeric action level (NAL) exceedances. Routine BMP maintenance or the implementation of an additional quantity of a BMP included in the SWPPP as recommended by the WPC Manager does not require an amendment to the SWPPP.

An effective combination of erosion (soil stabilization) and sediment control BMPs shall be implemented and maintained during the project. The following principles shall be followed to the maximum extent practicable to control erosion and sedimentation in disturbed areas at the site.

- Retain exisiting vegetation whenever feasible
- Keep runoff velocities low
- Trap sediment onsite
- Inspect and maintain control measures frequentlly

A more concise listing of the BMP control measures to be implemented and maintained at the project site are denoted in the BMP selection tables in the following sub-sections.

500.3.1 Temporary Run-on Control BMPs

TABLE 500.3.1
TEMPORARY RUN-ON CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SS-1	Scheduling	☑	☐	◉	○	
SS-2	Preservation of Property/ Preservation of Existing Vegetation	☑	☐	◉	○	
SS-12	Streambank Stabilization	☑	☐	◉	○	
SC-6	Temporary Gravel Bag Berm	☑	☐	◉	○	
ALTERNATIVE BMPs USED(3) ○ Yes ◉ No						

Notes:
(1)The BMP designations (SS-1, SC-5, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2)Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3)Use of alternative BMPs will require written approval by the RE.

Implementation of Temporary Run-on Controls BMPs

- The contractor shall protect and preserve existing vegetation in and adjacent to work areas. The contractor shall inform onsite personnel of the project limits and not to disturb vegetation outside those limits.
- The contractor shall protect and preserve existing vegetation and slopes adjacent to Coyote Canyon Creek. The contractor shall inform onsite personnel of the project limits and not to disturb vegetation or slopes outside those limits.
- The contractor shall install gravel bags for temporary control of surface flows on the internal streets and biofiltration swales to reduce the velocity of sheet flows and capture sediment to prevent it from being discharged from the site.
- The construction schedule shall be arranged in a manner that shall minimize the possible risk of soil disturbance and contaminated water entering any storm drains.

500.3.2 Soil Stabilization (Erosion Control)

Soil stabilization, also referred to as erosion control, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Soil stabilization BMPs protect the soil surface by covering and/or binding soil particles. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary soil stabilization requirements, temporary soil stabilization measures required by the contract documents, and other measures selected by the Contractor.

Sufficient soil stabilization materials will be maintained on site to allow implementation in conformance with Caltrans requirements and as described in this SWPPP. This includes implementation requirements for active and non-active areas that require deployment before the onset of rain.

The following soil stabilization BMP selection table indicates the BMPs that shall be implemented to control erosion on the construction site. Temporary soil stabilization BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary soil stabilization BMPs are shown in Attachment BB.

TABLE 500.3.2
TEMPORARY EROSION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SS-1	Scheduling	☑	☐	◉	○	
SS-2	Preservation of Property/ Preservation of Existing Vegetation	☑	☐	◉	○	

SS-12	Streambank Stabilization	☑	☐	◉	○	
ALTERNATIVE BMPs USED (3) ○ Yes ◉ No						

Notes:
(1)The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2)Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3)Use of alternative BMPs will require written approval by the RE.

The BMPs selected for the project are listed below along with an explanation of how they will be incorporated into the project.

- The contractor shall protect and preserve existing vegetation in and adjacent to work areas. The contractor shall inform onsite personnel of the project limits and not to disturb vegetation outside those limits.
- The contractor shall protect and preserve existing vegetation and slopes adjacent to Coyote Canyon Creek. The contractor shall inform onsite personnel of the project limits and not to disturb vegetation or slopes outside those limits.
- The construction schedule shall be arranged in a manner that shall minimize the possible risk of soil disturbance and contaminated water entering any storm drains.

500.3.3 Sediment Control

Sediment controls are structural measures that are intended to complement and enhance the selected soil stabilization (erosion control) measures and reduce sediment discharges from construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary sediment control requirements, temporary sediment control measures required by the contract documents, and other measures selected by the Contractor.

Sediment control BMPs will be installed at all appropriate locations along the site perimeter and at all operational internal inlets to storm drain systems at all times.

Throughout the duration of the project, temporary sediment control materials, equivalent to 10 percent of the materials installed on site, will be maintained on site for implementation in event of predicted rain, or the need for rapid response to failures or emergencies, in conformance with other Caltrans requirements, and as described in the SWPPP. This includes implementation requirements for active areas and non-active areas before the onset of rain.

The following sediment control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Temporary sediment control BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary sediment control BMPs are shown in Attachment BB.

TABLE 500.3.3
TEMPORARY SEDIMENT CONTROL BMPs

CONSTRUCTION	BMP NAME	CONTRACT	CONTRACT	BMP USED	IF A CONTRACT MINIMUM
To Be Determined					

BMP ID NO.(1)		MIN REQUIRE-MENT(2)	BID ITEM			REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SC-1	Temporary Silt Fence	☑	☐	◉	○	
SC-6	Temporary Gravel Bag Berm	☑	☐	◉	○	
SC-7	Street Sweeping	☑	☐	◉	○	
SC-10	Temporary Drain Inlet Protection	☑	☐	◉	○	
ALTERNATIVE BMPs USED(3) ◉ Yes ○ No						
CONSTRUCTION BMP ID NO. (1)	**BMP NAME**					**IF USED, STATE REASON**
1	Use of 2010 Caltrans Standard Plan T64 for all inlet protection BMPs					

Notes:
(1)The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2)Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3)Use of alternative BMPs will require written approval by the RE

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- The contractor shall install temporary silt fence at the toe of slopes adjacent to the work areas. The probable locations of the silt fence are shown on WPCDs.
- The contractor shall install gravel bags for temporary control of surface flows to reduce the velocity of sheet flows and capture sediment to prevent it from being discharged from the site.
- The contractor shall utilize a sweeper truck to perform street sweeping where noticeable tracking of materials from the job site onto adjacent streets occurs.
- Use of SC-10, Standard Plan T64 for all drain inlets.
- The contractor shall place temporary storm drain inlet protection at all storm drain inlets within the project limits.

500.3.4 Tracking Control

Tracking control BMPs are be implemented to reduce sediment tracking from the construction site onto private or public roads. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary tracking control requirements, temporary tracking control measures required by the contract documents, and other measures selected by the Contractor.

The following tracking control BMP selection table indicates the BMPs that shall be implemented to reduce sediment tracking from the construction site onto private or public roads. Temporary tracking control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary tracking control BMPs are shown in Attachment BB.

TABLE 500.3.4
TEMPORARY TRACKING CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SC-7	Street Sweeping	☑	☐	◉	○	
TC-1	Temporary Construction Entrance	☑	☐	◉	○	
ALTERNATIVE BMPs USED(3) ○ Yes ◉ No						

Notes:
(1)The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3)Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- The contractor shall utilize a sweeper truck to perform street sweeping where noticeable tracking of materials from the job site onto adjacent streets occurs.
- The contractor shall construct Type 1 stabilized construction entrance/exits to reduce the tracking of mud and soil onto paved roads by construction vehicles.

500.3.5 Wind Erosion Control

Wind erosion control BMPs will be implemented to prevent sediment from leaving the construction site. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary wind erosion control requirements, temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following temporary wind erosion control BMP selection table indicates the BMPs that shall be implemented to reduce wind erosion at the construction site. Temporary wind erosion control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary wind erosion control BMPs are shown in Attachment BB.

TABLE 500.3.5
TEMPORARY WIND EROSION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
WE-1	Wind Erosion Control	☑	☐	◉	○	
TC-1	Temporary Construction Entrance	☑	☐	◉	○	
ALTERNATIVE BMPs USED(3) ○ Yes ◉ No						

Notes:
(1)The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3)Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and narrative explain how the selected BMPs shall be incorporated into the project.

- The contractor shall implement wind erosion control to alleviate nuisance dust via a water truck. Water shall be applied when soil disturbing activities occur for dust control in accordance with Caltrans standard practices.
- The contractor shall construct Type 1 and/or Type 2 stabilized construction entrance/exits to reduce the tracking of mud and dirt onto paved roads by construction vehicles.

500.4 BMP Selection for Construction Site Management

Construction site management shall consist of controlling potential sources of water pollution before they come in contact with stormwater systems or watercourses. The Contractor shall control material pollution and manage waste and non-stormwater discharges at the construction site by implementing effective handling, storage, use, and disposal practices.

500.4.1 Non-Stormwater Site Management

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the Caltrans Permit or authorized under a separate NPDES permit, shall be prohibited. The selection of non-stormwater BMPs is based on whether construction activities with a potential for non-stormwater discharges will be conducted, as discussed in the Materials Management Plan and in Section 500.4. This project will incorporate SWPPP/WPCP Preparation Manual minimum non-stormwater pollution control requirements, non-stormwater pollution temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following non-stormwater control BMP selection table indicates the BMPs that shall be implemented to prevent non-stormwater discharges from construction activities conducted at the project site. Non-stormwater pollution control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for non-stormwater pollution control BMPs are shown in Attachment BB.

TABLE 500.4.1
TEMPORARY NON-STORMWATER POLLUTION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
NS-1	Water Control and Conservation	☑	☐	◉	○	
NS-3	Paving, Sealing, Sawcutting, and Grinding Operations	☑	☐	◉	○	
NS-4	Temporary Stream Crossing (3)	☑	☐	◉	○	
NS-9	Vehicle and Equipment Fueling	☑	☐	◉	○	
NS-10	Vehicle and Equipment Maintenance	☑	☐	◉	○	
NS-12	Concrete Curing	☑	☐	◉	○	
NS-14	Concrete Finishing	☑	☐	◉	○	
ALTERNATIVE BMPs USED(4) ○ Yes ◉ No						

Notes:
(1)The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2)Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3)The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
(4)Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- The contractor shall implement water conservation practices when water is used on the project site. The contractor shall make sure that any water leakage is repaired promptly, and all water equipment is kept in good working condition.
- The contractor shall perform paving, grinding, cold planing, and saw cutting operations throughout the project site.
- The contractor shall implement a temporary stream crossing is a structure placed across a waterway that allows vehicles to cross the waterway during construction, minimzing erosion and downstream sedimentation caused by vehicles.
- The contractor shall perform vehicle and equipment fueling within the designated area in the construction yard.
- The contractor shall avoid site vehicle and equipment maintenance. When emergency maintenance is required, it shall be performed within the designated area in the construction yard.
- The contractor shall utilize non-pigmented concrete curing compound following concrete work. The concrete curing compound shall be delivered onsite in steel bins to complete the curing application.
- Concrete finishing methods are used in this project for finishing surfaces of median barrier, concrete barriers, retaining walls, sound walls, abutments and bridge decks.

500.4.2 Waste Management and Materials Pollution Control

An inventory of construction activities, materials, and wastes is provided in Section 500.1.1. The following BMP consideration checklist lists the BMPs that have been selected to control construction site wastes and materials. Locations and details of applicable materials handling and waste management BMPs are shown on the WPCDs from Attachment BB. In the narrative description, a list of waste disposal facilities and the type of waste to be disposed at each facility is also provided. The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

TABLE 500.4.2
TEMPORARY WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
WM-1	Material Delivery and Storage	☑	☐	◉	○	
WM-2	Material Use	☑	☐	◉	◉	
WM-3	Stockpile Management	☑	☐	◉	○	
WM-4	Spill Prevention and Control	☑	☐	◉	○	
WM-5	Solid Waste Management	☑	☐	◉	○	

WM-6	Hazardous Waste Management (3)	☑	☐	◉	○	
WM-7	Contaminated Soil Management (3)	☑	☐	◉	○	
WM-8	Concrete Waste Management	☑	☐	◉	○	
WM-8	Temporary Concrete Washout (Portable)	☑	☐	◉	○	
WM-9	Sanitary/Septic Waste Management	☑	☐	◉	○	
ALTERNATIVE BMPs USED (4) ○ Yes ◉ No						

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
(4) Use of alternative BMPs will require written approval by the RE.

The contractor shall establish a construction yard for this project. The contractor shall use materials in accordance to the manufacturer's specifications to avoid misuse. The contractor shall have excavated material stockpiles within the designated area in the construction yard. The contractor shall seal and secure material containers on level ground for proper spill prevention storage. The contractor shall accumulate solid waste, consisting primarily of general site litter and construction debris, into a watertight dumpster.

500.5 Water Pollution Control Drawings

The WPCDs are the component of the project SWPPP that show the BMPs, by project phase/stage, that are necessary for the project to be in compliance with the CGP. The construction activity phases used in this SWPPP are the preliminary phase, grading phase, highway construction phase, and the highway planting / erosion control establishment phase. These phases are defined below.

Preliminary Phase (Pre-Construction Phase – Part of the Grading Phase)

Includes rough grading/or disking, clearing and grubbing operations, or any soil disturbance prior to mass grading.

Grading Phase

Includes reconfiguring the topography for the highway, including excavation for roadway (e.g., necessary blasting of hard rock), highway embankment construction (fills); mass grading, and stockpiling of select material for capping operations.

Highway Construction Phase

Encompasses both highway and structure construction. Highway construction includes final roadway excavation, placement of base materials and highway paving, finish grading, curbs, gutters and sidewalks, public utilities, public water facilities including fire hydrants, public sanitary sewer systems, storm drain systems and/or other drainage improvements, highway lighting, traffic signals and/or other highway electrical work, guardrail, concrete barriers, sign installation, pavement markers, traffic striping and pavement markings. Structure construction includes structure footings, bridges, retaining walls, major culverts, overhead sign structures and buildings.

Highway Planting / Erosion Control Establishment Phase

Includes clearing and grubbing operations, soil preparation (grading, incorporation of soil amendments, and placement of topsoil), irrigation (trenching, installation and trench backfilling), minor grading (top dressing and fine grading of lawn and ground cover areas), planting (seeding and planting of vegetation), mulching (application of wood chips or other mulches) and plant establishment (weeding, plant replacement, and, if needed, fertilizer application, irrigation maintenance, and reapplication of mulch). Erosion control includes placement of permanent erosion control materials and maintenance of temporary sediment controls during the erosion control establishment period.

The WPCDs provide field staff with the information on where to install BMPs so that they are effective. The WPCDs, WPCBML and Water Pollution Control Schedule provide the necessary tools for a Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCD cover sheet(s) shall include a listing of the BMPs that will be used along with the associated BMP symbols used on the WPCDs.

WPCDs are provided for all areas that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within the Caltrans rights-of-way

The WPCDs shall show the construction project site in detail, including:

- the construction site perimeter;
- geographic features within or immediately adjacent to the site; include surface waters such as lakes, streams, springs, wetlands, estuaries, ponds, and the ocean;
- site topography before and after construction; include roads, paved areas, buildings, slopes, drainage facilities, and areas of known or suspected contamination; and
- permanent (post-construction) BMPs.

The WPCDs shall show the following site information:

- discharge points from the project to off-site storm drain systems or receiving waters;
- tributary areas and drainage patterns across the project area (show using flow arrows) into each on-site stormwater inlet or receiving water;
- tributary areas and drainage patterns to each on-site stormwater inlet, receiving water or discharge point;
- off-site tributary drainage areas that generate run-on to the project;
- temporary on-site drainage(s) to carry concentrated flows;
- drainage patterns and slopes anticipated after major grading activities are completed;
- outlines of all areas of existing vegetation, soil cover, or native vegetation that will remain undisturbed during the project;

- outlines of all areas of planned soil disturbance (disturbed soil areas, DSAs);
- known location(s) of contaminated or hazardous soils; and
- any potential non-stormwater discharges and activities, such as dewatering operations, concrete saw-cutting or coring, pressure washing, waterline flushing, diversions, cofferdams, and vehicle and equipment cleaning; if operations can't be located on the WPCDs, a narrative description should be provided.

The WPCDs show proposed locations of all construction site BMPs. Additional detail drawings are provided if necessary to convey site-specific BMP configurations. The WPCDs shall show construction site BMPs including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; any temporary on-site drainage(s) to carry concentrated flows, BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets;
- construction entrances used for site ingress and egress points and any proposed temporary construction roads;
- BMPs to mitigate or eliminate non-stormwater discharges;
- BMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal; and
- BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning.

The WPCDs can be found in Attachment BB of the SWPPP.

500.6 Water Pollution Control BMP List

The Water Pollution Control Best Management Practices List (WPCBMPL) provides, by location and project phase/stage, the BMPs necessary for the project to be in compliance with the CGP. The WPCBMPL provides field staff both with a list of necessary BMPs and with an estimated quantity for each BMP by location and phase/stage of the project. The construction activity phases are typically the Preliminary Phase, Grading Phase, Highway Construction Phase, and the Highway Planting / Erosion Control Establishment Phase. The construction activity phases are defined in Section 500.5.

The WPCBMPL, water pollution control drawings and water pollution control schedule provide the tools necessary for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP. The BMPs listed on the WPCBMPL are the base line for site inspections and visual monitoring.

The WPCBMPL cover sheet includes a list of all BMPs to be used on the project based on Section 500 Determination of Construction Site Best Management Practices.

The names and number of locations listed on the WPCBMPL were established so that field staff and inspectors can easily identify where BMPs need to be located. The WPCBMPL includes all locations that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within Caltrans rights-of-way.

Necessary additional information to convey site-specific BMP configurations or BMP modifications are noted on the WPCBMPL.

All construction site BMPs are listed on the WPCBMPL including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; include temporary on-site drainage(s) to carry concentrated flows
- BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets
- BMPs to mitigate or eliminate non-stormwater dischargesBMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal
- BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning
- permanent BMPs that are a component of the project SWPPP

The WPCBMPL can be found in Attachment CC of the SWPPP.

500.7 Water Pollution Control Schedule

The Water Pollution Control Schedule (WPCS) is the component of the project SWPPP that shows the timeline for when BMPs will be installed so that the project is in compliance with the CGP. The WPCS provides field staff with the information necessary to plan for adequate materials and crews to install BMPs at the right time so that they are effective. The WPCS, WPCBMPL, and WPCDs provide the necessary tools for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCS shall contain an adequate level of detail to show major activities sequenced with the implementation of construction site BMPs, including:

- project start and finish dates, including each stage of the project
- SWPPP review and approval
- annual certifications
- mobilization dates
- mass clearing and grubbing/roadside clearing dates
- major grading/excavation dates
- dates named in other permits such as TRPA, Fish and Game and Army Corps of Engineers Permits
- dates for submittal of SWPPP amendments as required in the contract specifications

The WPCS shall show by location the dates for the deployment of:

- temporary soil stabilization BMPs
- temporary sediment control BMPs
- wind erosion control BMPs
- tracking control BMPs
- non-stormwater BMPs

- waste management and materials pollution control BMPs

The WPCS shall include:

- paving, saw-cutting, and any other pavement-related operations;
- major planned stockpiling operations;
- dates for other significant long-term operations or activities that may cause non-stormwater discharges, such as dewatering, grinding, etc; and
- final stabilization activities for each disturbed soil area of the project.

The WPCS shall be updated quarterly and the quarterly updates shall be filed in SWPPP File Category 20.03: Water Pollution Control Schedule Updates.

The Water Pollution Control Schedule can be found in Attachment DD of the SWPPP.

SECTION 600
PROJECT SITE IMPLEMENTATION PROGRAM

600.1 Water Pollution Control Manager Responsibilities

The WPC Manager shall have primary responsibility and authority to implement the SWPPP and ensure the project is in compliance with the CGP. The WPC Manager is responsible for implementing the SWPPP and amending the SWPPP when any of the conditions specified in Section 100.3 are met. The Contractor has assigned authority to the WPC Manager to mobilize crews and subcontractors, as necessary, for SWPPP and CGP compliance. The WPC Manager will be available at all times throughout duration of the project.

Duties of the Contractor's WPC Manager include but are not limited to the following

- ensuring full compliance with the SWPPP and the CGP
- implementing all elements of the SWPPP, including but not limited to implementing:
    - prompt and effective erosion and sediment control measures
    - all non-stormwater management, and materials and waste management activities such as: monitoring discharges (dewatering, diversion devices); performing general site cleanup; cleaning vehicles and equipment, performing fueling and maintenance activities; providing spill control; ensuring that no materials other than stormwater are discharged in quantities that will have an adverse effect on receiving waters or storm drain systems, etc.
- overseeing and ensuring that the following site inspections and visual site monitoring are conducted:
    - daily required BMP inspections
    - weekly routine stormwater site BMP inspections
    - quarterly non-stormwater site inspections
    - pre-storm inspections prior to forecasted storm events
    - daily inspections during extended forecasted storm events
    - post-storm inspections for qualifying rain events
- mobilizing crews to repair, replace, and/or implement additional BMPs due to deficiencies, failures or other shortcomings identified during inspections, to be completed within 24 hours of identification in compliance with Standard Specification 13-1.03A (the contractor's WPC Manager shall be assigned authority by the Contractor to mobilize crews), unless a longer period is authorized.
- coordinating with the RE to assure that if design changes to BMPs are required due to deficiencies, failures or other shortcomings identified during inspections, the changes are completed as soon as possible and the SWPPP is revised accordingly
- monitoring NWS Forecast Office forecasts for both forecasted storm events and qualifying rain events; these events are defined as follows:
    - forecasted storm event is defined as a 50% or greater likelihood that 0.10 inch or more of precipitation will fall within a 24-hour period

  - a qualifying rain event is defined as a rain event that may produce or has produced ½ inch or greater of precipitation at the time of discharge, with a 72-hour dry period between events

- monitoring weather at the project site
- preparing and implementing qualifying rain event sampling and analysis plans
- preparing and implementing Rain Event Action Plans for forecasted storm events
- mobilizing crews immediately, in the event of NAL exceedances, to repair existing BMPs and/or implement additional BMPs (the Contractor's WPC Manager shall be assigned authority by the Contractor to mobilize crews),
- coordinating with the RE in the event of NAL exceedances to assure that any SWPPP revisions (corrective actions) are made immediately, either to prevent pollutants and authorized non-stormwater discharges from contaminating stormwater, or to substantially reduce the pollutants to levels consistently below the NALs, so that the project complies with the SWPPP, the CGP and approved plans at all times,
- submitting NAL exceedances reports to the RE
- submitting test results for stormwater samples to the RE
- preparing amendments to the SWPPP when required
- preparing contractor's SWPPP Annual Compliance Certification
- preparing the Stormwater Annual Reports
- ensuring elimination of all unauthorized discharges
- preparing and submitting Notice of Discharge reports to the RE
- preparing and submitting reports of illicit connections or illegal discharges to the RE

600.2 Site Inspections

Stormwater site inspections and visual monitoring are necessary to ensure that the project is in compliance with the requirements of the CGP. Project site visual monitoring requirements are covered in Section 700 Construction Site Monitoring Program. Project site inspections of stormwater BMPs are conducted to identify and record:

- that BMPs are properly installed
- what BMPs need maintenance to operate effectively
- what BMPs have failed
- what BMPs could fail to operate as intended.

Routine stormwater site inspections shall be conducted by the contractor's WPC Manager or other 24-hour trained staff at the following minimum frequencies:

- daily inspections of:
  - storage areas for hazardous materials and waste
  - hazardous waste disposal and transporting activities

- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily
- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

- daily inspections for projects within the Lake Tahoe Hydrologic Unit
- daily inspections of access roadways
- weekly inspection of site BMPs

Stormwater site inspections shall be documented on CEM-2030 Stormwater Site Inspection Report, in Appendix G. Completed stormwater inspection reports shall be submitted to the RE within 24 hours after completion of the inspection. Copies of completed inspection reports will be kept in SWPPP File Category 20.31: Contractor Stormwater Site Inspection Reports,

Deficiencies identified during site inspections and correction of deficiencies will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed but must be submitted within five (5) days after completion of the site inspection. Completed Stormwater Site Inspection Report Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding Stormwater Site Inspection Report that generated the need for the CEM-2035 Stormwater Corrective Actions Summary

600.3 Weather Forecast Monitoring

The WPC Manager shall have primary responsibility to monitor the National Weather Service Forecast Office for forecasted precipitation based on project site location. Precipitation forecast information shall be obtained from the National Weather Service Forecast Office accessible at: http://www.srh.noaa.gov/.

The project site location to be used for obtaining forecast from National Weather Forecast Office website is:

North of State Route 118 at Donlon Road and State Route 34-Somis Road in Somis, California (VEN-118-PM 11.09)

The WPC Manager shall monitor the weather forecast on a daily basis for predicted precipitation within the following 96 hours. The WPC Manager shall monitor the forecast for the next 24, 48, 72 and 96 hours to determine if the forecast for precipitation is 50 percent or greater for any 6-hour period. If the forecast for precipitation is 50 percent or greater, the WPC Manager shall calculate the amount of precipitation forecasted for each 24-hour period and the total precipitation for the forecasted storm event and record the information. Weather forecast monitoring shall be recorded be filed in File Category 20.40: Weather Monitoring Logs.

When the forecast for precipitation is 50 percent or greater and the forecasted amount of precipitation is 0.10 inch or more for any 24-hour period within the next 72 hours, the WPC Manager shall perform a pre-storm site inspection and ensure that the site is prepared for the likely forecasted storm event.

For Risk Level 2 and 3 the WPC Manager will prepare a Rain Event Action Plan for forecasted storm events.

Forecasted storm event site preparation shall include, but is not limited to, the installation of soil stabilization and sediment BMPs on active disturbed soil areas and stockpiles.

600.4 Weather Monitoring

The WPC Manager shall have primary responsibility to monitor weather at the project site. The WPC Manager, on a daily basis, shall monitor the weather and record the weather conditions.

When there is precipitation, the WPC Manager shall ensure that storm precipitation data is obtained from the project site rain gauge. Precipitation monitoring will include recording the time, amount of precipitation measured in the project site rain gauge, amount of precipitation within a 24-hour period, and total cumulative amount of precipitation for the forecasted storm event.

If no pre-storm visual site monitoring was performed, and the amount of precipitation for any 24-hour period is 0.10 inch or greater, the WPC Manager will implement during storm visual site monitoring, as discussed in Section 700.1.

When a forecasted storm event was not forecasted to be a qualifying rain event, but the measured cumulative amount of precipitation for the storm event and the expected severity of the continuing storm event results in ½ inch or more of precipitation, the WPC Manager will prepare to sample.

Weather monitoring will be conducted daily. Weather monitoring documentation shall be kept in File Category 20.40: Weather Monitoring Logs.

600.5 Best Management Practices Status Report

The WPC Manager shall prepare a monthly status report of the water pollution control BMPs (site BMPs) installed on the project site. The monthly BMP status report will be based on the progress of the work and the WPCBMPL for the project, with any additional BMPs the WPC Manager has determined are necessary based on the stage of construction and construction activities.

Because the SWPPP, including the WPCBMPL and WPCDs, are based on the entire project site and all construction activities, the monthly BMP status report should be a "snapshot" of which BMPs are deployed on the project site, so a project inspector or reviewer can easily determine what could be expected to be seen on the project site that month. The monthly status report will be used by stormwater inspectors and contractor personnel to ensure SWPPP compliance.

The weekly status report will be used to ensure that weekly training meetings cover BMPs that are required for work activities during the week. The weekly status report will be provided to regulatory agency staff who visit the project site to indicate which BMPs should be in place and which are scheduled to be implemented during the coming week.

The monthly status of stormwater BMPs will be documented on CEM-2034 Stormwater Best Management Practices and Materials Inventory Report form, in Appendix H. Completed monthly status reports shall be submitted to the RE 48 hours prior to the beginning of the work week. Copies of the completed reports will be kept in SWPPP File Category 20.34: Monthly Best Management Practices and Materials Inventory Reports.

600.6 Rain Event Action Plans (REAP)

REAPs will be prepared by the WPC Manager when there is a forecasted storm event. A forecasted storm event is any weather pattern that is forecasted to have a 50 percent or greater probability of producing precipitation of 0.10 inch or more within any 24-hour period at the project site location. The WPC Manager will prepare the REAP for the forecasted storm event based on the current construction activity phase of the project. For REAPs, the construction activity phases are the Highway Construction Phase, Highway Planting / Erosion Control Establishment Phase or Inactive Project Phase. The construction activity phases are defined in Section 500.5.

When the NWS forecast for 72 hours and greater predicts a forecasted storm event, the WPC Manager will prepare a REAP using the REAP form appropriate to the current project stage. REAP forms are available in Appendix L. Prepared REAPs shall be submitted to the RE at least 48 hours prior to a forecasted stormevent. If the NWS forecast changes and a storm event is forecasted to occur within 24-72 hours then a REAP must be prepared. If the NWS forecast changes and a storm event is forecasted to occur within the next 24 hours a REAP will not be prepared and the WPC Manager will take immediate actions to ready the project site for the forecasted storm event.

The WPC Manager shall implement a REAP within the 48 hours prior to the forecasted storm event. A copy of the REAP shall be available on the job site at least 48 hours prior to the forecasted storm event. Copies of REAPs will be maintained in SWPPP File Category 20.45: Rain Event Action Plans in reverse chronologic order.

SECTION 700
CONSTRUCTION SITE MONITORING PROGRAM

700.1 Site Visual Monitoring Inspection

This Construction Site Monitoring Program includes conducting site visual monitoring inspections of the project site to address the following objectives:

- determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives
- determine whether BMPs included in the SWPPP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges
- determine whether BMPs included in the REAP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions and applicable NALs and Receiving Water Monitor Triggers of the CGP
- determine whether immediate corrective actions, additional BMP implementation, or SWPPP amendments are necessary to reduce pollutants in stormwater and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions
- document the presence or evidence of any non-stormwater discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source, if applicable, and the response taken to eliminate unauthorized non-stormwater discharges and to reduce or prevent pollutants from contacting non-stormwater discharges

700.1.1 Visual Monitoring Locations

Locations of Visual Monitoring Prior To A Storm Event

Visual monitoring (a pre-storm inspection) of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, 96 hours, and the amount of precipitation forecasted for any 24-hour period is 0.10 inch or greater. Within 48 hours of a forecasted storm event, a stormwater visual monitoring site inspection shall be performed and shall include observations of:

- stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources
- BMPs to identify whether they have been properly implemented
- any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard

2 drainage area(s) on the project site and the Contractor's yard, staging areas, and storage areas have been identified as required forecasted storm event visual observation location(s), according to Section I.3.e of Attachments C, D, and E of the CGP. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed by drainage area location number and location description in Table 700.1.1.1: Drainage Areas.

TABLE 700.1.1.1
DRAINAGE AREAS

Drainage Area No.	Location
001DL01	Southbound on Donlon Road (WPCD-1)
002DL02	Southwest intersection of westbound on Highway 118 and southbound SR 34 (WPCD-2)

stormwater storage or containment area(s) are located on the project site. These stormwater storage and containment area(s) have been identified as required forecasted storm event visual observation location(s). Stormwater storage or containment area(s) are shown on the WPCDs from Attachment BB and are listed by storage or containment area location number and location description in Table 700.1.1.2: Stormwater Storage and Containment Areas.

TABLE 700.1.1.2
STORMWATER STORAGE AND CONTAINMENT AREAS

Location No.	Location
	Not applicable

Locations of Visual Monitoring during Extended Forecasted Storm Events and within 48 Hours After a Qualifying Rain Event

During any extended forecasted storm events and within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation), a stormwater visual monitoring site inspection is required to observe:

- stormwater discharges at all discharge locations
- BMPs to identify and record those that need maintenance to operate effectively, those that have failed, and those that could fail to operate as intended
- the discharge of stored or contained stormwater

2 discharge location(s) are located on the project site. These stormwater discharge location(s) have been identified as required visual observation location(s). Stormwater discharge location(s) are shown on the WPCDs in Attachment BB and are listed in Table 700.1.1.3: Stormwater Discharge Locations.

TABLE 700.1.1.3
STORMWATER DISCHARGE LOCATIONS

Unique Sampling Location Identifier	Location
001DL01	Southbound on Donlon Road (WPCD-1)

002DL02	Southwest intersection of westbound on Highway 118 and southbound SR 34 (WPCD-2)

BMP locations shown on the WPCDs in Attachment BB and are listed on the WPCBMPL in Attachment CC.

stormwater storage or containment area(s) are located on the project site. Stormwater storage or containment area(s) are shown on the WPCDs in Attachment BB and are listed on Table 700.1.1.2: Stormwater Storage and Containment Areas.

Locations of Visual Monitoring for Non-Stormwater Discharges

A visual monitoring site inspection for non-stormwater discharges requires that each drainage area be observed for the presence of or indications of prior unauthorized and authorized non-stormwater discharges.

2 drainage area(s) are located on the project site and in the contractor's yard, staging areas, and storage areas that have been identified as observation location(s) for non-stormwater discharges. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed in Table 700.1.1.1: Drainage Areas.

700.1.2 Visual Monitoring Schedule

On a daily basis, contractor personnel will visual monitor the all immediate access roadways.

On a daily basis contractor personnel will visually monitor BMPs during applicable activities:

- storage areas for hazardous materials and waste
- hazardous waste disposal and transporting activities
- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily
- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

Stormwater site visual monitoring inspections shall be conducted at a minimum:

- within 48 hours prior to a forecasted storm event (any weather pattern that is forecasted to have a 50 percent or greater probability of producing 0.1 inches or more of precipitation in the project area within a 24 period)

- at 24-hour intervals during any extended forecasted storm event
- within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation)

Non-stormwater discharge site visual monitoring inspections shall be conducted, at a minimum, during each of the following periods: January-March, April-June, July-September, and October-December.

If visual monitoring of the site for stormwater is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the site inspector shall document the conditions that prevented the inspection. The documentation of the site visual monitoring inspection shall be filed in SWPPP File Category 20.33: Site Visual Monitoring Inspection Reports.

700.1.3 Visual Monitoring Procedures

Site visual monitoring inspections shall be overseen by the contractor's WPC Manager. Stie visual monitoring will be conducted by the WPC Manager , appointed QSP or stormwater inspector.

The name(s) and contact number(s) of the site visual monitoring inspection personnel are listed below and their training qualifications are provided in Attachment E:

- Assigned Inspector: To Be Determined Contact phone: To Be Determined
- Alternate Inspector: To Be Determined Contact phone: To Be Determined

Daily Access Road Monitoring

All immediate access roads must be inspected on a daily basis. Any sediment or other construction-related materials deposited on the roads must be removed daily (or more frequently when necessary) and prior to any rain event.

Daily BMP Monitoring During Applicable Activities

Standard Specification 13-1.03C requires that the contractor personnel on the site shall inspect the following activities on a daily basis:

- storage areas for hazardous materials and waste
- hazardous waste disposal and transporting activities
- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily

- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

Discharge Monitoring

During inspections, the contractor personnel shall be observant of any discharges or evidence of a prior discharge that could cause adverse conditions in the storm sewer system or the receiving water. If a discharge or evidence of a prior discharge is discovered by the contractor, the WPC Manager or contractor shall immediately notify the RE, and shall file a written report on the CEM-2061 Notice of Discharge form with the RE within 24 hours of the discharge or discovery of evidence of a prior discharge. Corrective measures shall be implemented immediately following the discovery of the discharge. Form CEM-2061 for reporting discharges is available in Appendix K.

Caltrans will notify the owner/operator of the MS4 and the RWQCB as soon as practicable, but no later than 24 hours after onset of or threat of discharge which can cause adverse conditions to the storm sewer system or the receiving water. This applies to any such discharge that is not covered by California Emergency Management Agency procedures for discharges from a highway to a storm sewer system subject to a MS4 permit.

Discharges requiring reporting include:

- stormwater from a DSA discharged to a waterway without treatment by an effective combination of temporary erosion and sediment control BMPs
- non-stormwater, except conditionally exempted discharges, discharged to a waterway or a storm drain system, without treatment by an approved control measure (BMP)
- stormwater discharged to a waterway or a storm drain system where the control measures (BMPs) have been overwhelmed or not properly maintained or installed
- discharge of hazardous substances above the reportable quantities, as provided in 40 CFR 110.3, 117.3 or 302.4
- stormwater runoff containing hazardous substances from spills discharged to a waterway or storm drain system

The initial notification to the RWQCB of a discharge or threat of discharge will be made immediately for any discharge that can cause adverse conditions to the storm sewer system or the receiving water, with a follow-up in writing within 24 hours. Adverse conditions include, but are not limited to, serious violations or serious threatened violations of Waste Discharge Requirements (WDRs), significant spills of petroleum products or toxic chemicals, or serious damage to control facilities that could affect compliance. Caltrans shall perform follow-up monitoring of major spills and/or perform confirmation sampling to ensure that threats to waters of the U.S. have been eliminated as determined by the local RWQCB.

Weekly BMP Monitoring

Weekly monitoring is required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. The weekly BMP monitoring shall include observations of:

- all stormwater storage and containment areas identified in Table 700.1.1.2 to detect leaks and ensure maintenance of adequate freeboard
- all BMPs for proper installation and adequate maintenance.

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced in the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 24 hours.

Visual Monitoring Prior To A Forecasted Storm Event

Visual monitoring of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, or 96 hours and the amount of precipitation forecasted for any 24-hour period during the storm event is 0.10 inch or greater within a 24-hour period. Site visual monitoring shall be conducted within 48 hours prior to a forecasted storm event. The pre-storm site visual monitoring shall include observations of:

- all drainage areas identified in Table 700.1.1.1 to identify any spills, leaks, or uncontrolled pollutant sources;
- all stormwater storage and containment areas identified in Table 700.1.1.2 to detect leaks and ensure maintenance of adequate freeboard
- all BMPs for proper installation and adequate maintenance.

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced in the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 24 hours and prior to the forecasted storm event.

Any corrective actions identified by a pre-storm visual monitoring site inspection shall be included in the REAP for the forecasted storm event.

Visual Monitoring during Extended Forecasted Storm Events

Stormwater visual monitoring site inspections shall be conducted at least once each 24-hour period during any extended forecasted storm events. During any extended forecasted storm event, the site visual monitoring inspector shall visually observe:

- stormwater discharges at all discharge locations (Table 700.1.1.3)
- all stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

During any forecasted storm event, stormwater visual monitoring site inspections will include the observation of all site BMPs for:

- proper installation
- achievement of maintenance requirements
- possible failure
- BMPs that could fail to operate as intended
- effectiveness, so that design changes can be implemented as soon as feasible if needed

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented , as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes.

Visual Monitoring Within 48 Hours after a Qualifying Rain Event

Site visual monitoring post-qualifying rain events shall be conducted within 48 hours after the qualifying rain event. The post-storm site visual monitoring inspection shall include observations of:

- discharges of stormwater that have not been processed by a BMP or evidence of stormwater that has not been processed by a BMP at all discharge locations
- evidence of a breach at stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Post-qualifying rain event stormwater visual monitoring site inspections will include observation of all site BMPs to determine if BMPs have failed to operate as intended because of:

- improper installation
- lack of maintenance
- lack of effectiveness

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, necessary implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes.

Visual Monitoring of Non-Stormwater Discharges

For non-stormwater site visual monitoring, each drainage area will be monitored quarterly for the presence or prior indications of unauthorized and authorized non-stormwater discharges, and their sources. The presence or absence of non-stormwater discharges based on site observations will be documented in the CEM-2030 Stormwater Site Inspection Report. Documentation of observed non-stormwater discharges will include presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Site observations of the site and any recommended corrective actions will be documented. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes. Corrective actions shall be documented in the CEM-2035 Stormwater Corrective Actions Summary. Any photographs used to document observations will be referenced in the CEM-2030 Stormwater Site Inspection Report.

700.1.4 Visual Monitoring Follow-up and Tracking Procedures

For deficiencies identified during visual monitoring (site inspections), the required repairs or maintenance of BMPs shall begin and be completed as soon as possible, while taking into consideration worker safety. For deficiencies identified during visual site inspections that require design changes, including additional BMPs, the implementation, as required by Standard Specification 13-1.03A, will begin within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). When design changes to BMPs are required, the SWPPP shall be amended, including the WCBMPL and WPCDs. If NALs are exceeded, corrective actions shall be approved by the WPC Manager and implemented immediately.

Deficiencies identified on site inspection reports, as well as corrections of deficiencies, will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective action summaries shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of a site inspection.

700.1.5 Data Management and Reporting

The results of site visual monitoring (pre-storm, during storm, post-storm, and quarterly inspections) shall be recorded on the CEM-2030 Stormwater Site Inspection Report, in Appendix G. A copy of each report shall be kept in SWPPP File Category 20.33.

All reports shall be provided to the RE within 24 hours of the site inspection.

Deficiencies identified during visual monitoring (site inspections) and correction of deficiencies will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of the site inspection. Completed Stormwater Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding inspection report and shall be kept in the SWPPP Category 20.33.

If a discharge or evidence of a prior discharge that could cause adverse condition in the storm sewer or the receving water is discovered by the Contractor, the WPC Manager or Contractor shall immediately notify the RE, and no more than 6 hours after discovery, and will file a written report to the RE within 24 hours of the discovery of evidence of a prior discharge. The written report to the RE will contain:

- the date, time, location, and type of unauthorized discharge;
- The nature of the operation that caused the discharge;
- An initial assessment of any impacts caused by the discharge;
- the BMPs deployed before the discharge;

- the date of deployment and type of BMPs deployed after the discharge, including additional measures installed or planned to reduce or prevent re-occurrence
- steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form, in Appendix K. Completed Notice of Discharge reports shall be submitted to the RE within 24 hours of discovery of evidence of a discharge. Copies of the Notice of Discharge reports will be kept in SWPPP File Category 20.61: Notice of Discharge Reports.

700.2 Sampling and Analysis Plans

700.2.1 General SAP

A sampling and analysis plan (SAP) describes how samples will be collected, under what conditions, where and when the samples will be collected, what the sample will be tested for, what test methods and detection limits will be used, and what methods/procedures will be performed to ensure the integrity of the sample during collection, storage, shipping and testing (i.e., quality assurance/quality control protocols). Therefore, a SAP shall include the components listed below.

1. Scope of Monitoring Activities
2. Monitoring Preparation
3. Monitoring Strategy
4. Sample Collection and Handling
5. Sampling Analysis
6. Quality Control and Assurance
7. Data Management and Reporting
8. Data Evaluation
9. Change of Conditions

This SWPPP contains a non-visible pollutants SAP. The SWPPP may also contain four additional specific SAPS based on the project risk level, project dewatering requirements, RWQCB sampling and analysis requirements, and a SAP for monitoring an active treatment system.

700.2.1.1 Scope of Monitoring Activities

For specific details with regard to monitoring activities, refer to the specific SAP identified below.

- Non-visible Pollutants (Section 700.2.2.1)
- Non-Stormwater Discharges (Section 700.2.3.1)
- Stormwater pH and Turbidity (Section 700.2.4.1)
- Monitoring required by the Regional Board (Section 700.2.5.1)
- Monitoring for Active Treatment Systems (ATS) (Section 700.2.6.1)

700.2.1.2 Monitoring Preparation

To ensure an effective construction site monitoring and reporting program, the following monitoring preparation activities are required:

- identifying qualified sampling personnel
- ensuring the availability of an adequate quantity of monitoring supplies
- ensuring the availability of field instruments; field instruments must be properly maintained and calibrated prior to sampling events
- identifying a qualified testing laboratory that is capable of performing stormwater and non-stormwater analysis for those constituents that must be tested in a laboratory

700.2.1.2.1 Qualified Sampling Personnel

Sampling personnel shall be trained to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring Program (SWAMP) 2008 Quality Assurance Program Plan (QAPrP).

- Stormwater sampling and field analysis will be performed by the following primary and alternative stormwater samplers: To Be Determined When Project is Awarded
- To Be Determined When Project is Awarded

The primary stormwater sampler has received the following stormwater sampling training:

- To Be Determined When Project is Awarded

The primary stormwater sampler has the following stormwater sampling experience:

- To Be Determined When Project is Awarded

The alternate stormwater sampler has received the following stormwater sampling training:

- To Be Determined When Project is Awarded

The alternate stormwater sampler has the following stormwater sampling experience:

- To Be Determined When Project is Awarded

Training records of designated contractor sampling personnel are provided in Attachment D, Contractor Personnel Stormwater Training.

Safety practices for sample collection will be in accordance with the To Be Determined When Project is Awarded.

700.2.1.2.2 Monitoring Supplies

700.2.1.2.3 Field Instruments

The field instrument(s) shown in Table 700.2.1.2.3: Field Instruments will be used to analyze the constituents shown:

TABLE 700.2.1.2.3 FIELD INSTRUMENTS	
Field Instrument	**Constituent**
To Be Determined	pH
To Be Determined	Turbidity

The instrument(s) shall be maintained in accordance with manufacturer's instructions.

The instrument(s) shall be calibrated before each sampling and analysis event.

A Standard Operating Procedure (SOP) for calibration and maintenance of field instruments shall be implemented based on the meter manufacturer's instructions. A copy of the manufacturer's instructions shall be attached to the SOP so that they are readily available.

Maintenance and calibration records shall be maintained in SWPPP File Category 20.55: Field Testing Equipment Maintenance and Calibration Records.

700.2.1.2.4 Testing Laboratory

Samples collected on the project site that require laboratory testing will be tested by a laboratory certified by the State Department of Health Services. Samples collected on the project site will be analyzed by:

Laboratory Name: **To Be Determined When Project is Awarded**

Address: **To Be Determined When Project is Awarded**

To Be Determined When Project is Awarded, To Be Determined When Project

Contact Name: **To Be Determined When Project is Awarded**

Title: **To Be Determined When Project is Awarded**

Phone Number: **To Be Determined When Project is Awarded**

Emergency Phone Number (24/7): **To Be Determined When Project is Awarded**

Email Address: **To Be Determined When Project is Awarded**

700.2.1.3 Monitoring Strategy

The monitoring strategy includes identifying analytical constituents, potential sampling locations, identification of actual sampling locations, and sampling schedule,

700.2.1.3.1 Analytical Constituents

Stormwater and non-stormwater discharges shall be monitored for the analytical constituents specified in the specific SAP(s) in this SWPPP.

700.2.1.3.2 Potential Sampling Locations

Potential sampling locations must be representative of the stormwater and non-stormwater discharges from the construction site. Existing conditions and associated construction activities within each drainage area form the basis for determining representative stormwater sampling locations.

Project drainage areas and potential sampling locations have been determined by:

- reviewing project plans
- visiting project site
- reviewing topography maps

The WPCDs show the demarcation of all drainage areas that are either:

- within the project site
- cover part of the project site

The QSD must identify potential sampling locations where concentrated run-off:

- leaves the Caltrans right-of-way
- drains into an MS4
- discharges into a receiving water

Potential run-on sampling locations were determined where concentrated run-on:

- enters the right-of-way
- combines with the stormwater on site and then discharges into an MS4, including the location(s) of discharge into the MS4

The following locations were determined when runoff discharges directly into receiving water bodies:

- the discharge location(s) into the receiving water
- a potential sampling location upstream of all discharge locations
- a potential sampling location downstream from all discharge location(s) into the receiving water.

Necessary potential sampling locations were determined when:

- there are potential sources of non-visible pollutants, as discussed in Section 500.1, and discharge locations are downgradient
- run-on locations are present that may contribute non-visible pollutants
- there are potential non-stormwater discharges and corresponding discharge locations are downgradient
- there are proposed dewatering construction activities

If an ATS is used on site, then sample locations must be included in Section 700.2.6.

Potential stormwater and non-stormwater sampling locations must be shown on the WPCDs in Attachment BB and listed in Attachment EE: Stormwater Sample Locations. The QSD has identified each of the potential sampling locations with a unique sample location identification code, as shown below. The identification code must start with a number and must be different for each location. If the construction site lies in a west-to-east orientation, starting with one (01) from the east, the potential sampling locations shall be numbered toward the west. If the construction site lies in a south-to-north orientation, the potential sampling locations shall be numbered toward the north.

To further distinguish among the locations, each potential sampling location has been identified with one of the following abbreviations based on the sampling location type:

- discharge locations leaving Caltrans right-of-way: DL
- discharge locations from areas with known non-visible pollutants: NVP
- discharge locations upgradient of areas with known non-visible pollutants: UNVP
- discharge locations to an MS4: MS
- run-on locations: RO
- discharge locations into a receiving water: RW
- downstream of all discharge locations: RWD
- upstream of all discharge locations: RWU
- dewatering discharge locations: DDL
- contained stormwater discharge locations: CSDL
- discharge locations for ATS: ATS

The unique sample location identification code shall follow this format, **SSSTTTTXX** , where:

SSS	=	sampling location identifier number (e.g., 010)
TTTT	=	sampling location type (e.g. DL)
XX	=	identifier number for the type of sampling location

For example, the sampling location identification for the 15th sampling location based on starting from the south end of the project for a stormwater discharge location that has been identified to be the ninth discharge location would be **015DL09.**

Potential sampling locations shown on the WPCDs shall be identified with unique sampling location identifiers. Each potential sample location must be listed on Stormwater Sample Locations in Attachment EE. The unique identification of each potential sampling location based on its number and abbreviation of type shall be used on all sampling documentation.

The WPC Manager may have to revise and/or add additional sampling locations during the course of construction as conditions dictate.

700.2.1.3.3 Identification of Actual Sampling Locations

For each forecasted storm event, actual sampling locations will be determined by the WPC Manager based on the strategy described in each specific SAP.

700.2.1.3.4 Sampling Schedule

For the sampling schedule, see the specific SAPs in this CSMP. If a scheduled sampling activity is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document why an exception to performing the sampling was necessary.

700.2.1.4 Sample Collection and Handling

Sample collection procedures shall be used to ensure that representative samples are collected and that the potential for contamination of samples is minimized. Sample handing procedures are followed to ensure that samples are identified accurately and that the required analysis is clearly documented. Chain-of-custody requirements for samples are necessary to trace the possession of the sample from collection through analysis.

700.2.1.4.1 Sample Collection Procedures

Samples shall be collected, maintained and shipped in accordance with the SWAMP's 2008 QAPrP.

Grab samples shall be collected and preserved in accordance with the methods identified in each specific SAP. Only personnel trained in proper water quality sampling shall collect samples.

Samples from areas of sheet flow can be collected using the collection procedures shown in the video at http://www.youtube.com/watch?v=AmEJUNp44aU. For pH and turbidity sampling, sheet flow sampling can be conducted as described below to concentrate the flow in order to collect a sample or follow other procedures approved by the RE.

- Place several rows of sandbags in a half circle directly in the path of the sheet flow to pond water, and wait for enough water to spill over. Then place a cleaned or decontaminated flexible hose along the top, and cover with another sandbag so that ponded water will only pour through the flexible hose and into sample bottles. Do not reuse the same sandbags during future sampling events as they may cross-contaminate future samples.

- Place a cleaned or decontaminated dustpan with open handle in the path of the sheet flow so that water will pour through the handle and into sample bottles.

For receiving water sampling, upstream samples shall be collected to represent the water body upgradient of the construction site. Downstream samples shall be collected to represent the water body mixed with direct discharge from the construction site. Samples shall not be collected directly from ponded, sluggish, or stagnant water.

Receiving water upstream and downstream samples shall be collected using one of the following methods:

- placing a sample bottle directly into the stream flow in or near the main current upstream of sampling personnel and allowing the sample bottle to fill completely;

  OR

- placing a decontaminated or sterile bailer or other sterile collection devise in or near the main current to collect the sample and then transferring the collected water to appropriate sample bottles allowing the sample bottle to fill completely.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel shall follow the procedures listed below.

- Wear a clean pair of surgical gloves donned prior to the collection and handling of each sample at each location.

- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water. Dispose of decontamination water/soaps appropriately (i.e., do not discharge to the storm drain system or receiving water).
- Do not allow the inside of the sample bottle to come into contact with any material other than the run-off sample.
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
- Do not leave the cooler lid open for an extended period of time once samples are placed inside.
- Do not sample near a running vehicle where exhaust fumes may impact the sample.
- Do not touch the exposed end of a sampling tube, if applicable.
- Avoid allowing rainwater to drip from rain gear or other surfaces into sample bottles.
- Do not eat, smoke, or drink during sample collection/field measurement.
- Do not sneeze or cough in the direction of an open sample bottle.
- Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample.

700.2.1.4.2 Sample Handling Procedures

Immediately following collection, sample bottles to be forwarded for laboratory analytical testing shall be capped, labeled, documented on the Chain-of-Custody Record, sealed in a re-sealable storage bag, placed in an ice-chilled cooler, at 0 ±4 degrees Celsius, and delivered within 24 hours to the laboratory shown in sub-section 700.2.1.2.4.

Immediately following collection, samples used for field analysis shall be tested in accordance with the field instrument manufacturer's instructions and results recorded on the CEM-2052 Stormwater Sample Field Test Report form.

700.2.1.4.3 Sample Documentation Procedures

All original data documented on sample bottle identification labels, the Chain-of-Custody, and the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

The following form, used for sample documentation, is provided in the SWPPP appendices:

- CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, in Appendix M

Duplicate samples shall be identified in a manner consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples can be identified in the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form.

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle, which shall include, at a minimum, the following information:

- project name
- contract number and/or project identifier number

- unique sample identification code, which shall follow this format, **SSSSSYYMMDDHHmmTT** , where

SSSSS	=	sampling location identifier number (e.g., 01MS1)
YY	=	last two digits of the year (e.g. 11)
MM	=	month (01-12)
DD	=	day (01-31)
HH	=	hour sample collected (00-23)
mm	=	minute sample collected (00-59)
TT	=	Type or QA/QC Identifier (if applicable)
G	=	grab
FS	=	field duplicate

  For example, the sample number for a grab sample collected at Station 01MS1, collected at 4:15PM on December 8, 2011 would be **01MS11112081615G.**

- constituent to be analyzed
- initials of person who collected the sample

Stormwater Sampling and Testing Activity Log: A log of sampling events and test results shall include:

- sampling date
- separate times for collected samples and QA/QC samples, recorded to the nearest minute
- unique sample identification number and location
- constituent analyzed
- names of sampling personnel
- weather conditions (including precipitation amount)
- test results
- other pertinent data

Sample Information, Identification and Chain-of-Custody Record Forms: All samples to be analyzed by a laboratory will be accompanied by a Chain-of-Custody. The samplers will sign the Chain-of-Custody when samples are turned over to the testing laboratory. Chain-of-custody procedures will be strictly adhered to for QA/QC purposes.

700.2.1.5 Sample Analysis

For the analytical methods to be used to determine the presence of pollutant(s), see the specific SAPs in this CSMP.

700.2.1.6 Quality Assurance/Quality Control

For verification of laboratory or field analysis, duplicate samples shall be collected at a rate of 10 percent or 1 minimum duplicate per sampling event. The duplicate sample shall be collected, handled, and analyzed using the same protocols as primary samples. A duplicate sample shall be collected immediately after the primary sample has been collected. Duplicate samples shall not influence any evaluations or conclusions; however, they shall be used as a check on laboratory or field analysis quality assurance.

700.2.1.7 Data Management and Reporting

All test results shall be documented on either the CEM-2052 Stormwater Sample Field Test Report form and/or may be entered on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

For field tests, the submitted information shall include a signed copy of the Chain-of-Custody and CEM-2052 Stormwater Sample Field Test Report form. Appendix N contains the CEM-2052 Stormwater Sample Field Test Report form , which must accompany the Chain-of-Custody Record. The test results can be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, in Appendix M.

For laboratory testing, all laboratory analysis results shall be reviewed for consistency among laboratory methods, sample identifications, dates, and times for both primary samples and QA/QC samples. The test results may be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form.

All sampling and testing documentation, including the Chain-of-Custody, CEM-2051 Stormwater Sampling and Testing Activity Logs - Optional Form, CEM-2052 Stormwater Sample Field Test Reports, and Laboratory Test Reports shall be kept in the appropriate SWPPP file category. Sampling and testing documentation shall be filed in the appropriate following SWPPP file category based on the specific SAP that required the sampling and analysis:

- non-visible pollutant sampling and testing – SWPPP File Category 20.51;
- non-stormwater discharge sampling and testing – SWPPP File Category 20.50
- turbidity, pH, and SSC sampling and testing – SWPPP File Category 20.52
- required RWQCB sampling and testing – SWPPP File Category 20.53
- ATS sampling and testing – SWPPP File Category 20.54

If corrective actions are taken as a result of the data evaluation, a copy of the completed CEM-2035 Stormwater Corrective Actions Summary shall be filed in File Category 20.35: Corrective Actions Summary.

A copy of completed sampling records and reports and an updated CEM-2051 Stormwater Sampling and Testing Log - Optional shall be submitted to the RE. All water quality analytical results, including QA/QC data, shall be submitted to the RE within 48 hours of sampling for field analyzed samples, and within 30 days for laboratory analyses.

In addition to a paper copy of the water quality test results, the test results shall be submitted electronically in Microsoft Excel (.xls) format, and shall include, at a minimum, the following information from the lab: Sample ID Number, Contract Number, Constituent, Reported Value, Laboratory Name, Method Reference, Method Number, Method Detection Limit, and Reported Detection Limit. Electronic copies of stormwater data shall be forwarded by email to Alison Sweet at alison.sweet@ventura.org for inclusion into a statewide database.

700.2.1.8 Data Evaluation

For data evaluation of stormwater sample test results, see specific SAPs.

700.2.1.9 Change of Conditions

Whenever stormwater visual monitoring site inspections indicate a change in site conditions that might affect the appropriateness of sampling locations, sampling and testing protocols shall be revised accordingly. All such revisions shall be implemented as soon as feasible, and the SWPPP updated or amended.

700.2.2 Sampling and Analysis Plan for Non-Visible Pollutants

This SAP has been prepared for monitoring non-visible pollutants in stormwater and non-stormwater discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, January 2012. This SAP for monitoring non-visible pollutants includes all of the components listed in Section 700.2.1.

700.2.2.1 Scope of Monitoring Activities

The scope of monitoring for discharges of non-visible pollutants from the construction site is based on the construction materials and construction activities to be performed on the project site, potential for the presence of non-visible pollutants, based on the historical use of the site, and potential non-visible pollutants in run-off from areas where soil amendments have been used on the project site.

The construction materials, wastes or activities listed below, and identified in Section 500.1.1, are potential sources of non-visible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on the WPCDs in Attachment BB.

- Vehicles
- Heavy machinery
- Asphalt products
- Cement based materials
- Concrete curing compounds
- Base and sub-base materials
- Paints
- Solvents
- Thinners
- Sandblasting materials
- BMP materials
- Masonry block rubble
- General litter/trash
- Fertilizer
- Sandblasting operations

- Landscaping operations

The existing site features listed below, and identified in Section 500.1.2, are potential sources of non-visible pollutants to stormwater discharges from the project.

- To Be Determined by Rincon's ISA Report

The soil amendments listed below have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil and will be used on the project site.

- Soil Amendment

700.2.2.2 Monitoring Preparation

Refer to the general requirements in General SAP Section 700.2.1.2 for monitoring preparation.

Identifying qualified sampling personnEnsuring the availability of an adequate quantity of monitoring supplies. nsuring the availability of field instruments; field instruments must be properly maintained and calibrated prior to sampling events. •Identifying a qualified testing laboratory that is capable of performing stormwater and non-stormwater analysis for those constituents that must be tested in a laboratory.

700.2.2.2.1 Qualified Sampling Personnel

Refer to the general requirements in General SAP Section 700.2.1.2.1 for Qualified Sampling Personnel.

700.2.2.2.2 Monitoring Supplies

Refer to the general information in General SAP Section 700.2.1.2.2 regarding monitoring supplies.

700.2.2.2.3 Field Instruments

Refer to the general information in General SAP Section 700.2.1.2.3 regarding field instruments.

700.2.2.2.4 Testing Laboratory

Refer to the contact information found in General SAP Section 700.2.1.2.4 for the Testing Laboratory.

700.2.2.3 Monitoring Strategy

The monitoring strategy for non-visible pollutants in stormwater discharges is to identify all potential non-visible pollutants that may be on the project site, non-visible pollutant sources, and water quality indicators that will indicate the presence of the non-visible pollutant in stormwater discharges. Locations will be identified where sources of non-visible pollutants will be used, stored or exist because of historical use of the project site so that these areas are monitored prior to and during forecasted storm events.

Non-visible pollutant monitoring is only required where a discharge can cause or contribute to an exceedance of a water quality standard based on one of the following triggers:

- construction materials are waste are exposed
- the site contains historical non-visible pollutants
- construction activity has occurred or material has been placed within the past 24 hours that may cause an exceedance of a water quality standard
- there is run-on to the site that may contains non-visible pollutants
- there is a breach, malfunction, leak or spill from a BMP

When one of the triggers that indicates a non-visible pollutant source may have come in contact with stormwater is discovered during a site inspection conducted prior to, during or after a forecasted storm event, the WPC Manager will require that sampling and analysis of the stormwater discharge be conducted for the applicable non-visible pollutant water quality indicator(s).

For the forecasted storm event in which a trigger for a non-visible pollutant sampling and analysis has occurred, the WPC Manager will also require the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. The WPC Manager will perform an evaluation of the analysis results from the non-visible pollutant stormwater discharge sampling location and the analysis results from the uncontaminated run-off sampling location to determine if there is an increased level of the tested non-visible pollutant analyte in the stormwater discharge.

700.2.2.3.1 Analytical Constituents

Identification of Potential Non-Visible Pollutants

The following table lists the specific sources and types of potential non-visible pollutants on the project site and the applicable water quality indicator constituent(s) for that pollutant.

TABLE 700.2.2.3.1
POTENTIAL NON-VISIBLE POLLUTANTS AND WATER QUALITY INDICATOR CONSTITUENTS

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Masonry products	Alkalinity	pH
Aerially deposited lead	Lead	Metals
Resins	COD	COD
Lead/Acid Batteries	Sulfuric acid, lead and pH	pH
Curing Compound	Acidity, Alkalinity, pH, and VOCs	pH
Solvents	VOCs and SVOCs	VOCs, SVOCs
Thinners	VOCs, and SVOCs	VOCs, SVOCs
Vehicle batteries	Lead, sulfate or pH	Lead, sulfate, pH
Gasoline, Diesel, Oil	Total petroleum hydrocarbons	TPH

700.2.2.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring non-visible pollutants were identified. Sampling locations are based on: proximity to planned non-visible pollutant storage; occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, latest edition. Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

1 sampling location(s) on the project site and the contractor's support facilities have been identified as potential locations for the collection of samples of runoff from planned material and waste storage areas and areas where non-visible pollutant producing construction activities are planned. Potential non-visible pollutant sampling locations are listed in the Table 700.2.2.3.2.1: Potential Non-Visible Pollutant Sampling Locations.

TABLE 700.2.2.3.2.1
POTENTIAL NON-VISIBLE POLLUTANT SAMPLING LOCATIONS

Sampling Location Identifier	Location Description
001NVP01	Contractor's Yard (WPCD-1)

Potential non-visible pollutant sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

sampling location(s) has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location(s) was selected such that the sample will not have come in contact with (1) operational or storage areas associated with the materials, wastes, and activities identified in Section 500.1.1; (2) potential non-visible pollutants due to historical use of the site, as identified in Section 500.1.2; (3) areas in which soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied; or (4) disturbed soils areas. Potential non-visible pollutant uncontaminated sampling locations are listed in Table 700.2.2.3.2.2: Potential Uncontaminated Non-visible Pollutant Sampling Locations.

TABLE 700.2.2.3.2.2
POTENTIAL UNCONTAMINATED NON-VISIBLE POLLUTANT SAMPLING LOCATIONS

Sampling Location Identifier	Location Description
001UNVP01	To be determined based on actual field conditions and storm water flow patterns.

Potential non-visible pollutant uncontaminated sampling locations shall be shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

700.2.2.3.3 Actual Sampling Locations

Sampling for non-visible pollutants at any potential non-visible pollutant sampling location will be based on any of the conditions listed below having been identified during the visual monitoring site inspections.

- Locations where materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.

- Locations where materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the forecasted storm event, and (3) the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where a construction activity (including but not limited to those identified in Section 500.1.1) with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the forecasted storm event, (2) involved the use of applicable BMPs that were observed to be breached, malfunctioning, or improperly implemented, and (3) resulted in the potential for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

If the presence of a material storage, waste storage, or operations area where spills have been observed or the potential for the discharge of non-visible pollutants to surface waters or a storm drain system was noted during a site inspection conducted prior to or during a forecasted storm event and such an area has not been identified on the list of potential non-visible pollutant sampling locations, the WPC Manager must identify the corresponding discharge location and the corresponding upgradient sampling location as actual non-visible sampling locations. The additional sampling location for non-visible pollutant monitoring shall be shown on the WPCDs from Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

For forecasted storm events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2048 Storm Event Sampling and Analysis Plan form, in Appendix N. The completed SAP for each storm event will be filed in File Category 20.46: Storm/Rain Event Action, Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the storm event SAP shall be submitted to the RE.

For qualifying rain events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan, in Appendix O. The completed SAP for each qualifying rain event will be filed in File Category 20.46: Storm/Rain Event Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the SAP shall be attached to the REAP and submitted to the RE.

700.2.2.3.4 Sampling Schedule

In addition to the general scheduling requirements in General SAP Section 700.2.1.3.4, samples for non-visible pollutant monitoring, including both the non-visible pollutants samples and uncontaminated background samples, shall be collected during the first two hours of discharge from storm events that result in a sufficient discharge for sample collection. Samples shall be collected during daylight hours, 7 days a week.

700.2.2.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.2.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.2.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.2.4.3 Sample Documentation Procedures

In addition to the general sample documentation procedures provided in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document in the CEM-2030 Stormwater Site Inspection Report, that samples for non-visible pollutants were taken during a storm event, based on the criteria for non-visible pollutant sampling described in Section 700.2.2.3.3.

700.2.2.5 Sample Analysis

Samples collected for monitoring of non-visible pollutants will be analyzed by the laboratory identified in Section 700.2.1.2.4. Samples shall be analyzed for the constituents identified in Table 700.2.2.3.1, using the analytical methods identified in the following table, entitled "Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants."

TABLE 700.2.2.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING NON-VISIBLE

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time
pH	Field test	1x100mL	Polypropylene	Store at 4C	+/-0.1	immediate
Turbidity	EPA 180.1	500mL	Poly-bottle	Store at 4C	1 NTU	48 hours
Phenol	EPA 420.1	1x1L	Glass-amber	H2SO4 at 4C	0.1 mg/L	28 days
VOCs- Solvents	EPA 8260B	2x40 mL	VOA-glass	HCl at 4C	0.5 µg/L	14 days
SVOCs	EPA 8270C	1x1L	Glass-amber	Store at 4C	10 µg/L	7 days
TPH	EPA 8015B	3x40mL	VOA	HCl at 4C	10 mg/L	14 days
TPH Extractable	EPA 8015B	3x40mL	VOA	HCl at 4C	10 mg/L	14 days
Oil and Grease	EPA 1664A	2x1L	Glass-amber	HCl at 4C	10 mg/L	28 days
Metals	EPA6010B/7470A	1x250mL	Poly-bottle	Nitric acid at 4C	0.1 mg/L	180 days
Nitrate	EPA 300.0	500mL	Poly-bottle	Store at 4C	10 mg/L	48 hours
Alkalinity	SM2320B	500mL	Poly-bottle	Store at 4C	1 mg/L	14 days

700.2.2.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6.

700.2.2.7 Data Management and Reporting

Refer to general requirements for data management and reporting in Section General SAP 700.2.1.7.

700.2.2.8 Data Evaluation

Water quality sample analytical results for non-visible pollutants shall be compared to the uncontaminated background sample results. Should the discharge (downgradient) sample show an increased level of the tested non-visible pollutant analyte relative to the background sample, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visual pollutant concentrations. Once deemed necessary, corrective actions shall be implemented , as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter), and documented on the CEM-2035 Stormwater Corrective Actions Summary. Revisions/design changes to BMPs required as a result of data evaluation and site assessment shall be implemented based on an amendment to the SWPPP.

700.2.2.9 Change of Conditions

Refer to the general requirements for change of conditions in General SAP Section 700.2.1.9.

700.2.3 Sampling and Analysis Plan for Non-Stormwater Discharges

This SAP has been prepared for monitoring non-stormwater discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, January 2012. This SAP for monitoring non-stormwater discharges includes all of the components listed in Section 700.2.1.

700.2.3.1 Scope of Monitoring Activities

Non-stormwater discharges can be authorized by a separate NPDES permit or conditional exemption. For non-stormwater discharges that are unauthorized where runoff is discharged off site, sampling and testing of the discharge must be conducted in compliance with the CGP.

Examples of unauthorized non-stormwater discharges common to construction activities include:

- vehicle and equipment wash water, including concrete washout water
- slurries from concrete cutting and coring operations, or grinding operations

- slurries from concrete or mortar mixing operations
- residue from high-pressure washing of structures or surfaces
- wash water from cleaning painting equipment
- runoff from dust control applications of water or dust palliatives
- sanitary and septic wastes
- chemical leaks and/or spills of any kind, including but not limited to, petroleum, paints, cure compounds, etc

When an unauthorized non-stormwater discharge is discovered, the WPC Manager will require sampling and analysis of the effluent to detect whether non-visible pollutants are present in the discharge. Sampling and analysis of non-stormwater discharges shall be performed in accordance with Section 700.2.2, the SAP for non-visible pollutants.

Sampling and analysis for pH and turbidity of stored or impounded stormwater discharges subsequent to a qualifying rain event (a rain event that has produced ½ inch or more of precipitation at the time of discharge) shall be performed in accordance with Section 700.2.4, the SAP for stormwater pH and turbidity.

700.2.3.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.3.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.3.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.3.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.3.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.3.3 Monitoring Strategy

Non-stormwater discharges from the construction site will be monitored for exceedances of water quality standards.

700.2.3.3.1 Analytical Constituents

For non-stormwater dewatering discharges and discharges of stored stormwater, samples shall be analyzed for the following constituents:

- turbidity
- pH
- To Be Determined

700.2.3.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, potential sampling locations on the project site for monitoring dewatering discharges, discharges of impounded stormwater, and other non-stormwater discharges were identified. Sampling locations were based on: proximity to planned non-stormwater dewatering; non-stormwater occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the *Caltrans Construction Site Monitoring Program Guidance Manual,* January 2012
Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

sampling location(s) on the project site have been identified as potential locations for the collection of non-stormwater dewatering samples and the sampling location(s) are listed in Table 700.2.3.3.2.1: Potential Non-stormwater Dewatering Sampling Locations.

TABLE 700.2.3.3.2.1
POTENTIAL NON-STORMWATER DEWATERING SAMPLING LOCATIONS

Sampling Location Identifier	Location Description
None Identified	To Be Determined

sampling location(s) on the project site been identified as potential locations for the collection of discharge samples of impounded stormwater and the sampling location(s) are listed in Table 700.2.3.3.2.2: Potential Impounded Stormwater Discharge Sampling Locations.

TABLE 700.2.3.3.2.2
POTENTIAL IMPOUNDED STORMWATER DISCHARGE SAMPLING LOCATIONS

Sampling Location Identifier	Location Description
None Identified	To Be Determined

700.2.3.3.3 Actual Sampling Locations

Actual sampling locations will be determined by the WPC Manager prior to dewatering activities based on the potential dewatering discharge sample locations initially selected.

When stormwater is impounded in excavations on the project site and the impounded stormwater has the pontential to create runoff from the project site, the WPC Manager will determine the actual sampling location for collecting impounded stormwater discharge samples.

If new locations for dewatering discharges or impounded stormwater discharges that have not been identified on the list of potential stormwater and non-stormwater sampling locations are identified during the course of construction, the WPC Manager must create sampling location identifiers for the dewatering discharge sampling location. The additional sampling location for dewatering discharge monitoring shall be shown on the WPCDs in Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

700.2.3.3.4 Sampling Schedule

Whenever there are dewatering discharges or impounded stormwater discharges, sampling will be performed daily during discharging. Sampling will be performed upon commencement of the dewatering discharge or impounded stormwater discharge, and then at least a minimum of three (3) samples per day will be collected for analysis, depending on visual monitoring.

700.2.3.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.3.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.3.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.3.4.3 Sample Documentation Procedures

In addition to the general procedures for sample documentation in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document on the CEM-2030 Stormwater Site Inspection Report that samples for non-stormwater discharge pollutants were taken based on a visual monitoring site inspection.

700.2.3.5 Sample Analysis

Samples from non-stormwater discharges shall be analyzed for pH and turbidity.

The WPC Manager may determine that samples of non-stormwater discharges, need to be analyzed for non-visible pollutants. If the WPC Manager determines that non-visible pollutants may have contaminated the discharge, the samples shall be analyzed for the suspected pollutants. Sampling and analysis for non-visible pollutants in non-stormwater discharges shall be performed following the guidance in Section 700.2.2, the SAP for non-visible pollutants.

Samples shall be analyzed for the constituents indicated in the following table, titled "Sample Collection, Preservation and Analysis for Monitoring Water Extracted by Dewatering or Impounded Stormwater Discharges."

TABLE 700.2.3.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING WATER EXTRACTED BY DEWATERING OR IMPOUNDED STORMWATER DISCHARGES

Parameter	Test Method	Sample Preservation	Minimum Sample Volume(1)	Sample Bottle	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene or Glass	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene	Immediately	0.1

Notes: 1. Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

°C - degrees Celsius
°F - degrees Fahrenheit
L - liter
Ml - milliliters
NTU - Nephelometric Turbidity Unit

700.2.3.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in Section General SAP 700.2.1.6. For samples analyzed for turbidity and pH the following replaces the requirements for QA/QC in Section 700.2.1.6:

The contractor shall coordinate with the Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis. The contractor shall notify the RE at least 24 hours prior to dewatering discharge or impounded stormwater discharge sampling events.

700.2.3.7 Data Management and Reporting

Refer to the general requirements for data management and reporting in General SAP Section 700.2.1.7.

A copy of the evaluation of the water quality sample analytical results shall be attached either to the Stormwater Sample Field Test Report (CEM-2052) or the Stormwater Sample Laboratory Test Report (CEM-2054). If corrective actions are taken as a result of the data evaluation, a copy of the completed Stormwater Site Inspection Report Corrective Actions Summary (CEM-2035) shall be filed in File Category 20.35: Corrective Actions Summary.

A copy of the completed sampling records and reports and an updated Stormwater Sampling and Testing Activity Log (CEM-2051) shall be submitted to the RE.

700.2.3.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day that the water from dewatering is discharged. Should the dewatering discharge concentrations exceed applicable water quality standards, discharging will be stopped immediately and the WPC Manager or other personnel shall evaluate the dewatering BMPs to determine the probable cause for the exceedance. For dewatering discharges, Caltrans requires that the turbidity of any sample must not exceed 200 NTU. The pH value of any sample must be within the range of 6.7 to 8.3 pH units.

Samples of non-stormwater collected during discharge shall be evaluated by determining if suspected contaminants are present. Unauthorized discharges will be stopped as soon as possible and the RE will be notified immediately and a written report of discharge shall be completed and submitted to the RE. Authorized discharges shall be sampled for pH and turbidity and all suspected pollutants. For pH and turbidity, sample results shall be compared to the NAL.

As determined by the data evaluation and project site assessment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documents on the CEM-2035 Stormwater Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.3.9 Changes of Conditions

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.4 Sampling and Analysis Plan for Stormwater pH and Turbidity

This SAP has been prepared for monitoring pH and turbidity in stormwater discharges from the project site and off-site activities directly related to the project in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, January 2012. This SAP for monitoring pH and turbidity includes all of the components listed in Section 700.2.1.

700.2.4.1 Scope of Monitoring Activities

The scope of monitoring for this SAP includes monitoring for pH and turbidity in stormwater discharges from the project site and, run-on to the project site.

700.2.4.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.4.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.4.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.4.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.4.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.4.3 Monitoring Strategy

Monitor representative stormwater discharges from the project site for pH and turbidity during qualifying rain events (a rain event that has produced precipitation in the form of rain and produced run-off at the time of discharge).

700.2.4.3.1 Analytical Constituents

Stormwater discharge samples are to be analyzed for pH and turbidity.

700.2.4.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring pH and turbidity were identified. Potential sampling locations for monitoring stormwater discharges for pH and turbidity are based on drainage areas; run-on and runoff locations; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, January 2012. Stormwater discharge locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sample Locations in Attachment EE:

The stormwater discharge locations on the project site are listed in Table 700.2.4.3.2.1 "Stormwater Discharge Locations."

TABLE 700.2.4.3.2.1
STORMWATER DISCHARGE LOCATIONS

Sampling Location Identifier	Location
001DL01	Southbound on Donlon Road (WPCD-1)
002DL02	Southwest intersection of westbound on Highway 118 and southbound SR34 (WPCD-2)

The project does not receive run-on with the potential to combine with stormwater discharges.

700.2.4.3.3 Actual Sampling Locations

The WPC Manager shall select sampling locations from the list of potential sampling locations for stormwater discharge sampling shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE. If the construction activity has not started within the drainage area at a sampling location, and there is no disturbed soil within a drainage area, sampling from the stormwater discharge location from that drainage area is not required.

Within 72 to 48 hours prior to each qualifying rain event, the WPC Manager must identify the drainage areas that must be sampled. To identify these drainage areas, the WPC Manager must refer to the WPCDs and consider the conditions described below and activities within each drainage area that could have an effect on the stormwater discharge pH or turbidity.

1. Turbidity: The area of the disturbed soil at the time of precipitation could have an impact on the stormwater run-off turbidity. The area of the disturbed soil at the time of predicted precipitation must be expressed as a percentage of the total drainage area. It is reasonable to assume that a larger percentage of disturbed soil area could result in a more turbid run-off.
2. pH: The type of construction activities that could have an impact on stormwater run-off pH (for example, concrete work and saw cutting, lime stabilization work, use of crushed concrete, etc).

For representative sampling of construction site discharges, 20 percent of the drainage areas with disturbed soil areas and 20 percent of the drainage areas where activities that could potentially have an impact on the discharge pH must be sampled. At least five (5) drainage area discharge locations for each qualifying rain event must be sampled. If there are five (5) or fewer drainage area sampling locations in a project, then all drainage area sampling locations must be sampled. The drainage areas with the largest percentage of disturbed soil area must be included in the selected drainage areas to be sampled. The drainage areas where the most extensive activities (activities that potentially can alter discharge pH) are in progress must be included in the selected drainage areas to be sampled.

This representative monitoring strategy for stormwater discharges requires collection of additional samples based upon the preceding sampling event stormwater discharge pH or turbidity analysis results when the:

- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 200 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 50 percent.
- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 250 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 100 percent.
- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.5 to 8.5 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 50 percent.
- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.0 to 9.0 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 100 percent.

The selection of additional sampling locations, based on turbidity results, will involve drainage areas with the highest percentage of disturbed soil area. The selection of additional sampling locations, based on pH results, will be involve drainage areas with construction activities that are most likely to affect stormwater discharge pH.

700.2.4.3.4 Sampling Schedule

Discharge samples shall be collected for turbidity and pH for qualifying rain events that result in a discharge from the project site. When applicable, upstream, downstream, and run-on samples shall be collected for analysis of turbidity and pH. Sampling and testing for turbidity and pH will be performed daily during all qualifying rain events. Samples shall be collected during working hours.

At least 48 hours prior to each qualifying rain event, the WPC Manager must prepare a list of sampling locations that must be sampled for the qualifying rain event.

The locations shall include all of the following sampling location types:

- discharge locations from the drainage areas with the largest percentage of disturbed soil areas,
- discharge locations from the drainage areas where construction activities that could have an impact on stormwater run-off pH are in progress, and
- if applicable, at least one sampling location from drainage areas where the disturbed soil areas have been stabilized.

The sampling locations must be sampled in the following order: starting with the sampling location on the northwest corner of the WPCDs as the first entry and move clockwise on the WPCDs.

The Caltrans stormwater site inspector and contractor inspector must coordinate and select the sampling locations and the time to meet and collect simultaneous samples for the purposes of QA/QC.

Every reasonable attempt has to be made to collect at least three grab samples per day from each sampling location during the qualifying rain event.

Sampling must start immediately after the flow begins or as soon as possible thereafter. The individual responsible for collecting samples must begin sampling with the first sampling location identified and move on to the next sampling location until all locations are sampled. It is preferable that the three rounds of sampling are performed over the first three hours of the flow; however, depending on the time of the day or other dictating conditions in the field, the three rounds of sampling could be performed over a shorter period of time to ensure that three samples per location are collected.

If stormwater sampling is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document the conditions resulting in the sampling not being performed as planned.

700.2.4.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.4.4.1 Sample Collection Procedures

In addition to the general procedures for sample collection in General SAP Section 700.2.1.4.1, the procedures described below apply to sample collection for monitoring of pH and turbidity.

- Grab samples shall be collected and preserved in accordance with the methods identified in Table 700.2.4.5.1: Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH, provided in Section 700.2.4.5.
- Only personnel trained in proper water quality sampling shall collect samples.

700.2.4.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.4.4.3 Sample Documentation Procedures

Refer to the general procedures for sample documentation in General SAP Section 700.2.1.4.3.

700.2.4.5 Sample Analysis

Samples shall be analyzed for the constituents indicated in Table 700.2.4.5.1: "Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH."

TABLE 700.2.4.5.1
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING TURBIDITY AND PH

Parameter	Test Method	Sample Bottle	Minimum Sample Volume(1)	Sample Preservation	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Polypropylene or Glass	100 mL	Store at 4˚ C (39.2˚ F)	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Polypropylene	100 mL	Store at 4˚ C (39.2˚ F)	15 minutes	0.2

Acronyms/Notes:

C = Celsius
F = Fahrenheit
Min = minimum
mL = milliliter
NTU = Nephelometric Turbidity Units

(1) Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

Samples collected for field analysis shall meet the requirements of the field instrument manufacturer's instructions.

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3, which includes field instrument calibration and maintenance documentation requirements.

700.2.4.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6. The following replaces the requirements for QA/QC in Section 700.2.1.6 for turbidity and pH quality assurance testing. However, Section 700.2.1.6 requirements apply for SSC quality assurance testing: The contractor shall coordinate with Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis activities. The contractor shall notify the RE at least 24 hours prior to sampling events.

700.2.4.7 Data Management and Reporting

Refer to general requirements for data management and reporting in General SAP Section 700.2.1.7.

In addition to the general requirements for data management and reporting in Section 700.2.1.7, the additional reporting described below is required.

Numeric Action Limit Exceedance Reportin - This project is subject to NALs for pH and turbidity as shown in Table 700.2.4.7.1 "NALs for Monitoring pH and Turbidity."

TABLE 700.2.4.7.1
NALs FOR MONITORING pH AND TURBIDITY

Parameter	Test Method	Detection Limit (min)	Unit	Numeric Action Level
pH	Field test with calibrated portable instrument	0.2	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	Field test with calibrated portable instrument	1	NTU	250 NTU

Acronyms:

Min = Minimum

NAL = numeric action level

NTU = Nephelometric Turbidity Units

If an NAL for pH is exceeded, then form CEM-2062 NAL Exceedance Report will be completed and submitted to the RE within 48 hours after the sampling and analysis event. The NAL Exceedance Report will include:

- test results, analytical methods, reporting units, and detection limits
- date, sampling location, time of sampling, and visual observations
- predicted quantity of precipitation of the forecasted storm event, and estimated quantity of precipitation at the time of sampling
- description of BMPs
- corrective actions taken to manage the NAL exceedance

Once deemed necessary, corrective actions shall be immediately implemented and documented. Appendix I contains the CEM-2035 Stormwater Corrective Actions Summary form and Appendix O contains the CEM-2062 NAL Exceedance Report form. NAL exceedance reports will be filed in SWPPP File Category 20.62: Numeric Action Level Exceedance Reports.

700.2.4.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day of stormwater sampling. If the stormwater discharge concentrations exceed applicable water quality standards, the WPC Manager or other personnel shall evaluate the project site BMPs to determine the probable cause for the exceedance.

As determined by the data evaluation and project site assessment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documented on the CEM-2035 Stormwater Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.4.9 Change of Condition

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.5 Sampling and Analysis Plan for Monitoring Required by Regional Board

This project does not require a Sampling and Analysis Plan for Monitoring required by a RWQCB.

700.2.6 Sampling and Analysis Plan for Monitoring of Active Treatment System

This project does not require a SAP for an ATS because deployment of such a system is not planned.

SECTION 800
POST-CONSTRUCTION CONTROL PRACTICES

800.1 Post-Construction Control Practices

The following are the post-construction BMPs for the project site

- Permanent landscape, drainage culvert, permanent slope stablization, and bio-swales

800.2 Post-Construction Operation/Maintenance

The post-construction BMPs that are listed above will be funded and maintained in the following manner.

short-term funding: County of Ventura

long-term funding: County of Ventura

The responsible party for the long-term maintenance of post-construction BMPs is County of Ventura

SECTION 900
SWPPP REPORTING REQUIREMENTS

900.1 Recordkeeping

To manage the various documents required by the SWPPP and to provide easy access to the documents, the following SWPPP file categories will be used to file SWPPP compliance documents:

File Category 20.01 .....Stormwater Pollution Prevention Plan (SWPPP)
File Category 20.02 .....Stormwater Pollution Prevention Plan Amendments
File Category 20.03 .....Water Pollution Control Schedule Updates
File Category 20.05 .....Notice of Construction or Notice of Intent
File Category 20.06 .....Legally Responsible Person Authorization of Approved Signatory
File Category 20.10 .....Correspondence
File Category 20.21 .....Subcontractor Contact Information and Notification Letters
File Category 20.22 .....Material Suppliers Contact Information and Notification Letters
File Category 20.23 .....Contractor Personnel Training Documentation
File Category 20.31 .....Contractor Stormwater Site Inspection Reports
File Category 20.32 .....Caltrans Stormwater Site Inspection Reports
File Category 20.33 .....Site Visual Monitoring Inspection Reports
File Category 20.34 .....Best Management Practices Weekly Status Reports
File Category 20.35 .....Corrective Actions Summary
File Category 20.40 .....Weather Monitoring Logs
File Category 20.45 .....Rain Event Action Plans
File Category 20.46 .....Storm/Rain Event Sampling and Analysis Plan
File Category 20.50 .....Non-Stormwater Discharge Sampling and Test Results
File Category 20.51 .....Non-Visible Pollutant Sampling and Test Results
File Category 20.52 .....Turbidity, pH and SSC Sampling and Test Results
File Category 20.53 .....Required Regional Water Board Monitoring Sampling and Test Results
File Category 20.54 .....ATS Monitoring Sampling and Test Results
File Category 20.55 .....Field Testing Equipment Maintenance and Calibration Records
File Category 20.61 .....Notice of Discharge Reports
File Category 20.62 .....Numeric Action Level Exceedance Reports
File Category 20.63 .....Numeric Effluent Limitation Violation Reports
File Category 20.70 .....Annual Certification of Compliance
File Category 20.80 .....Stormwater Annual Reports
File Category 20.90 .....Notice of Termination

Records shall be retained for a minimum of three years for the following items:

- approved SWPPP document and amendments
- Stormwater Site Inspection Reports
- Site Inspection Report Corrections Summary
- Rain Event Action Plans (REAPs)
- Notice of Discharge Reports
- Numeric Action Limit (NAL) Exceedance Reports
- Numeric Effluent Limitaion (NEL) Violation Reports
- sampling records and analysis reports
- Annual Compliance Certifications
- copies of all applicable permits

900.2 Stormwater Annual Report

A Stormwater Annual Report will be prepared for this project to document the stormwater monitoring information and training information.

The stormwater monitoring information listed below shall be included in the Stormwater Annual Report.

- A summary and evaluation of all sampling and analysis results, including copies of laboratory reports.
- The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter.
- A summary of all corrective actions taken during the compliance year.
- Identification of any compliance activities or corrective actions that were not implemented.
- •A summary of all violations of the CGP.
- The names of individual(s) who performed site inspections, sampling, site visual monitoring inspections and/or measurements.
- The date, place, and time of site inspections, sampling, site visual monitoring inspections, and/or measurements, including precipitation (rain gauge).
- Any site visual monitoring inspection and sample collection exception records.

The stormwater training information listed below shall be included in the Stormwater Annual Report.

- Documentation of all training for individuals responsible for all activities associated with compliance with the CGP.
- Documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair.
- Documentation of all training for individuals responsible for overseeing, revising and amending the SWPPP.

900.3 Discharge Reporting

If an unauthorized discharge is discovered or evidence of a previously unseen discharge is discovered, the Contractor shall notify the RE within 6 hours of the discovery, and will file a written report with the RE within 24 hours after the discovery. The written report to the RE will contain the following items:

- date, time, location, and type of unauthorized discharge
- nature of operation that caused the discharge
- initial assessment of any impacts caused by the discharge
- BMPs deployed before the discharge event and date(s) of deployment
- BMPs deployed after the discharge event, including re-installation, maintenance or repair of initial BMPs
- steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form in Appendix M. A log of all reportable discharges shall be documented on CEM-2065 Discharge Reporting Log form in Appendix Z. Completed CEM-2061 Notice of Discharge forms shall be submitted to the RE within 24 hours after the discharge event or discovery of evidence of a prior discharge. Copies of completed forms will be kept in File Category 20.61: Notice of Discharge Reports.

900.4 Regulatory Agency Notice or Order Reporting

If a written notice or order is issued to the project by any regulatory agency, the Contractor will notify the RE within 6 hours of receiving the notice or order and will file a written report to the RE within 48 hours of receiving the notice or order. Corrective measures will be implemented immediately following receipt of the notice or order.

The report to the RE will contain the following items

- the date, time, location, and cause or nature of the notice or order
- the BMPs deployed prior to receiving the notice or order
- the date of deployment and type of BMPs deployed after receiving the notice or order, including additional BMPs installed or planned to reduce or prevent recurrence
- an implementation and maintenance schedule for any affected BMPs

900.5 Illicit Connection/Illegal Discharge Reporting

If the Contractor discovers an illicit connection to a storm drain system or any pipe discharging onto the project site, not shown on the project plans, the Contractor shall notify the RE within 6 hours of the discovery and shall file a written report to the RE within 48 hours of the discovery.

If the Contractor discovers any illegal discharge, including illegal disposing of material on the project site, the Contractor shall immediately notify the RE and shall file a written report to the RE within 3 days of discovery.

The report to the RE will contain the following items:

- the date, time, and location of the discovery
- the details for the illicit connection or illegal discharge, including any photographs taken
- any actions taken to contain the illegal discharge

- any sampling and testing performed on material that was illegally disposed of or discharged

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

LEGALLY RESPONSIBLE PERSON
AUTHORIZATION OF APPROVED SIGNATORY

CEM-2006 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
LEGALLY RESPONSIBLE PERSON NAME AND TITLE	LEGALLY RESPONSIBLE PERSON ADDRESS

The Legally Responsible Person appoints the following person:

Authorized approved signatory name and title

Authorized approved signatory address

I hereby agree and further authorize the above-named designated authorized approved signatory to certify all permit registration documents, Numeric Action Level Exceedance Reports, ATS, Numeric Effluent Limitation Violation Reports, Receiving Water Monitoring Trigger Reports, Annual Reports, and Notices of Termination in accordance with Section IV.I, Section IV.XVI, Attachment D, and Attachment E of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2010-0014-DWQ & 2012-0006-DWQ, NPDES No. CAS000002.

I hereby further authorize the above-named designated approved signatory to submit documents electronically to the State Water Resources Control Board SMARTS database.

Executed this _____ day of _____ , 20 _____ at _____ California

Legally responsible person signature	Approved signatory signature
Legally responsible person name	Approved signatory name
Phone number	Phone number

Instructions

General Information

- This form is required for compliance with provisions in Section IV.I of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, amended by 2010-0014-DWQ & 2012-0006-DWQ, NPDES No. CAS000002.
- The legally responsible person (LRP) for Caltrans projects is the district director. The LRP may authorize the project resident engineer to be the approved signatory.
- For a local agency, the LRP is either a principal executive officer or ranking elected official. The local agency LRP may authorize the project resident engineer to be the approved signatory.
- For a private entity performing work in the state right-of-way under an encroachment permit, the LRP must be one of the following:
  1. For a corporation, a responsible corporate officer.
  2. For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- The private entity LRP may not authorize an approved signatory.
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan.

Form

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without a number, write N/A in the field.

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the contract number field.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NOTIFICATION OF CONSTRUCTION

CEM-2002 (REV. 12/2011)

ADA Notice

For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

In compliance with Caltrans Statewide NPDES Stormwater Permit Order No. 99-06 DWQ, NPDES No. CAS000003

I. IDENTIFICATION - Attach Vicinity Map

PROJECT INFORMATION NAME AND SITE ADDRESS	SUBMITTAL	DATE
	☒ First Submittal ☐ Amendment Number _____	CONTRACT NUMBER/CO/RTE/PM
TENTATIVE START DATE	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A Project Resides in the Lake Tahoe Hydrologic Unit ☐ Risk Level 2 ☐ Risk Level 3	PROJECT IDENTIFIER NUMBER
TENTATIVE END DATE		TENTATIVE DATE SWPPP AVAILABLE

II. CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARDS

☐ Region 1, North Coast	Region 5, Central Valley	Region 6, Lahontan	☐ Region 7, Colorado River
☐ Region 2, San Francisco Bay	☐ Sacramento	☐ South Lake Tahoe	☐ Region 8, Santa Ana
☐ Region 3, Central Coast	☐ Fresno	☐ Victorville	☐ Region 9, San Diego
☐ Region 4, Los Angeles	☐ Redding		

III. CALTRANS DISTRICT

NAME/NUMBER	PROJECT CONTACT
ADDRESS	POSITION TITLE
CITY	PHONE

IV. CONSTRUCTION FIELD OFFICE - Attach map of its location.

STREET ADDRESS			CONSTRUCTION CONTACT
PHYSICAL LOCATION IF DIFFERENT THAN ADDRESS ABOVE			POSITION TITLE
CITY	STATE	ZIP CODE	PHONE

V. CONSTRUCTION SITE INFORMATION

DESCRIPTION AND TYPE OF WORK

ADDITIONAL RELATED REQUIRED APPROVALS ☐ DTSC Variance ☐ CWA 404/401 ☐ DFG 1601 ☐ NPDES/WDRs ☐ OTHER

DESCRIBE:

TOTAL CONSTRUCTION AREA ACRES	TOTAL DISTURBED AREA ACRES
RECEIVING WATER NAME	PROJECT IN OR ADJACENT TO RECEIVING WATER? ☐ YES ☐ NO

PROJECT DISCHARGES TO ☐ Groundwater infiltration ☐ Basin infiltration (name) ☐ Municipal or other system name

VI. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the people who manage the system or are directly responsible for gathering the information, the information submitted is true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment of knowing violations.

SIGNATURE	DATE
PRINT/TYPE NAME	TITLE

Caltrans Statewide NPDES Permit
Order No. 99-06 DWQ, NPDES CAS000003

Instructions

The Caltrans Statewide NPDES Permit requires that Caltrans submit a Notification of Construction (NOC) for construction projects covered by the permit to the appropriate Regional Water Quality Control Board (RWQCB) at least 30 days before the start of construction. In some cases, the RWQCB may view two or more smaller projects in the same corridor part of a larger common plan of development. The project manager should be aware of other projects in the corridor. Mention these projects in section V, Construction Site Information, if needed.

Typically, the district stormwater coordinator, environmental staff, project manager, or project engineer completes most information on the form; submits the NOC to the appropriate RWQCB at the time the PS&E package goes to the office engineer; and transmits a copy to the district construction division. Do not submit fees to the RWQCB.

At the time of the first submittal to the RWQCB, the district may elect to leave blank the information in Section IV, Construction Field Office, and resubmit a copy of the form with that information filled in when Caltrans assigns the resident engineer to the project. Alternatively, the district may wish to fill in a contact name of someone other than the resident engineer, such as the area senior construction engineer or project manager, who will remain that project's contact until resubmitting the NOC with new contact information or filing the Notice of Completion of Construction (NOCC). You may complete the form electronically or by printing legibly.

I. IDENTIFICATION.
Provide a brief project descriptive name and the project site address. When the NOC is first submitted to the RWQCB, check the "First Submittal" box and enter the following information:

- Contract number, construction project identifier number, county, route, and post mile.
- Date you first submitted the NOC to the RWQCB or the date of the subsequent submittal.
- Tentative start and end dates of construction.
- Tentative date when the Storm Water Pollution Prevention Plan (SWPPP) will be available.
- Enter the project risk level, or N/A for projects in the Lake Tahoe Hydrologic Unit and is regulated under order No. R6T-2011-0019, NPDES No. CAG616002.
- For subsequent changes of information, enter the amendment number in addition to the contact information.

Provide a "to-scale" or "to-approximate-scale" vicinity drawing of the construction site and the immediate surrounding area. Limit the map to either 8.5" x11" or 11" x 17". Do not submit a drawing that does not meet these size limits. The map must show—at a minimum—the site perimeter, geographic features surrounding the site, general topography, and location of the construction project in relation to surface waters and named streets, roads, intersections, or landmarks.

II. CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
Check the box of the RWQCB that has jurisdiction over the area the project is in.

III. CALTRANS DISTRICT
Enter the name and address of the Caltrans district individual responsible for submitting the Notice of Construction (NOC) to the RWQCB. Typically the individual is the project engineer, project manager, district stormwater coordinator, or environmental program staff.

IV. CONSTRUCTION FIELD OFFICE
Enter Caltrans field office information, if known, and the construction contact person information. The district may elect to use contact information for the resident engineer or other individual, such as the area senior or project manager, after the project has been assigned. If the construction contact information changes, the district should submit a revised form to the RWQCB.

Provide the physical address of the field office or, if no physical address is available, a description of the physical location of the field office and a map location.

Caltrans Statewide NPDES Permit
Order No. 99-06 DWQ, NPDES CAS000003

V. CONSTRUCTION SITE INFORMATION

Provide a brief narrative description of the work. You may attach a checklist of permanent and temporary BMPs if needed or required by a RWQCB. You may also attach a checklist of construction BMPs as an amendment after the SWPPP is complete. Check the appropriate boxes to indicate additional required approvals, permits, or certifications. Examples:

- Variance from the Department of Toxics Substances Control (DTSC) for reuse of soil containing lead.
- Dredge or fill operations requiring Army Corps of Engineers 404 certification or Clean Water Act 401 certification.
- Streambed alteration requiring Department of Fish and Game 1601 permit and non-stormwater discharges requiring separate waste discharge requirements.

Describe the condition and whether the approval, permit, or certification has been issued. If the project involves soils subject to the DTSC variance, notify the appropriate RWQCB to determine if it must issue separate waste discharge requirements. RWQCBs have up to 120 days to issue these requirements, so notify the RWQCB early in the process.

Indicate the total size of the construction project in acres. Also indicate the size of the disturbed soil area. The Stormwater Management Plan defines disturbed soil area as "areas of exposed, erodible soil, including stockpiles within the construction limits and result from construction activities."

Identify the name of the surface water body receiving the stormwater discharge. Indicate whether the project is in or immediately adjacent to the receiving water. If the stormwater has infiltrated, check the box for infiltration basin, and identify the basin's location. If the discharge is to a separate storm sewer system, such as a collection system operated by a municipality, flood control district, utility, or similar entity, check the box for municipal or other system and enter the name of the system owner.

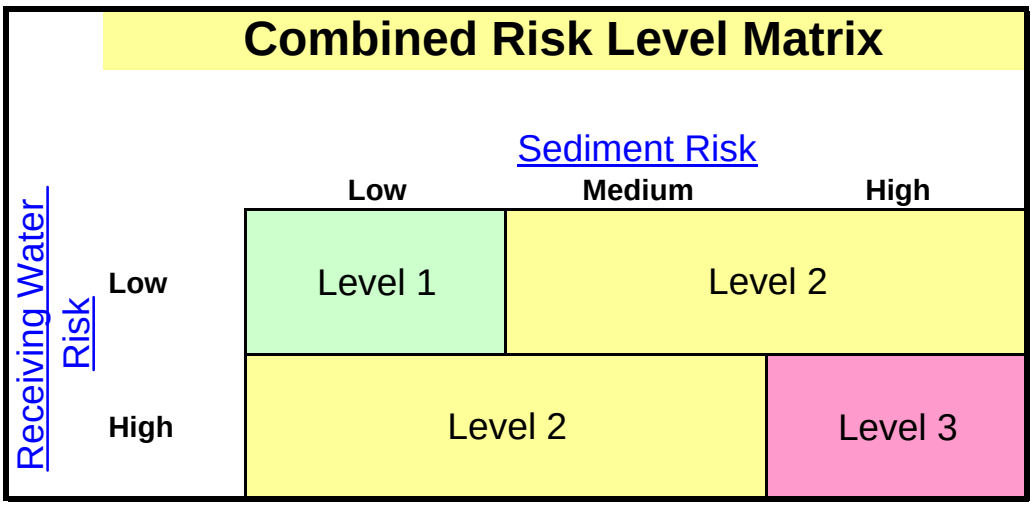
VI. CERTIFICATIONS

The permit requires the district director or a duly authorized representative to certify the Notice of Construction. If the district director elects to delegate signature authority, the district must have previously submitted the list of authorized representatives to the appropriate RWQCB.

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		13.82
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.24
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		1.73
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		5.738064
16	**Site Sediment Risk Factor**		**Low**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?:	**yes**	**High**
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml		
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan)		
http://www.waterboards.ca.gov/waterboards_map.shtml		

Combined Risk Level Matrix



Project Sediment Risk:	**Medium**
Project RW Risk:	**High**
Project Combined Risk:	**Level 2**

http://water.epa.gov/polwaste/npdes/stormwater/LEW-Results.cfm

Water: Stormwater

You are here: Water » Pollution Prevention & Control » Permitting (NPDES) » Stormwater » LEW Results

LEW Results

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Start Date:	03/01/2015
End Date:	10/02/2015
Address:	Highway 118 at Donlon Road, Somis
Latitude:	34.2637262
Longitude:	-118.99393659999998

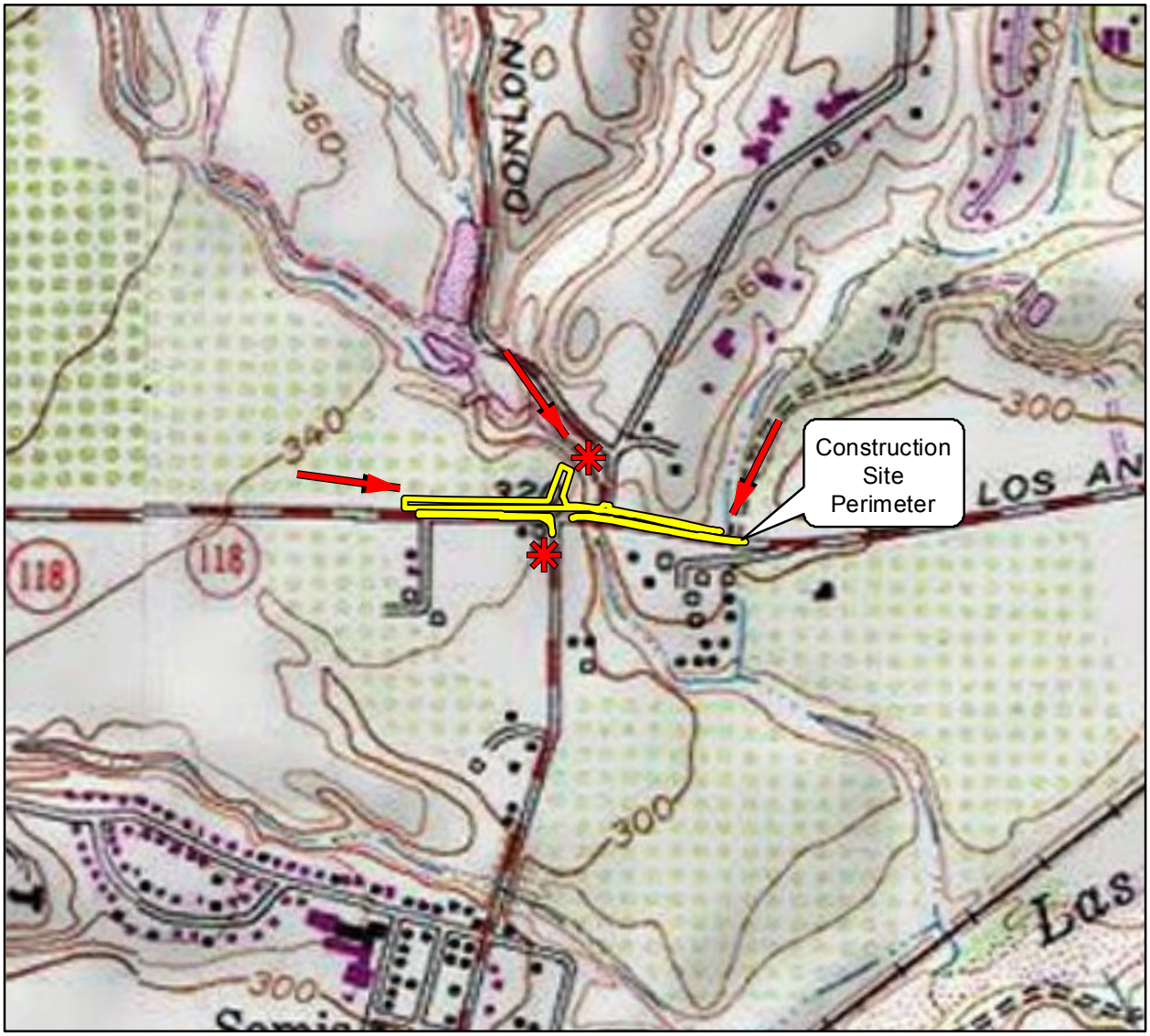
Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF **13.82** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **03/01/2015** - **10/02/2015**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do NOT qualify for a waiver from NPDES permitting requirements**.

Start Over

Last updated on Monday, July 28, 2014



Imagery provided by National Geographic Society, ESRI and its licensors © 2014. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

N

0 400 800
Feet

Offsite Drainage Areas Discharging onto the Site

Discharge Points

Vicinity Map

Figure 1

Disturbed Soil Area

Drain Flow Direction

Sampling/Observation Location

Soil Stabilization

SS-2: Preservation of Existing Vegetation — PEV

SS-12: Streambank Stabilization — SBS

Sediment Control

SC-6: Gravel Bag Berm — GBB

SC-7: Street Sweeping and Vacuuming

SC-10: Storm Drain Inlet Protection

Wind Erosion Control

WE-1: Wind Erosion — WEC

Tracking Control

TC-1: Stabilized Construction Entrance/Exit, Type 2 w/ Shaker Plates

Non-Stormwater Management

NS-1: Non-Storm Water Management

NS-3: Paving and Grading Operations

NS-4: Temporary Stream Crossing

NS-9: Vehicle and Equipment Fueling — VEF

NS-10: Vehicle and Equipment Maintenance — VEM

NS-12: Concrete Curing — cc

NS-14: Concrete Finishing — cf

Non-Stormwater Management

WM-1: Material Delivery and Storage — MS

WM-2: Material Use — MU

WM-3: Stockpile Management — CS

WM-4: Spill Prevention and Control

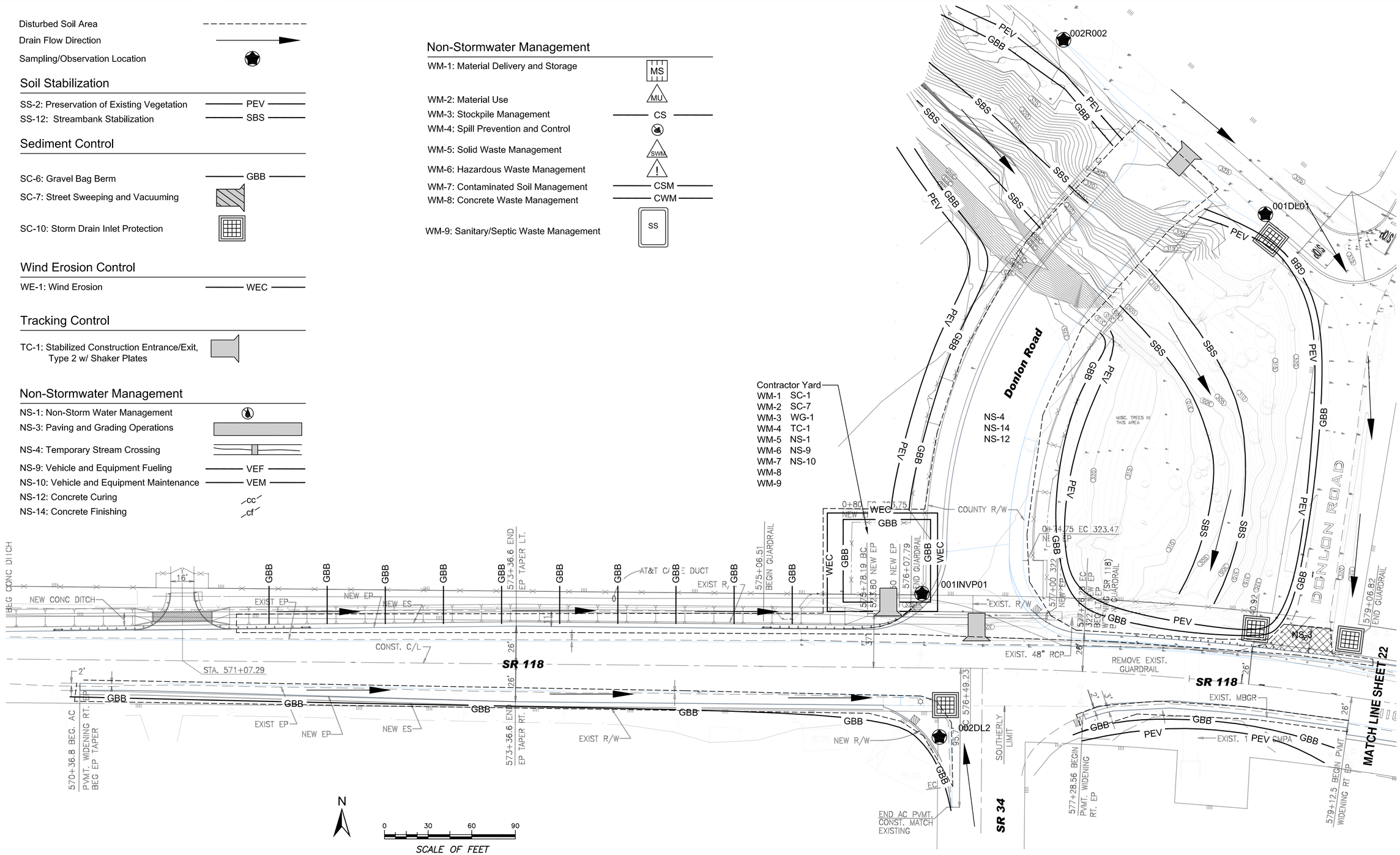
WM-5: Solid Waste Management — SWM

WM-6: Hazardous Waste Management — !

WM-7: Contaminated Soil Management — CSM

WM-8: Concrete Waste Management — CWM

WM-9: Sanitary/Septic Waste Management — SS



D			
C			
B			
A			
△	REVISION DESCRIPTION	APP	DATE

DESIGNED

DRAWN

CHECKED

APPROVED

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT

SPEC. NO. RD15-04

PROJ. NO. 50454

DONLON ROAD REALIGNMENT
DONLON ROAD IMPROVEMENTS
WATER POLLUTION CONTROL DRAWING NO. 1

SHEET 21 OF 22

DRAWING NO.

Disturbed Soil Area

Drain Flow Direction

Sampling/Observation Location

Soil Stabilization

SS-2: Preservation of Existing Vegetation — PEV

SS-12: Streambank Stabilization — SBS

Sediment Control

SC-6: Gravel Bag Berm — GBB

SC-7: Street Sweeping and Vacuuming

SC-10: Storm Drain Inlet Protection

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Non-Stormwater Management

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NS-3: Paving and Grading Operations

NS-4: Temporary Stream Crossing

NS-9: Vehicle and Equipment Fueling — VEF

NS-10: Vehicle and Equipment Maintenance — VEM

NS-12: Concrete Curing — cc

NS-14: Concrete Finishing — cf

Non-Stormwater Management

WM-1: Material Delivery and Storage — MS

WM-2: Material Use — MU

WM-3: Stockpile Management — CS

WM-4: Spill Prevention and Control

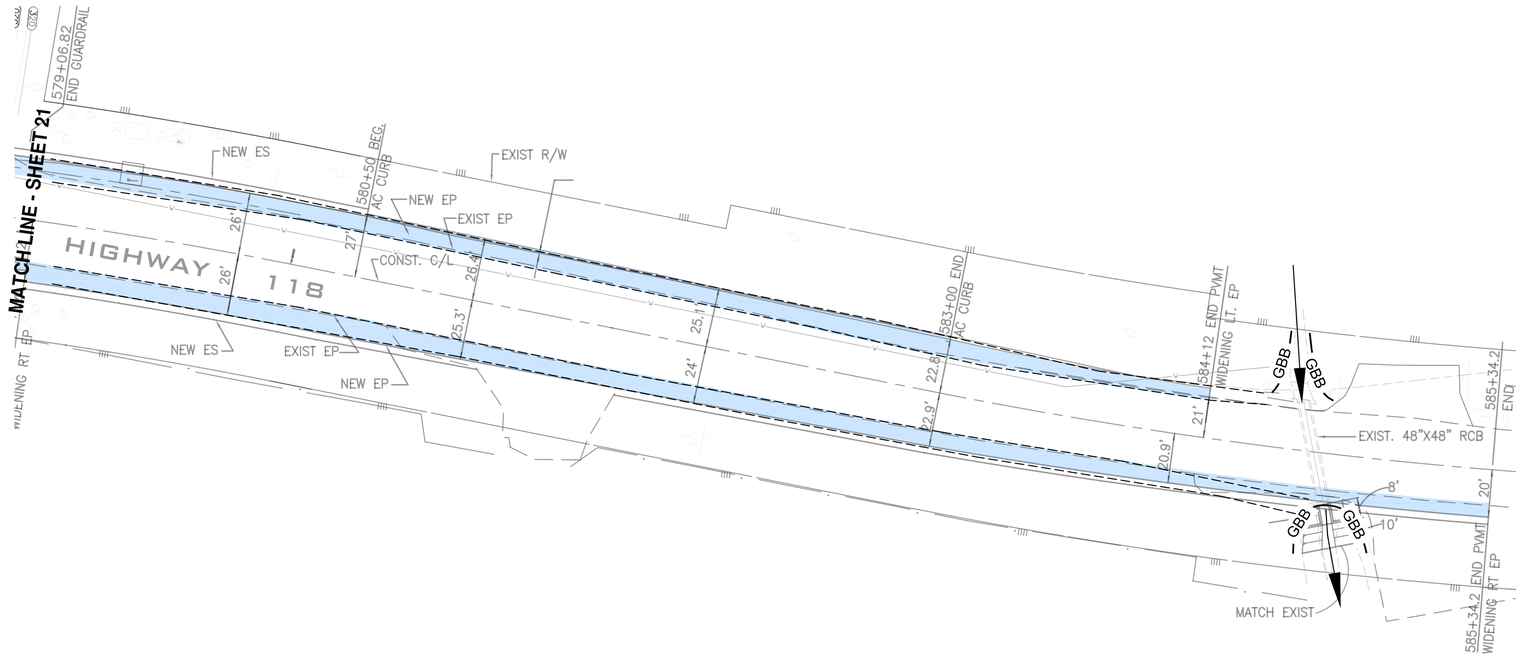
WM-5: Solid Waste Management — SWM

WM-6: Hazardous Waste Management

WM-7: Contaminated Soil Management — CSM

WM-8: Concrete Waste Management — CWM

WM-9: Sanitary/Septic Waste Management — SS



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SCALE OF FEET

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CHECKED

APPROVED

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT

SPEC. NO. RD15-04

PROJ. NO. 50454

DONLON ROAD REALIGNMENT
SR 118 IMPROVEMENTS
WATER POLLUTION CONTROL DRAWING NO. 2

SHEET 22 OF 22

DRAWING NO.

CERTIFICATE OF TRAINING

CALIFORNIA CONSTRUCTION GENERAL PERMIT

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

HUGO DE LA LLAVE

Aug 07, 2014 - Oct 29, 2016

Certificate # 23668

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

California Stormwater Quality Association and
California Construction General Permit Training Team

The CPSWQ® Application Review Committee
certifies that

Hugo E. De la Liave

Subscribes to the Code of Conduct and Ethics and has met the requirements established by the CPSWQ Council as a

Certified Professional in Storm Water Quality™

An EnviroCert International, Inc. Program

Certification Number: 0890

Certification Date: October 18, 2012

Chair, CPSWQ Council

Charles R. Wilson Jr

Interim Program Director

The CPSWQ Program was established in 1995.

CERTIFICATE OF TRAINING

CALIFORNIA CONSTRUCTION GENERAL PERMIT

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

Alison Sweet

Jul 07, 2013 - Jul 07, 2015

Certificate # 24446

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

California Stormwater Quality Association and
California Construction General Permit Training Team

Construction Site Monitoring Program Guidance Manual

Final Report

2012

CTSW-RT-11-255.11.01-F

For individuals with sensory disabilities, this document is available in alternate formats upon request. Please call or write to Storm Water Liaison, Caltrans Division of Environmental Analysis, MS 27, P.O. Box 942874, Sacramento, CA 94274-0001. (916) 653-8896 Voice, or dial 711 to use a relay service.

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose of Document

This manual presents guidance for California Department of Transportation (Caltrans) staff and contractors to use in the planning and implementation of stormwater monitoring programs at construction sites, in compliance with the State of California's Construction General Permit (CGP) issued by the State Water Resources Control Board (SWRCB), and related regulatory requirements, specifically:

- State Water Resources Control Board Order No. 2009-0009-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities, herein called the "Construction General Permit (CGP)," especially Sections I.J, I.K, IX, X, XI, and XII.
- State Water Resources Control Board Order No. 99-06-DWQ, National Pollutant Discharge Elimination System (NPDES) Permit No. CAS000003, Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California Department of Transportation (Caltrans), herein called the "Caltrans Stormwater Permit," especially Sections H, J.1, and J.2.

This manual also contains Construction Site Monitoring Program (CSMP) requirements based on:

- Caltrans Statewide Stormwater Management Plan (SWMP), Section 6.2 (Caltrans, 2002)
- Caltrans Standard Specification
- Caltrans Standard Special Provisions

This manual is designed and organized to provide descriptions of the processes used to plan and implement a successful water quality monitoring program specific to runoff from construction sites. The manual directly addresses CGP requirements for the monitoring of stormwater runoff. The current version of the CGP was adopted by the SWRCB on September 2, 2009, and became effective on July 1, 2010.

The guidance provided in this manual complements Caltrans' *Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation*

Manual (Caltrans, 2011a), particularly the Caltrans *SWPPP Template* (Caltrans, 2011b). This manual should be used to complete SWPPP template Section 700 CSMP based on project specific information.

An important objective of this manual is to provide consistency in monitoring methods among Caltrans' various construction sites, as well as consistency in monitoring protocols over time. Such consistency is essential to ensure compliance with the CGP and provide for data comparability. It is also essential that monitoring data are collected in a manner to ensure that the data are accurate. Therefore, this manual features detailed information on quality assurance (QA) and quality control (QC) procedures.

The stormwater sampling and testing procedures in this manual are based on the Caltrans' general guidance manual for stormwater monitoring—*Caltrans Comprehensive Protocols Guidance Manual* (Caltrans, 2003a)—which provides more comprehensive guidance for planning and implementation of stormwater monitoring projects.

Because construction projects come in many sizes and configurations, each site must be addressed individually. The CGP makes essential distinctions by Risk Level, as described in Section 2 of this manual, and has separate requirements for active treatment systems (ATSs) (covered in Section 9) and Linear Underground/Overhead Projects (covered in Appendix C). It is the responsibility of the construction site Resident Engineer (RE) and the Contractor's Water Pollution Control (WCP) Manager to evaluate each construction project and use this manual to develop a site-specific monitoring strategy in compliance with the CGP, and coordinated with the Caltrans' SWPPP requirements. For further guidance and/or direction about compliance with the CGP, the Caltrans' District Construction Stormwater Coordinator can be contacted.

1.2 CGP Overview

The California SWRCB administers the federal NPDES Permit Program for stormwater runoff from construction sites through its statewide, General NPDES Permit. On September 2, 2009, the SWRCB re-issued the CGP under Order No. 2009-0009-DWQ. Under the CGP, owners or managers of construction sites are called "dischargers," referring to the potential to "discharge" stormwater runoff from the construction site. Effective July 1, 2010, the permit requires dischargers whose projects disturb 1 acre of soil or more, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 acre or more, to obtain coverage under the CGP.

This manual addresses the monitoring requirements of the CGP and other monitoring requirements required by Caltrans. The CGP covers construction site stormwater management more broadly, including requirements for preparation of a SWPPP. The SWPPP includes measures for minimizing pollutants in stormwater runoff during and after construction as well as monitoring. For further guidance on developing SWPPPs, refer to the *Caltrans SWPPP and WPCP Preparation Manual* (Caltrans, 2011a). The CGP regulatory requirements vary depending on the risk level of the project. Risk level is determined by the risk determination, according to the anticipated discharge of sediment and the risk to receiving waters. The CGP establishes three levels of possible risk for a construction site (Risk Level 1, 2, or 3). A project's risk level is specified in the contract special provisions. The monitoring requirements for each risk level are summarized in Section 2.

1.3 Organization of the Manual

This manual is organized to assist Caltrans staff and contractors through the process necessary to develop and implement the CSMP in compliance with the CGP using the *SWPPP Template* (Caltrans, 2011b).

Section 1 provides a general introduction, purpose, and overview of this manual.

Section 2 provides general information on preparing the CSMP.

Section 3 covers protocols for visual monitoring.

Section 4 covers information on CSMP implementation protocols.

Section 5 covers protocols for monitoring of non-visible pollutants.

Section 6 covers protocols for monitoring of non-stormwater discharges.

Section 7 covers protocols for monitoring of stormwater discharges (pH and turbidity).

Section 8 covers protocols for Regional Water Quality Control Board (RWQCB)-required monitoring.

Section 9 covers protocols for monitoring of ATS.

Section 10 covers protocols for monitoring of receiving waters.

Section 11 provides timeline information, as well as documentation and reporting requirements.

This guidance manual also includes:

- Sources to obtain more information
- Glossary of terms used throughout the manual
- List of references used in the preparation of this manual
- Alphabetical subject index
- Forms Instruction (Appendix A)
- Bottle and Equipment Cleaning Protocols (Appendix B)
- Linear Underground/Overhead Project Monitoring Requirements (Appendix C)
- Active Treatment System – CGP Monitoring Protocols (Appendix D)

2.0 OVERVIEW

2.1 Permit Requirements

The CGP requires preparation of a project-specific CSMP for each construction site prior to the commencement of construction activities. The CSMP must be updated as necessary on an ongoing basis to reflect project changes.

As required by the CGP, the CSMP is developed to address the following objectives:

- Demonstrate that the site is in compliance with the Discharge Prohibitions and applicable numeric action levels (NALs) and numeric effluent limitations (NELs) of the CGP.
- Determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives (WQOs).
- Determine whether immediate corrective actions, implementation of additional best management practices (BMPs), or SWPPP updates or amendments are necessary to reduce pollutants in stormwater discharages and authorized non-stormwater discharges.
- Determine whether BMPs included in the SWPPP/Rain Event Action Plan (REAP) are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges.

The CSMP must be developed by a Qualified SWPPP Developer (QSD), and the CGP allows the CSMP to be either a standalone document or be included as a separate section in a project-specific SWPPP. Section 2 in this manual provides a summary of the elements that must be included within a project-specific CSMP. For Caltrans projects, the template for the CSMP is found in Section 700 of the *SWPPP Template* (Caltrans, 2011b). The WPC Manager will oversee implementation of the CSMP.

Each project-specific CSMP must address the CGP monitoring and sampling requirements specified for the risk level designated for the project. In addition, each project-specific CSMP must address the Caltrans-required monitoring and sampling requirements specified in the Caltrans standard specifications and contract special provisions. Table 2-1 summarizes the monitoring requirements for each risk level.

Table 2-1. Summary of Monitoring Requirements

Risk Level	Visual Monitoring (Inspections)					Water Quality Monitoring (Sample Collection/Testing)			
	Daily Inspection for Discharges[1]	Quarterly Non-Stormwater	Pre-Storm[2,3]	Daily Storm BMP[4]	Post Storm[5]	Stormwater Discharge (pH and turbidity)[6,7]	Non-Visible Pollutants[10]	Non-Stormwater Discharge	Receiving Water[11,12]
1	✓	✓	✓	✓	✓	[8]	✓	[8]	
2	✓	✓	✓	✓	✓	✓	✓	✓	
3	✓	✓	✓	✓	✓	✓[9]	✓	✓	✓

Notes:

[1] These daily inspections are required by Caltrans in addition to the Construction General Permit (CGP)-required quarterly non-stormwater inspections. Both routine daily access road and weekly site inspections of project best management practices (BMPs) are covered in Caltrans *Stormwater Pollution Prevention Plan (SWPPP) Template* Section 600.2 Site Inspections.

[2] Within two business days (48 hours) prior to each forecasted storm event. The CGP requires a pre-storm inspection prior to qualifying rain event* but because the size of a rain event cannot be predicted accurately, Caltrans has set an adequate trigger for a pre-storm event visual inspection to be the same as for a Rain Event Action Plan (REAP): 50 percent or greater probability of producing precipitation of 0.1 inch or greater within a 24-hour period in the project area based on the National Weather Service Forecast Office (National Oceanic and Atmospheric Administration).

[3] For Risk Level 2 and 3 projects, a REAP also must be developed by the Water Pollution Control Manager 48 hours prior to any forecasted storm event. The REAP must be made available on site and implementation begun no later than 24 hours prior to the forecasted storm event. Refer to the *SWPPP Template* (Caltrans, 2011b) for additional information.

[4] At least once each 24-hour period during any extended storm event.

[5] Within two business days (48 hours) after each qualifying rain event.*

[6] Minimum three samples from each representative sampling point (defined in Section 7.4) per day during a qualifying rain event.*

[7] Submit results to Resident Engineer (RE) within 48 hours after storm event if either of the numeric action levels (NALs) is exceeded. RE submits results to State Water Resources Control Board (SWRCB) within 10 days after storm event if either of the NALs is exceeded. For Risk Level 3 projects, submit results to RE within 48 hours after storm event. RE submits results to SWRCB within five days after storm event. If either of the numeric effluent limitations (NELs) are exceeded, submit results to RE within six hours of NEL exceedance being identified. RE submits results to SWRCB within 24 hours after NEL exceedance has been identified.

[8] In addition to the CGP-required non-visible pollutant sampling, Caltrans requires Risk Level 1 dischargers to also collect a minimum of three samples per day from discharges of accumulated stormwater or groundwater dewatering discharge and analyze for pH, turbidity, and residual additives, if any are used.

[9] For Risk Level 3 projects, must also sample for suspended sediment concentration if turbidity daily average NEL is exceeded in previous effluent samples.

[10] If applicable; within first two hours of discharge from any storm event occurring during project working hours.

[11] When an NEL is exceeded and the Risk Level 3 site has a direct discharge into receiving waters, sample upstream and downstream of discharge in receiving water.

[12] Benthic macroinvertebrate bioassessment is required for projects disturbing 30 acres or more with direct discharge to a freshwater wadeable stream that is either: (a) listed by the SWRCB or United States Environmental Protection Agency as impaired due to sediment, and/or (b) tributary to any downstream water body that is listed for sediment; and/or has the designated beneficial uses SPAWN & COLD & MIGRATORY. (Guidance on bioassessment monitoring is not included in this manual.)

*A qualifying rain event is any event producing precipitation of 0.5 inch or greater over the duration of the rain event.

The CSMP must include all monitoring procedures and instructions, location maps, forms, and checklists as required by the CGP. Templates and locations for the maps, forms, and checklists are provided in the Caltrans *SWPPP Template* attachments and appendices (Caltrans, 2011b). Records of visual observations and water quality monitoring (completed forms) must be included with the SWPPP and in the Annual Report.

The CSMP must cover all types of monitoring to be performed at the construction site, including:

- Visual Monitoring (Inspections[1]) of Sites
  - Routine (non-storm) Inspections
    - Daily Inspection for Discharges
    - Quarterly Non-Stormwater
  - Storm-Event Based Inspections
    - Pre-Storm
    - Daily During Storm
    - Post-Storm
- Water Quality Monitoring (Sample Collection and Testing)
  - Non-Visible Pollutants
  - Non-Stormwater Discharges (including dewatering discharges)
  - Stormwater Discharges (pH and turbidity)
    - Effluent
    - Stored or Contained Stormwater
    - Conditional Monitoring (e.g., run-on)
    - Receiving Waters
  - RWQCB-required Monitoring
  - ATS Monitoring

[1] Both routine daily and weekly site inspections of project BMPs are covered in Caltrans *Storm Water Pollution Prevention Plan Template* Section 600.2 Site Inspections.

2.2 Monitoring Plan Outline/Content

Specific content of the CSMP for each construction project includes both visual monitoring requirements and stormwater and non-stormwater monitoring requirements based on applicable sampling and analysis plans (SAPs). The CSMP content must include the following sections as applicable to the specific construction project:

A. Site Visual Monitoring Inspections
   - Visual Monitoring Locations
   - Visual Monitoring Schedule
   - Visual Monitoring Procedures
   - Visual Monitoring Follow-up and Tracking Procedures

B. Sampling and Analysis Plans
   - General
   - Non-Visible Pollutants
   - Non-Stormwater Discharges
   - Stormwater Discharges (pH and Turbidity)
   - Monitoring Required by RWQCB
   - ATS

The CSMP must include a general SAP and specific SAPs based on the specific construction project's risk level, RWQCB requirements, and project-specific activities (i.e., dewatering activities or ATS discharges). For example, for a Risk Level 1 project that does not have additional RWQCB requirements or an ATS, the CSMP must have a General SAP, a SAP for non-visible pollutants, and a SAP for non-stormwater discharges (accumulated stormwater or groundwater discharge only). Alternatively, some Risk Level 2 or 3 projects may require a general SAP and all five specific SAPs. The project's risk level is specified in the contract special provisions. Table 2-1 identifies the monitoring requirements that apply for each risk level. Other project-specific monitoring requirements placed upon the project by RWQCB would be identified in an Order or permit which should be included with the contract documents.

Each SAP must include the following sections:

1. Scope of Monitoring Activities
2. Monitoring Preparation
3. Monitoring Strategy

4. Analytical Constituents (Non-Visible and Non-Stormwater SAPs only)
5. Sample Collection and Handling
6. Sample Analysis
7. Quality Assurance/Quality Control
8. Data Management and Reporting
9. Data Evaluation
10. Change of Conditions

3.0 VISUAL MONITORING PROTOCOLS

3.1 Permit Requirements

Dischargers must conduct visual monitoring (inspections[1]) to comply with the CGP. A project's risk level determines the types of monitoring required. These inspections include:

- All project drainage areas are inspected daily to identify any discharges.
- All project drainage areas are inspected quarterly to identify any non-stormwater discharges, including authorized and unauthorized discharges. These inspections must identify any evidence of the presence of flowing water or signs of recent flow during dry weather conditions.
- Pre-storm inspections are conducted to: (a) evaluate the presence of spills, leaks, or uncontrolled pollutant sources; (b) assess BMP implementation; (c) evaluate stormwater storage and containment areas to detect leaks, ensure adequate freeboard, and document any pollutant characteristics; and (d) confirm proper rain gauge installation.
- BMPs are inspected daily during storms to identify BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended.
- Post-storm inspections of BMPs are required to identify whether they have been properly implemented in accordance with the SWPPP.
- Post-storm inspections are required of stormwater discharges at all discharge locations, and discharges of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event.

Table 3-1 summarizes CGP Visual Monitoring requirements.

3.2 How and What to Monitor

Inspections must occur only at times when climatic conditions (i.e., thunderstorms, high winds, etc.) do not present a health or safety hazard. If the required visual observations (inspections) are not performed due to dangerous weather conditions, provide an

[1] Both routine daily access road and weekly site inspections of project BMPs are covered in Caltrans SWPPP Template Section 600.2 Site Inspections.

explanation for why the site inspection could not be conducted on the Stormwater Site Inspection Report form (CEM-2030).

Prior to performing a visual monitoring site inspection, review the following:

- SWPPP Attachment AA Water Pollution Control Drawings (WPCDs)
- Latest weekly Best Management Practices Status Report (CEM-2034)
- Stormwater Site Inspection Report Corrective Actions Summary form (CEM-2035) for the previous week, as applicable

Bring the following items with you on the inspection:

- A copy of the SWPPP Attachment AA WPCDs
- A daily logbook
- Blank copies of the forms to complete during the inspection

The Stormwater Site Inspection Report form (CEM-2030) and the Stormwater Site Inspection Report Corrective Actions Summary form (CEM-2035) (as applicable) must be completed, signed, and dated by the person performing the inspections.

The requirements for routine (non-storm) and storm event-based inspections listed in Table 3-1 are each described in detail below.

3.2.1 Daily Inspection for Discharges

Daily inspections must be performed to identify and record any discharges or evidence of a prior discharge. Discharges requiring reporting include:

- Stormwater from a disturbed soil area discharged to a waterway without treatment by an effective combination of temporary erosion and sediment control BMPs.
- Non-stormwater, except conditionally exempted discharges, discharged to a waterway or a storm drain system, without treatment by an approved control measure (i.e., BMP).
- Stormwater discharged to a waterway or a storm drain system where the control measures (i.e., BMPs) have been overwhelmed or not properly maintained or installed.
- Discharge of hazardous substances above the reportable quantities in 40 Code of Federal Regulations (CFR) 110.3, 117.3 or 302.4.

- Stormwater runoff containing hazardous substances from spills discharged to a waterway or storm drain system.

Table 3-1. Summary of Visual Monitoring Requirements

Risk Level	Visual Monitoring (Inspections)				
	Daily Inspection for Discharges[1]	Quarterly Non-Stormwater	Pre-Storm[2,3]	Daily During Storm[4]	Post Storm[5]
1	✓	✓	✓	✓	✓
2	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓

Notes:
1 These daily inspections are required by Caltrans in addition to the Construction General Permit (CGP)-required quarterly non-stormwater inspections. Both routine daily access road and weekly site inspections of project best management practices are covered in Caltrans *SWPPP Template* Section 600.2 Site Inspections (Caltrans, 2011b).
2 Within two business days (48 hours) prior to each storm event. The CGP requires a pre-storm inspection prior to qualifying rain event but because the size of a rain event cannot be predicted accurately, Caltrans has set an adequate trigger for a pre-storm event visual inspection to be the same as for a Rain Event Action Plan (REAP): 50 percent or greater probability of producing precipitation of 0.1 inch or greater within a 24-hour period in the project area based on the National Weather Service Forecast Office (National Oceanic and Atmospheric Administration).
3 For Risk Level 2 and 3 projects, a REAP must be developed by the Water Pollution Control Manager 48 hours prior to any likely storm event. The REAP must be made available on site and implementation begun no later than 24 hours prior to the forecasted storm event. Refer to the *SWPPP Template* for additional information (Caltrans, 2011b).
4 At least once each 24-hour period during any extended storm event.
5 Within two business days (48 hours) after each qualifying rain event.*

* A qualifying rain event is any event producing precipitation of 0.5 inch or greater over the duration of the rain event.

Daily Discharge Inspection Process

On a daily basis contractor personnel will visual monitor the project site for discharges and report any discharges to the WPC Manager.

If dry weather flow is observed (i.e., non-stormwater discharge) on the project site, the source of the discharge must be identified. For each non-stormwater discharge described, the discharge must be identified as an authorized or unauthorized non-stormwater discharge (see Section 3.2.2, Quarterly Non-Stormwater Inspections). Non-stormwater flows could originate from sources such as vehicle washing, chemical leaks and/or spills, or potentially illicit connections. If the source cannot be determined by visual observation, detailed testing that may include non-visible pollutant analyses should be performed. Document the source, quantity, frequency, and characteristics of the non-stormwater discharges and associated drainage area.

For both stormwater and non-stormwater flow, BMPs treating the flow must be inspected to identify and record any BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Also identify, where applicable, the need to implement any additional BMPs.

The Stormwater Site Inspection Report Corrective Actions Summary form (CEM-2035) must be completed if any of the following conditions requiring corrective actions are identified:

- To prevent any unauthorized discharge, including a discharge which can cause adverse conditions in the storm sewer system or the receiving water.
- To reduce or prevent pollutants (from a breach, malfunction, leakage, spill, or uncontrolled pollutant source) from contacting non-stormwater or stormwater discharges.
- To implement additional BMPs and/or restore proper operation of BMPs that are not properly installed, that need maintenance to operate effectively, that have failed, or that could fail to operate as intended.

The RE must be immediately notified by the WPC Manager of any discharge or evidence of a prior discharge that could cause adverse conditions in the storm sewer system or the receiving water. A written report, the Notice of Discharge form (CEM-2061), must be filed with the RE within 24 hours of the discharge event or discovery of evidence of a prior discharge. The RE will decide if the discharge warrants an additional report to SWRCB. Adverse conditions include but are not limited to violations or threatened violations of WDRs, significant spills of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance. Caltrans will perform follow-up monitoring of major spills and/or perform confirmation sampling to ensure that threats to waters of the United States have been eliminated, as determined by the local RWQCB. Caltrans will notify the owner/operator of the Muncipal Separate Storm Sewer System (MS4) or the principal permittee as soon as practicable, but no later than 24 hours after onset of or threat of discharge which can cause adverse conditions in the storm sewer system or the receiving water. This requirement applies to any such discharge that is not covered by the State of California Governor's Office of Emergency Services procedures for discharges from a highway to a storm sewer system subject to a MS4 permit.

3.2.2 Quarterly Non-Stormwater Inspections

Each drainage area must be inspected for the presence of authorized and unauthorized non-stormwater discharges and their sources. Each drainage area also must be inspected for indications of prior flow during dry weather conditions.

Authorized Non-Stormwater Discharges: The CGP authorizes certain non-stormwater discharges that may be necessary for the completion of construction projects. The CGP requires that authorized non-stormwater discharges must:

- Be infeasible to eliminate
- Comply with BMPs as described in the SWPPP
- Meet the NELs and NALs for pH and turbidity
- Not cause or contribute to a violation of water quality standards

All dewatering discharges from sedimentation basins must be filtered or treated, using appropriate technology. The appropriate technology must be selected based on potential pollutants and suspended sediment characteristics and concentration.

The Caltrans Statewide NPDES Permit authorizes certain non-stormwater discharges unless they are identified as a source of pollutants. However, specific control measures may be required to minimize adverse impacts from these discharges. Some RWQCBs may require a separate NPDES permit or specific monitoring and reporting requirements for authorized discharges. Authorized non-stormwater dewatering discharges may require a permit because some RWQCBs have adopted General Permits for dewatering discharges. Check with the RE or the applicable RWQCB for requirements in the project area. The Caltrans Statewide NPDES Permit specifies three types of authorized non-stormwater discharges:

1. Discharges authorized by a separate NPDES Permit (Because these discharges have a separate permit, they are not addressed in this manual).
2. Conditionally exempt discharges
3. Exempted discharges

Conditionally exempt non-stormwater discharges are specified in the Caltrans Statewide NPDES Permit and include: water line and fire hydrant flushing; irrigation water; landscape irrigation; uncontaminated ground water dewatering; and other discharges not subject to a separate general NPDES permit adopted by a region. Conditionally exempt discharges are not prohibited (i.e., they are authorized) if they are identified as not being sources of pollutants to receiving waters or if appropriate control measures (i.e., BMPs) to minimize the adverse impacts of such sources are developed and implemented.

Authorized non-stormwater discharges exempted by the Caltrans Permit (Exempted Discharges) include:

- Flows from riparian habitats or wetlands.
- Diverted stream flows.
- Springs or rising groundwater.
- Uncontaminated groundwater that infiltrates into the project site and is discharged.

Unauthorized Non-Stormwater Discharges: Unauthorized non-stormwater discharges may not be discharged from the construction site. Examples of unauthorized non-stormwater discharges common to construction activities include:

- Vehicle and equipment wash water, including concrete washout water.
- Slurries from concrete cutting and coring operations, or grinding operations.
- Slurries from concrete or mortar mixing operations.
- Residue from high-pressure washing of structures or surfaces.
- Wash water from cleaning painting equipment.
- Runoff from dust control applications of water or dust palliatives.
- Sanitary and septic wastes.
- Chemical leaks and/or spills of any kind including but not limited to petroleum, paints, cure compounds, etc.

Non-Stormwater Discharge Inspection Process

Review the site map to determine the location and number of drainage areas and drainage area locations. Review the previous quarter's forms to determine if any corrective actions and/or SWPPP revisions were scheduled to be performed. Determine whether the corrective actions and/or SWPPP revisions were performed on schedule and record notes accordingly on the current quarter's form. If the actions were not performed on schedule, determine the reason and either revise the schedule or perform the actions immediately, if possible.

Observations must be made and recorded on the Stormwater Site Inspection Report form (CEM-2030) as follows:

1. Complete the header information on each page of the form.
2. Complete the General Information and Storm Information on page 1 of the form.

3. Respond to each item on the form with a check in the appropriate column for either "Yes" or "No." Include an explanation in the "Comments" column where applicable; these specific comments will allow more direct comparison over time to track results of stormwater pollution prevention efforts. Include a description of corrective actions taken or necessary to be performed. The form(s) must be signed and dated by the individual completing the observations.

4. Observe each drainage area for non-stormwater discharges, such as the presence of flowing water or signs of recent flow during dry weather conditions. If there is dry weather flow at the discharge location (i.e., non-stormwater discharge) during the inspection, the source of the discharge must be identified. For each non-stormwater discharge described, the discharge must be identified as an authorized or unauthorized non-stormwater discharge. Non-stormwater flows could originate from sources such as vehicle washing or potentially illicit connections. If the source cannot be determined by visual observation, detailed testing should be performed. Document the source, quantity, frequency, and characteristics of the non-stormwater discharges and associated drainage area. Corrective actions must be taken to prevent any unauthorized discharge.

5. If any water is observed, document any pollutant characteristics (floating or suspended material, sheen, discoloration, turbidity, odor, etc.).

6. Document if water samples are collected.

7. Observe the job site and job site perimeter for illicit connections and illegal discharges.

8. Document any corrective actions taken, the date the actions were performed or scheduled to be performed, and any SWPPP revisions necessary with the date the actions were performed or scheduled to be performed.

Reporting of discharges must be documented on the Notice of Discharge form (CEM-2061).

3.2.3 BMP Inspections

Pre-storm, during-storm and post-storm visual monitoring inspections must be performed to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. BMPs are designed to eliminate or reduce the discharge of pollutants from construction sites to waters of the state. BMPs can be

categorized as either Erosion and Sediment Control measures, or Construction Site Management measures.

Review the SWPPP to determine the locations of the BMPs. Determine if any corrective actions and/or SWPPP revisions were scheduled to be performed. Determine whether the corrective actions and/or SWPPP revisions were performed on schedule and record notes accordingly on the current form. If the actions were not performed on schedule, determine the reason and either revise the schedule or perform the actions immediately, if possible.

Observations must be made and recorded on the Stormwater Site Inspection Report form (CEM-2030) and the Stormwater Site Inspection Report Corrective Actions Summary form (CEM-2035), if applicable, as follows:

- Complete the header information on each page of the form.
- Complete the General Information and Storm Information on page 1 of the form.
- Inspect each BMP and respond to each item on the form with a check in the appropriate column for either "Yes" or "No." Include an explanation in the "Comments" column where applicable; these specific comments will allow more direct comparison over time to track results of stormwater pollution prevention efforts. Include a description of corrective actions taken or necessary to be performed. The form(s) must be signed and dated by the individual completing the observations.
- Photograph the BMPs as needed to document any identified problem areas.
- Document any corrective actions taken, the date the actions were performed or scheduled to be performed, and any SWPPP revisions necessary with the date the actions were performed or scheduled to be performed. If BMP failures or shortcomings are identified during the inspection, repairs or design changes to BMPs, as directed by the WPC Manager, must be implemented within 72 hours of identification and completed as soon as possible. Document corrective actions on Stormwater Site Inspection Report Summary of Corrective Actions form (CEM-2035).

BMP Inspection Process

Erosion and Sediment Control BMPs. For Erosion and Sediment Control BMP visual monitoring, the Stormwater Site Inspection Report form (CEM-2030) guides the inspector to evaluate each type of BMP. The form asks BMP-specific questions such as:

- Is the BMP in the right location and is it properly installed? Refer to the SWPPP for information on the proper installation of BMPs selected for the project.
- Does the BMP require maintenance or repair? Inspections should determine if any maintenance activities are needed, such as:
  - Removing sediment from barriers and sedimentation devices.
  - Replacement or repair of worn, missing, or damaged sediment control devices such as silt fence fabrics or fiber rolls.
  - Replacement or repair of damaged structural controls (e.g., check for seepage, erosion and undercutting, structural soundness, damaged or obstructed inlet/outlet or spillway).
  - Repair of damaged soil stabilization measures; (e.g., mulch, hydroseeding, geotextiles and mats).
  - Other control maintenance as defined in the SWPPP or manufacturer's specifications.

The need for BMP repair or redesign can be determined by evaluating the BMP's effectiveness. For Erosion Control BMPs, determine if there are signs of visible erosion. For Erosion and Sediment Control BMPs, determine whether sediment was carried downstream of the BMP. In addition, BMP redesign may be required if grading operations at a site change the stormwater drainage patterns.

Construction Site Management BMPs. For Construction Site Management BMPs, the visual monitoring should be conducted to ensure that the BMPs were implemented and maintained according to the SWPPP. Construction Site Management BMPs may include vehicle and equipment fueling, maintenance, and cleaning; material and/or hazardous material storage; and waste management. The Stormwater Site Inspection Report form (CEM-2030) guides the inspector to evaluate each type of BMP by asking BMP-specific questions such as:

- Are areas protected from run-on and runoff? Are areas reasonably clean and free of spills, leaks, and other material?
- Are watertight containers and dumpsters properly located? Is litter and material waste placed in watertight dumpster?
- Are hazardous materials stored in properly labeled containers?
- Are concrete washout liners free from punctures and holes?

Pre-Storm Inspections

Pre-storm inspections are required to be conducted within two business days (48 hours) prior to each *forecasted* storm event. The CGP requires a pre-storm inspection prior to qualifying rain event but because the size of a rain event cannot be predicted accurately, Caltrans has set an adequate trigger for a pre-storm event visual inspection to be the same as for a REAP: 50 percent or greater probability of producing precipitation of 0.1 inch or greater within a 24-hour period in the project area based on the National Weather Service (NWS) Forecast Office (National Oceanic and Atmospheric Administration). The visual monitoring (inspections) must include:

- All stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.
- All BMPs to identify whether they have been properly implemented in accordance with the SWPPP/REAP.
- Any stormwater storage and containment areas to detect leaks and ensure adequate freeboard.
- The rain gauge to determine if it is operating properly and prepared to measure and record rainfall.

Review the site map to determine the location and number of the drainage areas. Review the SWPPP to determine the location and number of the BMPs. Review the previous storm's forms to determine if any corrective actions and/or SWPPP amendments were scheduled to be performed. Determine whether the corrective actions and/or SWPPP amendments were performed on schedule and record notes accordingly on the current form. If the actions were not performed on schedule, determine the reason and either revise the schedule or perform the actions immediately, if possible.

For pre-storm visual monitoring inspections:

- Inspect each drainage area for any breach, malfunction, leakage, or spill of construction-related materials that could be exposed to stormwater. Document the presence and characteristics of any leaks, stains, sludges, odors, or other abnormal conditions. Document any pollutant characteristics (floating or suspended material, sheen, discoloration, turbidity, odor, etc.).
- Inspect any stormwater storage and containment areas to determine any leaks and if there is adequate freeboard for storm event. If detained stormwater is present,

document any pollutant characteristics (floating or suspended material, sheen, discoloration, turbidity, odor, etc.).

- Inspect each BMP according to Section 3.2.3.
- Photograph the drainage areas and BMPs as needed to document any identified problem areas.
- Document any observations and corrective actions according to Section 3.2.3.

Daily During-Storm BMP Inspections

Daily storm BMP inspections must be performed at least once each 24-hour period during any extended rain events to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. See Section 3.2.3 for information on performing and documenting BMP inspections.

For during-storm visual monitoring inspections:

- Inspect stormwater discharges at each drainage discharge location. Document the presence and characteristics of any leaks, stains, sludges, odors, or other abnormal conditions. Document any pollutant characteristics (floating or suspended material, sheen, discoloration, turbidity, odor, etc.).
- Inspect any stormwater storage and containment areas. Document any pollutant characteristics (floating or suspended material, sheen, discoloration, turbidity, odor, etc.).
- Inspect BMPs according to Section 3.2.3.
- Document stormwater sample collection.
- Document observations according to Section 3.2.3.

Post-Storm Inspections

Post-storm inspections are required to be conducted within two business days (48 hours) after each qualifying rain event. The visual monitoring (inspections) must:

- Identify whether BMPs were adequately designed, implemented, and effective.
- Visually observe (inspect) stormwater discharges at all discharge locations.
- Visually inspect the discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event producing precipitation

of 0.5 inch or greater at the time of discharge. Stored or contained stormwater that likely will discharge after operating hours due to anticipated precipitation must be observed prior to the discharge during operating hours.

Review the site map to determine the location and number of drainage areas. Review the SWPPP to determine the location and number of the BMPs. Review the forms completed for pre-storm and daily storm BMP inspections to determine if any corrective actions and/or SWPPP amendments were scheduled to be performed. Determine whether the corrective actions and/or SWPPP amendments were performed on schedule and record notes accordingly on the current form. If the actions were not performed on schedule, determine the reason and either revise the schedule or perform the actions immediately, if possible.

For post-storm visual monitoring:

- Inspect stormwater discharges at each drainage discharge location. Document the presence and characteristics of any leaks, stains, sludges, odors, or other abnormal conditions. Document any pollutant characteristics (floating or suspended material, sheen, discoloration, turbidity, odor, etc.).
- Inspect any stormwater storage and containment areas. Document any pollutant characteristics (floating or suspended material, sheen, discoloration, turbidity, odor, etc.).
- Inspect BMPs according to Section 3.2.3.
- Document stormwater sample collection.
- Document observations and corrective actions according to Section 3.2.3.

3.3 Data Evaluation

3.3.1 Reviewing Results Regarding CGP Requirements

Visual monitoring (inspections) must be performed to assess compliance with the CGP and identify where corrective measures are needed.

3.3.2 Identifying Corrective Measures

Corrective measures must be implemented on an as-needed basis, as follows:

1. **Discharges:** Corrective measures must be implemented immediately following the discovery of a discharge that can cause adverse conditions in the storm sewer

system or the receiving water. Corrective measures may include:

- Repairing and restoring proper operation of failed or inadequately maintained BMPs.
- Implementing additional, alternative, or redesigned BMPs.
- Isolating any breach, malfunction, leakage, or spill by covering or containing them with BMPs.
- Cleaning up leaks or spills.

2. **BMPs:** Corrective measures must be taken to restore proper operation of BMPs that are not properly installed, that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. If BMP failures or shortcomings are identified during inspections, repairs or design changes to BMPs (as directed by the WPC Manager) must be implemented within 72 hours of identification and completed as soon as possible. Corrective measures can include:
   - Removing sediment from barriers and sedimentation devices.
   - Replacement or repair of worn, missing, or damaged sediment control devices, such as silt fence fabrics or fiber rolls.
   - Replacement or repair of damaged structural controls (e.g., check for seepage, erosion and undercutting, structural soundness, damaged or obstructed inlet/outlet or spillway).
   - Repair of damaged soil stabilization measures; (e.g., mulch, hydroseeding, geotextiles and mats).
   - Other control maintenance as defined in the SWPPP or manufacturer's specifications.
3. **Spills, leaks, or uncontrolled pollutant sources:** Implement corrective actions to reduce or prevent pollutants from contacting non-stormwater or stormwater discharges. Corrective actions could include:
   - Removing the pollutant source by removing impacted soil, cleaning pavement, applying absorbent materials, then removing and disposing of absorbed materials.
   - Covering the pollutant source with methods such as tarps and closing lids.

- Containing the pollutant source by implementing double containment, such as surrounding the source with a berm.

4. **Unauthorized non-stormwater discharges:** If dry weather flow is observed at a discharge location (i.e., non-stormwater discharge) during the inspection, the source of the discharge must be identified. Non-stormwater flows could originate from sources such as dust control measures or potentially illicit connections. If the source cannot be determined by visual observation, detailed testing that may include non-visible pollutant analyses should be performed. Document the source, quantity, frequency, and characteristics of the non-stormwater discharges and associated drainage area. For each non-stormwater discharge described, the discharge must be identified as an authorized or unauthorized non-stormwater discharge. Corrective actions must be taken to prevent any unauthorized discharge.
5. **Stormwater storage and containment areas.** Repair any leaks and perform any required maintenance.

3.3.3 Reporting

Complete the following forms for visual site monitoring inspections and submit to the RE as detailed in Section 11:

- CEM-2030 Stormwater Site Inspection Report
- CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary (if required)
- CEM-2061 Notice of Discharge Report form (if required)

See Section 11 for detailed information on reporting and recordkeeping requirements.

4.0 CSMP IMPLEMENTATION PROTOCOLS

This section covers topics relevant to implementing the CSMP, including training, preparation and logistics, sample collection, QA/QC, laboratory sample preparation and analytical methods, QA/QC data evaluation, and data reporting. The information presented in this section was adapted from Caltrans' general guidance manual for stormwater monitoring, *Caltrans Comprehensive Protocols Guidance Manual* (Caltrans, 2003a), available on Caltrans' website at:
http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-03-105.pdf

4.1 General Information

4.1.1 Project Risk Level Determination

The CGP requirements vary depending on the risk level of the project. A project's risk level (Risk Level 1, 2, or 3) is determined by using the methodology described in the *Storm Water Quality Handbook - Project Planning and Design Guide* (PPDG) (Caltrans, 2010), and is then documented in the *Stormwater Data Report* (PPDG, Appendix E). The method involves first assessing a site's sediment risk (the relative amount of sediment that might be discharged, given the project and location details) and second, assessing the receiving water risk (the relative risk that sediment discharges pose to the receiving waters). The risk level is determined prior to obtaining coverage under the CGP and is included as part of the SWPPP (Section 500.1 in the *SWPPP Template* [Caltrans, 2011b]). A project's risk level is specified in the contract special provisions.

4.1.2 Timing – Project Working Hours Only; Safe Conditions Only

Visual monitoring and sample collection should be conducted only during scheduled project working hours (Caltrans equivalent of "site business hours" as specified in the CGP). Visual monitoring or sample collection should not be performed during dangerous weather conditions, such as flooding and electrical storms.

In addition, quarterly non-stormwater visual monitoring inspections must be conducted only during daylight hours (sunrise to sunset). This restriction may necessitate conducting quarterly inspections outside of project working hours.

If required monitoring was not conducted due to dangerous weather conditions or monitoring could not occur during project working hours, an explanation must be provided on the Stormwater Site Inspection Report form (CEM-2030). The completed

form must be included in the SWPPP and in the Annual Report, and must document the reason(s) for not conducting visual monitoring and/or sample collection.

4.1.3 Who Should Monitor

All monitoring, maintenance, repair, and sampling activities must be performed or supervised by the WPC Manager, who must be a QSD. A Qualified SWPPP Practitioner (QSP) may implement the SWPPP under the supervision of the WPC Manager. A QSD and QSP will have undergone the training requirements specified in Section 4.3.

4.2 Monitoring Location Selection

Selecting locations for Caltrans construction site monitoring depends primarily on the type of monitoring (i.e., stormwater discharge, non-stormwater discharge, or non-visible pollutant) and the associated CGP requirements, as follows:

- ***Stormwater discharge samples*** must be collected from representative discharge points (defined in Section 7.3) where the construction site's stormwater flows off site. If there is reason to believe run-on may contribute to an exceedance of NALs or NELs, run-on also must be sampled.
- ***Non-stormwater discharges*** must be sampled from all discharge points where non-stormwater runoff is discharged off site. If there is reason to believe run-on may contribute to an exceedance of NALs or NELs, run-on also must be sampled.
- For ***non-visible pollutant sampling*** one grab sample must be collected at any discharge locations identified as potentially containing non-visible pollutants. In addition, one grab sample also must be collected of stormwater that has not come in contact with the disturbed soil or materials stored or used on site (uncontaminated sample), upstream/upgradient of the contaminated sample site.

Once the requirements for each type of monitoring have been determined, consideration of the following items will help ensure selection of the most appropriate monitoring locations:

- Representativeness
- Personnel Safety
- Site Access
- Site Selection Assessment

Each of these considerations is discussed in detail below.

4.2.1 Representativeness

Effective monitoring of construction sites requires selection of sampling locations that adequately represent runoff from the site prior to mixing with off-site sources. Select sampling sites that have the following characteristics:

- Monitoring sites should be located where runoff leaves the construction site, and where runoff from the site has combined to form a definable runoff stream of adequate depth to sample.
- Stormwater monitoring sites should be relatively fixed and stable (not subject to significant modification during construction), unless the project site physical drainage pattern is altered significantly during construction. Non-stormwater or non-visible pollutant sampling locations will likely vary.
- Discharge monitoring sites should be in an active area of construction activity where the runoff stream well represents the flow and characteristics of the discharge.
- Monitoring sites should not be influenced significantly by construction equipment exhaust or be affected by surrounding land uses via atmospheric deposition or flows from non-Caltrans areas. For example, if possible, do not select sites in close proximity to agricultural fields that may be sprayed with pesticides, or industrial sites that may contribute airborne constituents, when deposition from those sites may affect on-site concentrations of monitoring project constituents.
- Monitoring sites should not be influenced by backwater, tidal conditions, or a high groundwater table (if groundwater reaches the surface and mixes with stormwater or non-stormwater runoff). If sampling dewatering non-stormwater discharges, it should be expected that the groundwater will be co-mingled.
- Discharge monitoring sites should be located where on-site runoff has not combined with runoff from off-site (non-Caltrans) sources.
- Discharge monitoring sites should be free of illegal discharges and illicit connections. An inspection of the site should include identification of any signs of illegal discharges, which generally include illegal discharge/dumping of wastes (e.g., used oil and other automotive fluids, trash and debris, etc.) and illicit connections of sanitary sewer lines to the storm drainage system. To adequately assess illegal discharges and illicit connections, sites should be visited during dry

weather to observe any non-stormwater runoff. The following on-site observations should be made to identify illegal discharges and illicit connections:

- Presence of debris or rubbish piles on roadway shoulders, at turnouts, in open channels or other areas of the potential monitoring site. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way. Approach containers, such as bottles or barrels, with caution as they may contain hazardous materials.
- Visible signs of staining or unusual colors on the pavement or surrounding adjacent soils.
- Pungent odors coming from the drainage system.
- Discoloration or oily substances in the water, or stains and residues detained within ditches, channels or drain boxes.
- Abnormal water flow during dry weather, including irrigation tail waters.
- Unusual flows in sub-drain systems used for dewatering.
- Excessive sediment deposits, particularly adjacent to or near active off-site construction projects.
- In rural areas, also check for non-standard junction structures and broken concrete, disturbed soil, removed vegetation, or other disturbances at or near junction structures.

All observations should be documented for potential future use. If an illegal discharge or illicit connection is observed on a Caltrans right-of-way, the RE should be notified immediately. If the nature of an observed discharge is unknown or suspected of being a hazardous substance, no further investigation should be conducted and the incident should be reported immediately to the RE.

4.2.2 Personnel Safety

It is essential to ensure monitoring crew safety from such hazards as traffic, explosive or toxic gases, possible injury due to poor footing in slippery conditions, and hazards posed by poor visibility or other challenging conditions during adverse weather, especially at night.

Avoid locating sampling sites within the normal flow of either on-site construction traffic or the travel lanes of public right-of-ways.

The following is a general list of hazards that could be encountered at Caltrans monitoring sites; these hazards should be avoided or mitigated when selecting monitoring sites:

- Proximity to high-speed traffic
- Poor visibility at night or during adverse weather conditions
- Poor footing on slippery surfaces
- Confined spaces (access requires Occupational Safety and Health Administration certification)
- Explosive or toxic gases
- Uncovered water conveyances
- Heat – heat exhaustion, heat stroke
- Cold – exposure, frostbite
- Hazardous wildlife and plants
- People encountered on site who are unknown to field personnel

It is important to note that this is only a general, partial list of possible hazards that field personnel may encounter. It is imperative that experienced WPC managers and field technicians conduct a thorough investigation of each monitoring site to identify other possible hazards before the monitoring phase of a project begins.

To help avoid hazards, personnel should be physically capable of performing all tasks required for sample collection and be familiar with the site's Health and Safety Plan. The Health and Safety Plan must be developed prior to the initiation of any sample collection activities and should include information on at least the following: hazard evaluation (e.g., chemical, physical, etc.), contingency plan, personal protective equipment, and emergency information. Additional information regarding personnel safety during sample collection is provided in Section 4.6.1.

4.2.3 Site Access

Ease of vehicular and personnel access to the monitoring locations for sample collection activities should be assured for the full range of weather conditions that may be encountered, especially during wet-weather conditions. For example, ensure that the access point and available parking are at a safe distance from traffic, that any roads to the sampling location are adequate and reliable (e.g., limited potential to be muddy or

flooded during wet weather), and that access does not require crossing private property. When in doubt, check with local agencies as to whether any permits will be required to gain legal access to the site(s). For stormwater outfall monitoring sites, access into the drainage line/outfall for sample collection must be safe and practical. Whenever feasible, access to monitoring locations should not involve confined-space entry or exposure to fast-moving traffic.

To ensure that personnel can quickly locate and access monitoring locations, clear directions and site maps should be developed that diagram site access for each monitoring location. In addition, a list of special access instructions should be included within the CSMP, including information regarding required keys for locks, traffic control requirements, necessary permits, etc.

4.2.4 Location Selection Assessment

Each potential monitoring location should be visited to confirm the expected site characteristics and verify whether the monitoring location is suitable for collecting samples. When possible, a visit should be conducted during or after a storm, when the discharge flow conditions can be observed. For some types of sampling (e.g., representative sampling locations for stormwater discharges), this visit could coincide with the pre-storm site inspection performed to develop the REAP. A wet-weather visit can provide valuable information regarding logistical constraints that may not be readily apparent during dry weather. However, a dry-weather visit should also be conducted to observe any non-stormwater flows, including evidence of any illicit connections or illegal discharges.

The site selection criteria should be reflected in the site selection assessment form, which should be completed during each monitoring location selection assessment visit. Figure 4-1 presents the Site Selection Assessment form.

Criteria to be documented during a site visit include type of discharge, physical configuration of site, drainage area characteristics, potential safety issues, site access, and whether any of the following are present: comingling of runoff from non-Caltrans sources, illegal discharges or illicit connections, nearby sources of atmospheric deposition, high groundwater, tidal influence, staining or discoloration.

Figure 4-1

Location Selection Assessment Form*

** example log only; specific site logs should be developed based upon program objectives*

Date _____ Name of person conducting site visit _____

District _____ Location _____ Post Mile _____

TYPE OF SITE:

Is the drainage area 100 percent representative of site type? □ yes □ no

Describe: _____

TYPE OF RUNOFF FROM SITE:

Curb and gutter □ Overland flow □ Other□

Describe: _____

POTENTIAL SAMPLING LOCATION (WITH ACCESS TO FLOW):

Storm drain inlet	□	Ditch, swale	□
Culvert	□	BMP (e.g., retention basin)	□
Pipe	□	Other (describe) _____	□

Comments: _____

CLEAR CELLULAR PHONE RECEPTION AT SITE? □ yes □ no

Comments:

VEHICULAR SITE ACCESS? □ yes □ no

Describe: _____

PERSONNEL SAFETY ISSUES? □ yes □ no

(e.g., Proximity to traffic lanes, steep embankments, etc.)

Describe: _____

SITE CONDITIONS/OBSERVATIONS *(if yes, describe)*

Tidal influences □ yes □ no

Illegal dumping □ yes □ no

Illicit connections □ yes □ no

High groundwater table □ yes □ no

Runoff from landscaped areas □ yes □ no

Adjacent commercial farming □ yes □ no

Contributing off-site runoff □ yes □ no

Adjacent industrial sites □ yes □ no

Does runoff stream fairly well represent the flow and characteristics of the discharge?

□ yes □ no

*explain*_____

Is the site representative of Caltrans construction activities? □ yes □ no

Other observations:

The information compiled in the Site Visit Log form should then be used to determine if the monitoring location is representative of the project site, and appropriate for meeting CGP requirements.

4.3 Training Requirements

Familiarity with the requirements of the CGP, the SWPPP and the CSMP, and competence in the techniques and protocols specified in those documents are essential for the collection of water samples in a manner that meets the requirements of the CGP, while protecting the health and safety of the field crewmembers. This section briefly describes the training necessary to provide monitoring personnel with the knowledge and skills to perform their assigned duties competently and safely. Training must be documented on the Stormwater Training Record (CEM-2023) and Stormwater Training Log (CEM-2024).

All Contractor's field personnel must receive QSP and/or QSD and field monitoring training prior to conducting monitoring activities. The QSD, QSP, and WPC Manager must have Caltrans-approved stormwater management training, as described on Caltrans' Construction Storm Water and WPC website at:
http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

Because storm-related monitoring events are difficult to predict, and construction projects often last for a year or more, one or more members of the field crew may be unavailable to monitor a given event due to sick leave, vacation, etc. Thus, it is necessary to designate alternate field crewmembers who can fill in when primary members are unavailable. These alternate field crewmembers must receive the same training as the primary members in the event that a primary crewmember is unavailable.

4.3.1 QSD and QSP Training

All monitoring, maintenance, repair, and sampling activities must be performed by or supervised by the WPC Manager, who must be a QSD. A QSP may implement the SWPPP under the supervision of the WPC Manager. At a minimum, a QSD must be registered or certified as one of the following:

- A California-registered professional civil engineer
- A California-registered professional geologist or engineering geologist
- A California-registered landscape architect

- A professional hydrologist registered through the American Institute of Hydrology
- A Certified Professional in Erosion and Sediment Control registered through Enviro Cert International, Inc.
- A Certified Professional in Storm Water Quality registered through Enviro Cert International, Inc.
- A Certified Professional in Erosion and Sediment Control registered through the National Institute for Certification in Engineering Technologies

In addition, effective September 2, 2011, a QSD must have attended a SWRCB-sponsored or SWRCB-approved QSD training course. At a minimum, a QSP must be a QSD, or must be certified as one of the following:

- A certified erosion, sediment, and stormwater inspector through Enviro Cert International, Inc.
- A certified inspector of sediment and erosion control through Certified Inspector of Sediment and Erosion Control, Inc.

In addition, effective September 2, 2011, a QSP must have attended a SWRCB-sponsored or SWRCB-approved QSP training course. Training records must be updated, documented, and recorded in SWPPP file category 20.07 Contractor Personnel Stormwater Training Documentation.

4.3.2 Field Monitoring Training

Field monitoring training must include the following basic elements:

- SWPPP general review and a detailed review of Section 700 CSMP to become knowledgeable of project-specific CSMP requirements
- Health and Safety Plan review
- Field Training/Monitoring Simulation (Dry Run)

Review SWPPP, CSMP, and Health and Safety Plan. All field monitoring personnel and alternates should read the entire SWPPP which includes the CSMP developed for the construction site to obtain the background information required for an overall understanding of the project.

Monitoring personnel also should be made aware of potential hazards associated with sampling. These hazards can include slippery conditions, cold or hot temperatures, construction site traffic, and contaminated water. Crewmembers must read the Health and Safety Plan and become familiar with the methods to be employed to effectively handle those hazards.

Field Training/Monitoring Simulation (Dry Run). A training session should be held for all of the Contractor's field sampling and testing personnel and alternates to review the monitoring techniques and protocols specified in the CSMP. Ideally, the training session should occur shortly before construction begins.

The Contractor's training session should be organized in a chronological fashion, to follow the normal order of events from pre-monitoring preparations through post-monitoring activities. All standard operating procedures should be covered, along with the site-specific responsibilities of individual sampling and testing personnel. In addition, any questions arising from the document review should be addressed during this session.

Training personnel should circulate a copy of the SWPPP with the CSMP, and all other appropriate documentation during the training session. The following items should be available during a training session:

- Documentation (SWPPP, CSMP, forms, chain-of-custody, equipment manuals, etc.)
- Monitoring equipment
- Water, for demonstration purposes
- Sample bottles and example bottle labels

Key sections of the SWPPP, CSMP (SWPPP Section 700), and Health and Safety Plan should be highlighted during the training session, and use of equipment should be demonstrated. To emphasize the importance of minimizing sample contamination, special attention should be given to proper sample handling techniques. Ample opportunity should be provided to answer questions posed by field sampling and testing personnel.

The training should include a visit to the construction site where a monitoring simulation, or "dry run," can be conducted under the supervision of the WPC Manager. During the "dry run," field sampling and testing personnel travel to their assigned monitoring locations and run through the procedures specified in the CSMP, including:

- Site access and parking at the site
- Implementing traffic control measures (if any)
- Knowing the location of personal protective equipment
- Calibrating field equipment
- Checking/preparing the monitoring stations
- Placing ice in ice chests for grab samples (if applicable)
- Conducting field measurements
- Completing sample bottle labels (if applicable)
- Collecting water samples (if applicable)
- Completing field log forms (including calibration forms)
- Completing chain-of-custody forms for each laboratory (if applicable)
- Packing samples on ice for transport to laboratory (if applicable)
- Delivering or shipping samples to the laboratory (if applicable)

All of the equipment and materials required for monitoring a storm event should be mobilized and used to simulate, as closely as possible, the conditions of an actual monitoring event. All field sampling and testing personnel (including alternates) should receive hands-on training with all field equipment and sample handling procedures. The WPC Manager should re-emphasize health and safety considerations during the field monitoring simulation.

4.4 Preparation and Logistics

Adequate pre-storm preparations are essential for a successful monitoring event. Prior to deployment of field sampling and testing personnel and the initiation of monitoring, it is imperative that weather systems are adequately tracked, field personnel are prepared, and all necessary equipment is inventoried. Monitoring preparation and logistics should include the following basic elements:

- Weather tracking
- Communications
- Ordering sample bottles (if applicable)
- Preparing sample bottle labels (if applicable)

- Field preparations, including:
  - Implementing traffic control measures (if any)
  - Calibrating and maintaining field equipment as necessary
  - Checking/preparing the monitoring stations
  - Placing ice in ice chests for grab samples (if applicable)
  - Completing sample bottle labels and chain-of-custody forms (if applicable)
- Mobilization of field crews

The above-listed elements are discussed in the following subsections.

4.4.1 Weather Forecast Tracking

Weather tracking must be performed regularly to assist monitoring personnel in preparing for the arrival of rain. The WPC Manager or other assigned Contractor staff must be assigned to track weather conditions and evaluate potential storms.

Weather forecasts provide the quantitative precipitation forecast (QPF) and the associated probability for each impending precipitation event. QPF is the amount of precipitation (in inches or centimeters) for the expected duration of the storm. The QPF is used to determine whether the predicted storm meets the Caltrans-specified criteria of 0.1 inch of rainfall within 24 hours for non-visible pollutant monitoring, or the CGP requirement for monitoring precipitation events that are 0.5 inches or more for turbidity and pH.

The NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas. NWS data are available for use by the general public through the NWS website at: http://www.nws.noaa.gov/

Both written and graphical forecasts are available from the NWS website, along with a "Forecast Discussion" which provides additional information on model results and the logic behind the current forecast. The website also provides access to radar, satellite, and land-based weather station data. To obtain the percent chance of precipitation and the forecasted precipitation amount, at the NWS website, enter your zip code or city and state in the search box and click "go." Then, at the bottom right-hand portion of the page, under "Additional Forecasts & Information," click on "Forecast Weather Table Interface" to show both the percent chance of precipitation and the precipitation amount forecast.

To supplement forecasts from the NWS, private weather forecasting services can be contracted to provide custom forecast services for specific locations on a regular basis.

Private weather forecasting services are also available on an on-call basis for telephone consultations regarding impending precipitation events. Additionally, information can be obtained from weather news available on local television forecasts and The Weather Channel, as well as other sources available on the Internet.

Appendix B provides information regarding California meteorology and weather tracking. For time periods of up to one week prior to the arrival of a storm system, NWS model predictions and satellite imagery form the basis of the predictive information provided by NWS and private forecasters. As candidate storms approach, NWS radar observations and hourly reports from land-based NWS weather stations may be used to track and evaluate storm progress. Telephone communication with a contract forecaster is an effective way to access current information from these sources. As rainfall becomes imminent, observations from local field personnel can also be useful.

The WPC Manager shall monitor the weather forecast on a daily basis for predicted precipitation within the following 96 hours. The WPC Manager shall monitor and record the forecast at least daily for the next 24, 48, 72 and 96 hours to determine if the forecast for the probability of precipitation is 50 percent or greater for any 6-hour period. If the forecast for precipitation is 50 percent or greater, the WPC Manager shall calculate the amount of precipitation forecasted for each 24-hour period and the total precipitation for the storm event and record the information. Weather forecast monitoring shall be recorded on CEM-2040 Weather Forecast Monitoring Form. The completed CEM-2040 Weather Forecast Monitoring forms shall be filed in File Category 20.40: Weather Monitoring Logs. Within two working days of the last date shown on a completed Weather Forecast Monitoring Log form, a copy of the completed log will be submitted to the RE.

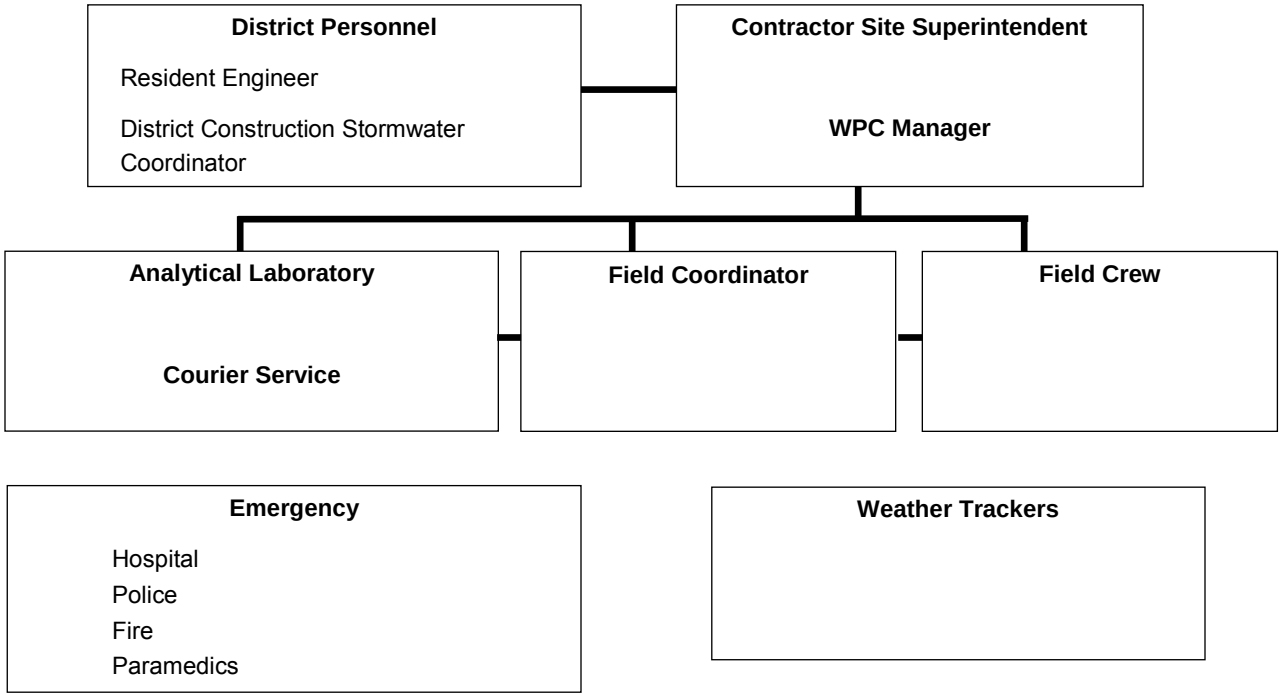
4.4.2 Communications

A telephone tree should be developed to clearly define lines of communication and notification responsibilities. The telephone tree is used for site and monitoring preparation activities, personnel notification of forecasted events, communications during monitoring, and coordinating site and BMP evaluations following an event. The telephone tree should be attached to the REAP form (CEM-2045, CEM-2046, or CEM-2047). The telephone tree graphically shows the notification sequence from the WPC Manager to field water quality monitoring personnel. The telephone tree should list laboratory personnel numbers for the purpose of sample delivery. Emergency telephone numbers should be listed, including numbers of hospitals nearest the construction site.

The telephone tree should include office, pager, cellular, home, and any other pertinent telephone numbers for each person involved in the project. It is essential that each person listed on the telephone tree have access to a copy of the telephone tree at all times during the monitoring season. Figure 4-2 presents an example of a telephone tree.

Figure 4-2

Telephone Tree



4.4.3 Ordering Sample Bottles

For field-tested samples, bottles for samples should be ordered for collection of samples for field measurements, as needed in cases where the field meter probe cannot be inserted directly into the sample stream. The order should specify wide-mouth bottles, as grab sampling is easier to perform with wide-mouth bottles. Bottles are only used once and cannot be re-used.

For laboratory-tested samples, prior to the first sampling event, a sample bottle order is placed with the analytical laboratory. The laboratory provides clean bottles as part of their analytical services. The bottle order is based on all planned analyses that will be performed by the laboratory. Bottles are only used once and cannot be re-used. Enough bottles should be ordered to cover multiple events, accidental breakage or contamination,

QA/QC samples, and potential non-stormwater sampling. If field blank samples are to be performed, the bottle order should also include blank water.

Field personnel must inventory sample bottles upon receipt from the laboratory to assure that adequate bottles have been provided to account for the expected analytical requirements. Immediately following each monitoring event, the bottle inventory should be checked and additional bottles ordered as needed.

Sample bottles and laboratory-cleaned sampling equipment must be handled only while wearing clean, powder-free nitrile gloves. Sample bottles must be stored in a clean area with lids properly secured.

Sampling Locations: As part of CSMP (SWPPP Section 700), the QSD must identify each of the potential sampling locations with a unique sample location identification code, as shown below. The identification code must start with a number and must be different for each location. If the construction site lies in a west-to-east orientation, starting with "01" from the east; the potential sampling locations shall be numbered toward the west. If the construction site lies in a south-to-north orientation, the potential sampling locations must be numbered toward the north (i.e., staring with "01" from the south). To further distinguish among the locations, the QSD must assign the following abbreviations to each potential sampling location based on the location type:

- Locations leaving Caltrans right-of-way: DL
- Discharge locations from areas with known non-visible pollutants: NVP
- Discharge locations upgradient of areas with known non-visible pollutants: UNVP
- Discharge locations to an MS4: MS
- Run-on locations: RO
- Discharge locations into a receiving water: RW
- Downstream of all discharge locations: RWD
- Upstream of all discharge locations: RWU
- Dewatering discharge locations: DDL
- Contained stormwater discharge locations: CSDL
- Discharge locations for ATS: ATS

The unique sample location identification code shall follow this format, SSSTTTTXX, where:

SSS = sampling location identifier number (e.g., 010)

TTTT = sampling location type (e.g., DL)

XX = identifier number for the type of sampling location

For example, the sampling location identification for the 15th sampling location based on starting from the south end of the project for a stormwater discharge location that has been identified to be the ninth discharge location would be 015DL09.

Sample Bottle Identification Labels: Sampling personnel shall assign a unique sample identification code, which shall follow this format, SSSSSYYMMDDHHmmTT, where:

SSSSS = sampling location identifier number (e.g., 01MS1)

YY = last two digits of the year (e.g. 11)

MM = month (01-12)

DD = day (01-31)

HH = hour sample collected (00-23)

mm = minute sample collected (00-59)

TT = Type or QA/QC Identifier (if applicable)

G = grab

FS = field duplicate

For example, the sample number for a grab sample collected at Station 01MS1, collected at 4:15 p.m. on December 8, 2011, would be 01MS11112081615G.

4.4.4 Sample Bottle Labels

Bottle labels should be prepared prior to each monitoring event. The laboratory typically provides blank bottle labels. Standard labels must be applied to each sample bottle that will be submitted to a laboratory for analysis. Labels should be completed to the extent possible and applied to sample bottles prior to the mobilization of field crews in the field. Pre-labeling of sample bottles simplifies field activities, leaving only date, time, and sample identification number to be noted on the label in the field. The laboratory should be able to provide pre-labeled bottles with water-proof labels that ample space for writing

in site- and event-specific information. A standardized bottle label should include the following information:

- Project name
- Project number
- Site name
- Sample type (stormwater, non-stormwater, non-visible pollutants, etc.)
- Unique sample identification number
- Collection date/time
- Collected by: (names of field personnel)
- Preservative (if any)
- Analytical constituent(s)
- Each project site, monitoring location, and monitoring event should be assigned a unique identification number per the Caltrans naming guidelines described in the *SWPPP Template* (Caltrans, 2011b).

Custom bottle labels may be produced using blank water-proof labels and labeling software. Computer labeling programs can save a great deal of time in generating bottle labels. The sites and analytical constituent information can be entered in the computer program for each monitoring program in advance, and printed as needed prior to each monitoring event.

Because field blank and field duplicate samples are typically sent to the analytical laboratory "blind," bottle labels for these QA/QC samples must be completed with pseudonym site names and sample IDs. Actual QA/QC sample collection site information must be carefully noted in the field log. See Sections 4.9 and 4.10 for detailed QA/QC sample information.

Bottles should be labeled in a dry environment prior to sampling. Attempting to apply labels to sample bottles that are wet after filling will cause problems, as labels usually do not adhere to wet bottles, and it is difficult to write on wet labels. The labels should be applied to the bottles rather than to the caps. See Table 4-1 for required sample bottle types and preservatives.

Table 4-1. Sample Collection, Preservation and Analysis

Constituent	Analytical Method[1]	Sample Preservation	Minimum Sample Volume	Sample Bottle	Maximum Holding Time	Reporting Limit[2]
TPH-gasoline	EPA SW8015M	Store at 4° C, HCl to pH<2	40 mL	3 x 40 mL VOA-glass	14 days	50 mg/L
TPH-diesel	EPA SW8015M	Store at 4° C	500 mL	2 - 1 L Glass-Amber	14 days	50 mg/L
BTEX	EPA 624	Store at 4° C, HCl to pH<2	40 mL	3 x 40 mL VOA-glass	14 days	0.5 µg/L
VOCs-Solvents	EPA 624	Store at 4° C, HCl to pH<2	40 mL	3 x 40 mL VOA-glass	14 days	0.5- 50 µg/L
SVOCs	EPA 625	Store at 4° C	1 L	2 - 1 L Glass-Amber	7 days	0.05-.25 µg/L
Phenols	EPA 420.1	Store at 4° C	1 L	2 - 1 L Glass-Amber	7 days	0.1 mg/L
Pesticides	EPA 625	Store at 4° C	1 L	2 - 1 L Glass-Amber	7 days	0.1 µg/L
PCBs	EPA 625	Store at 4° C	1 L	2 - 1 L Glass-Amber	7 days	0.05-1.0 µg/L
Herbicides	EPA SW8151A	Store at 4° C	1 L	2 - 1 L Glass-Amber	7 days	Check Lab
Residual chlorine	SM 4500-Cl G	Do not expose to light (foil wrapped)	100 mL	250 mL Glass	15 minute	0.1 mg/L
Cations (barium, potassium, calcium, iron, sodium, magnesium)	EPA 200.7	Store at 4° C, HNO_3 to pH<2	100 mL	250 mL P	6 months	1 mg/L
Chloride	SM 4500-Cl B,C,D, or E	Store at 4° C	100 mL	250 mL P	28 days	1 mg/L
Sulfate	EPA300.0/SM 4110 B	Store at 4° C	100 mL	250 mL P	28 days	1 mg/L
TDS	SM 2540 C	Store at 4° C	100 mL	250 mL P	7 days	1 mg/L
BOD	SM 5210 B	Store at 4° C	600 mL	1 L P	48 hours	3 mg/L
COD	EPA 410.4/SM 5220 D	Store at 4° C, $H2SO_4$ to pH<2	100 mL	100 mL P	28 days	10 mg/L
TOC /DOC	SM 5310 C	Store at 4° C, $H2SO_4$ to pH<2	250 mL	250 mL Glass-Amber	28 days	1 mg/L
TKN (organic nitrogen)	SM4500-NH3 C	Store at 4° C, $H2SO_4$ to pH<2	50 mL	1 L P	28 days	0.1 mg/L
NO_3-N (nitrate – inorganic nitrogen)	EPA 300.0/SM 4110 B	Store at 4° C	100 mL	250 mL P	48 hours	0.1 mg/L

Table 4-1. Continued

Constituent	Analytical Method[1]	Sample Preservation	Minimum Sample Volume	Sample Bottle	Maximum Holding Time	Reporting Limit[2]
Phosphate, ortho	EPA 365.3	Store at 4° C	50 mL	100 mL P	48 hours	0.03 mg/L
pH	Field test with calibrated portable instrument; EPA Method 150.1	None	100 mL	250 mL P	15 min	+/- 0.2 pH units[4]
Turbidity	Field test with calibrated portable instrument; EPA Method 180.1	None	100 mL	250 mL P	48 hours	1 NTU
Temperature	Field test with calibrated portable instrument; SM 2550	None	100 mL	250 mL P	15 min	+/- 0.1°C[5]
Dissolved oxygen	Field test with calibrated portable instrument; EPA Method 360.1	None	100 mL	250 mL P	Immediately	+/- 0.05 mg/L[5]
Specific conductance	Field test with calibrated portable instrument; SM 2510	Store at 4° C; filter if hold time > 24 hours	100 mL	250 mL P	28 days	+/- 1 µmhos/ cm[5]
Total dissolved solids	SM 2540 C	Store at 4° C	100 mL	250 mL P	7 days	1 mg/L
Suspended sediment concentration	ASTM Method D 3977-97[3]	Store at 4° C	100 mL	250 mL P	120 days	5 mg/L
Alkalinity	SM 2320 B	Store at 4° C	100 mL	250 mL P	14 days	1 mg/L
Metals (Al, Sb, As, Be, Cd, Cr, Co, Cu, Pb, Mn, Mo, Ni, Se, Tl, V, Zn)	EPA 200.8	Store at 4° C, HNO_3 to pH<2	100 mL	250 mL P	6 months	0.2 – 25 µg/L
Metals (Chromium VI)	EPA 218.6	Store at 4° C	50 mL	250 mL P	24 hours	1 µg/L
Coliform bacteria (total/fecal)	SM 9221 B/9221 C E	Store at 4° C, sodium thiosulfate ($Na_2S_2O_3$) in presence of chlorine	100 mL	100 mL Sterile P	6 hours	1 MPN/100 mL

Notes:

Adapted from Attachment S of the *SWPPP/WPCP Preparation Manual* (Caltrans, 2007a) and *Caltrans Comprehensive Protocols Guidance Manual* (Caltrans, 2003a)

[1] Alternative test procedures can be used if approved through the process specified in 40 Code of Federal Regulations part 136.

[2] Recommended reporting limits. Reporting limits can vary by analyte and by laboratory.

[3] ASTM, 1999, Standard Test Method for Determining Sediment Concentration in Water Samples: American Society of Testing and Materials, ASTM D 3977-97 (2007), Vol. 11.02, pp. 389-394.

[4] Measured on a scale of 0-14; must be able to read within +/- 0.2 pH units.

[5] Must be able to report to +/- 0.1 of the nearest standard measurement unit.

°C = degrees Celsius

ASTM = ASTM International

BOD = biochemical oxygen demand

BTEX = benzene, toluene, ethylbenzene, and xylene

COD = chemical oxygen demand

DOC = dissolved organic carbon

EPA = United States Environmental Protection Agency

HCl = hydrogen chloride

HNO_3 = nitric acid

H_2SO_4 = hydrogen sulfide

L = Liter

µmhos/cm = micro mhos per centimeter

mg/L = milligrams per liter

µg/L = micrograms per liter

mL = milliliter

MPN = most probably number

$Na_2S_2O_3$ = sodium thiosulfate

NO_3 = nitrate

NTU = nephelometric turbidity units

P = polyethylene plastic

PCB = polychlorinated biphenyl

SM = standard method

SVOC = semi-volatile organic compound

SW = solid waste

SWPPP = Stormwater Pollution Prevention Plan

TDS = total dissolved solids

TKN = total Kjeldahl nitrogen

TOC = total organic carbon

TPH = total petroleum hydrocarbon

VOA = volatile organic analysis

VOC = volatile organic compound

WPCP = Water Pollution Control Plan

< = less than

Al = aluminum

Sb = Antimony

As = Arsenic

Be = beryllium

Cd = cadmium

Cr = chromium

Co = cobalt

Cu = copper

Pb = lead

Mn = manganese

Mo = molybdenum

Ni = Nickel

Se = selenium

Ti = thallium

V = vanadium

Zn = zinc

4.4.5 Field Equipment Preparations

Prior to the first precipitation event, and immediately after each monitored event, the field crews will inventory, restock, replace, clean, calibrate, maintain, and test field equipment as needed. Calibration solutions should be ordered if necessary. A standard checklist is used to perform an inventory of field equipment (tools, sample bottles, safety equipment, first aid kit, cellular telephone, etc.). Figure 4-3 presents an example field equipment checklist. Field equipment should be kept in one location, which is used as a staging area to simplify field crew mobilization.

Figure 4-3

Field Equipment Checklist

☐	First aid kit	☐	CSMP (SWPPP Section 700)
☐	Log books/log sheets	☐	Chain of Custody forms (CEM-2050)
☐	"Rite-n-Rain" pens	☐	Umbrella
☐	Paper towels	☐	Coolers and ice
☐	Required grab sample bottles	☐	Spare bottle labels
☐	Parameter-specific field kits or electronic meters	☐	Permanent "Sharpie" Markers – fine point
☐	Weather–resistant camera	☐	Powder-free nitrile gloves
☐	Rubber bands / Duct tape	☐	Zip-lock baggies
☐	Cellular phone	☐	Hardhats /orange safety vests
☐	Personal rain gear	☐	Health and Safety Plan
☐	Sample collection equipment (extra bottles, bailers, etc.)		

4.4.6 Mobilization for Monitoring

When a storm approaches that may generate a discharge, the WPC Manager or other Contractor staff assigned to track weather conditions will alert the field sampling and testing personnel and analytical laboratory. Field sampling and testing personnel will be given notice to mobilize when precipitation is imminent or has begun. For non-stormwater or non-visible pollutant monitoring, field sampling and testing personnel will be given notice to mobilize when conditions required for sampling are present. Field

crews may already be on-site conducting an inspection when non-stormwater or non-visible pollutant monitoring is required. The WPC Manager should have a contingency plan to collect potential non-stormwater or non-visible pollutant samples prior to conducting site inspections (e.g., weekly, before, during, and after rain event, quarterly non-stormwater inspections). The contingency plan for sampling should include that stormwater inspectors are qualified as samplers or a sampler is available on short notice.

When first alerted, field sampling and testing personnel should consult their event sampling plan and check field equipment and supplies to ensure they are ready to conduct the required monitoring. Battery levels should be checked in all field equipment, and portable meters should be calibrated prior to commencing field measurements. For projects that require laboratory analysis of samples, the laboratory should be informed of incoming samples and field crew will need to obtain ice for sample preservation. Ice should be kept in ice chests for storage of filled grab sample bottles awaiting transport to the laboratory. Keeping ice in zip-lock-type bags facilitates clean, easy ice handling. Refreezable ice packets are generally not recommended because they are susceptible to damage in transit and leakage

Once given the go-ahead, the field sampling and testing personnel will travel to the assigned monitoring locations and conduct final preparations for monitoring, including field equipment calibration.

4.5 Rainfall Measurement

The WPC Manager shall have the primary responsibility to monitor weather at the project site. The WPC Manager, on a daily basis, shall monitor the weather and record the weather conditions on the CEM-2041 Weather Monitoring Log from.

The CGP requires rain gauge readings to be measured and recorded for monitoring events. Rain gauge readings must be made and recorded from the on-site rain gauge before, during, and after precipitation events, and the event rainfall total must be computed for comparison to the Qualifying Storm (greater than or equal to 0.5 inch event total) and the Compliance Storm (see Section 7.6.1).

Precipitation can be measured using either a portable “direct-reading” rain gauge (graduated collector that is read manually) or an electronic “tipping bucket” rain gauge. Use of an electronic “tipping bucket” rain gauge is recommended whenever possible, due to improved accuracy and electronic recording of the data. This type of rain gauge collects rainfall in a small “bucket” in increments, usually 0.01 to 0.05 inch. The bucket

automatically tips and is emptied after each increment. The rain gauge is normally connected to a data logger, which counts the number of tips. Total rainfall is recorded automatically by the data logger.

If a portable, direct-reading rain gauge is used to collect precipitation data, field personnel must be present on site during the precipitation event to take periodic readings.

Rain gauges should be installed and maintained according to manufacturer specifications. Important installation factors include:

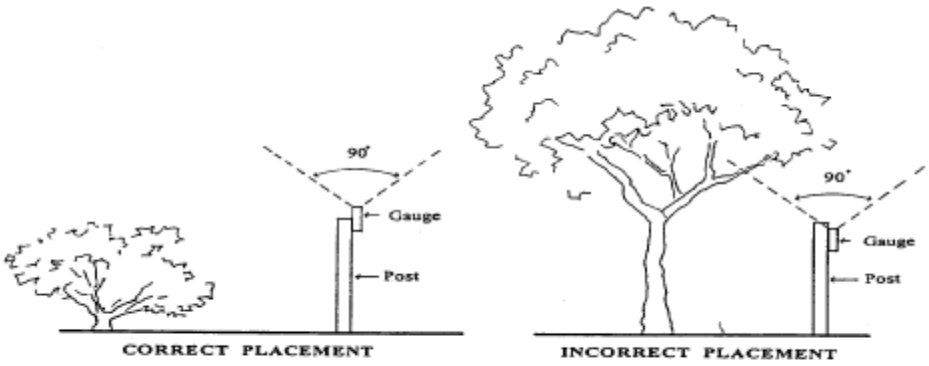
- Rain gauges must be installed in a secure fashion in a location where no buildings, trees, overpasses, or other objects obstruct or divert rainfall prior to entering the rain gauge.
- A rain gauge should always be placed in an elevated position (at least 4 feet above ground surface) so that activity on the ground (field technicians, animals, nearby traffic) does not splash water or debris into it.
- Rain gauges must be positioned so that the openings are horizontal and level.
- Rain gauges must be installed securely so that they maintain the secure position throughout the study; this is often accomplished by securing the gauge to a post or other object that will not bend in high winds.

The rain gauge should be installed over undisturbed land at least 4 feet above the ground surface. In areas having an accumulation of over 0.5 meters of snow per year, the rain gauge should be raised at least 12 inches above the usual seasonal total snow level. In addition, wind obstructions should not be closer than two to four times the obstruction height, and objects with a height of over 3 feet that deflect wind should not be located less than 16.5 feet away from the collector. The rain gauge must be positioned in an area clear of obstruction with a 45-degree angle of clearance all around the gauge (see Figure 4-4 for an illustration of the required imaginary 90-degree cone of clearance above the meter).

Typical rain gauges do not operate in freezing conditions. Heated rain gauges may be used in colder climates where alternating current power is available. Rain gauges using antifreeze are also available, but are susceptible to malfunction in high-wind situations. As such, rain gauges using antifreeze must be mounted securely to safeguard against disturbance by strong winds.

Figure 4-4

Required Rain Gauge Clearance



Source: The Clean Water Team Guidance Compendium for Watershed Monitoring and Assessment State Water Resources Control Board, 2010.

Electronic rain gauges typically are mounted on top of rigid metal pipe. Wiring that connects the gauge to a monitoring station enclosure is run through this pipe and additional metal conduit as necessary to protect it against vandalism and the elements.

To function properly, rain gauges must be frequently maintained. The most common issue is fouling of the tipping bucket apparatus by bird droppings, leaves, or other materials. The gauge should be inspected prior to every potential monitoring event and cleaned as necessary.

The rain gauge must be calibrated following the manufacturer specifications, at a minimum prior to each stormwater monitoring season. The gauge should be recalibrated following any instance of fouling from bird dropping or other materials, and at any time that anomalous readings are observed.

Weather monitoring must be documented daily on the CEM-2041 Weather Monitoring Log form. Completed weather monitoring log forms must be kept in File Category 20.40: Weather Monitoring Logs. Within two working days of the last date shown on a completed weather monitoring log, a copy of the completed log must be submitted to the RE.

4.6 Sample Collection

For storm events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2048 Storm Event Sampling and

Analysis Plan form. At least 48 hours prior to each qualifying rain event, the WPC Manager must prepare the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan that includes a list of sampling locations that must be sampled for the forecasted qualifying rain event.

Field measurements will be made for pH and turbidity at monitoring location shown on form CEM-2049 Qualifying Rain Event Sampling and Analysis Plan during each rain event, and where necessary, grab sample(s) will be collected for laboratory analysis based on the event sampling and analysis plan (CEM-2048 or CEM-2049). Field measurements may be made by directly submerging the probe in the discharge stream, or by collecting a sample aliquot for immediate measurement in the field. Field measurements and grab sample collection times will be recorded on the standard field forms (e.g., Stormwater Sample Field Test Report, CEM-2052).

The CGP requires samples to be collected, maintained, and shipped in accordance with the Surface Water Ambient Monitoring Program (SWAMP) 2008 Quality Assurance Project Plan (QAPrP). Additional information regarding SWAMP's QAPrP is available online at:
http://www.waterboards.ca.gov/water_issues/programs/swamp/ and at:
http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/swamp_qapp_master090108a.pdf.

The CGP also requires that all sample collection and sample preservation be performed in accordance with the current edition of *Standard Methods for the Examination of Water and Wastewater* (American Public Health Association, current version).

The following elements pertain to sample collection and handling:

- Personal safety
- Sample containers and volumes
- Clean sampling techniques
- Grab sample collection
- Sample preservation
- Sample delivery/chain-of-custody

These elements are described in the subsections below.

4.6.1 Personal Safety

Before samples are collected, field personnel must ensure that samples can be collected safely at each sampling location. Personal safety should be considered when selecting monitoring sites, as described in Section 4.2, above. Field personnel must be trained in site health and safety requirements and be trained in sample collection and safety protocols. All monitoring activities must be supervised by the WPC Manager. Sample collection should not be performed during dangerous weather conditions, such as flooding and electrical storms. Adherence to the following recommendations will minimize risks to field personnel:

- Only personnel properly trained and equipped for confined space entry may enter a space designated as "confined" (such as a manhole or standpipe).
- At no time during storm conditions or when significant flows are present should field personnel enter a manhole or standpipe.
- Two-person field crews should be available for all fieldwork to be conducted under adverse weather conditions, or whenever there are risks to personal safety.
- Personnel must be trained regarding appropriate traffic control measures, and appropriate traffic control measures must be employed in accordance with the project SWPPP, CSMP, and Health and Safety Plan.

4.6.2 Sample Containers and Volumes

Appropriate sample bottles and equipment must be used for each parameter to be measured. Use of improper bottles and equipment can introduce contaminants and cause other errors, which can invalidate the data. Table 4-1 specifies sample bottles and volumes required for each analysis.

Sampling devices must be made of chemically resistant materials that will not affect the quality of the sample. In general, sampling devices should be constructed of one of three materials: Teflon, glass, or polyethylene. These materials are known to be the most inert in terms of adsorption or desorption of organic and inorganic compounds, although both glass and plastic are subject to certain use limitations, depending upon the type of constituent being measured, as discussed below.

Polyethylene or glass sampling equipment and bottles can be used for collection of samples for analysis for pH, turbidity, and other conventional pollutants, including solids and nutrients. All sampling equipment used for trace metals determinations must be

nonmetallic and free from any material that may contain metals. Acceptable materials include Teflon, polyethylene, and borosilicate glass (e.g., Pyrex). All sampling equipment used for trace organics determination must be glass or Teflon. Borosilicate glass is generally adequate when analysis is to be performed for a mixture of organic and inorganic constituents (such as metals). All sampling equipment used for bacteriological determination must be sterile.

Sampling equipment can include items such as scoops, bailers, grab poles, or other items designed to lower an appropriate sample container into the runoff flow. ***All grab sampling equipment which directly contacts the sample during or after collection must be compatible with the specific constituents to be analyzed***, as discussed previously. Sample collection equipment that is constructed of plastic or stainless steel may be Teflon-coated to make it suitable for use in stormwater monitoring.

Immediately prior to the filling of grab sample bottles, the bottle labels should be checked, and site- and event-specific information added using a waterproof pen. Attempting to label grab sample bottles after sample collection is not advised, as it is difficult to write on wet labels.

4.6.3 Clean Sampling Techniques

Stormwater sampling must employ "clean" sampling techniques to minimize potential sources of sample contamination, particularly from trace pollutants. Care must be taken during all sampling operations to minimize exposure of the samples to human, atmospheric, and other potential sources of contamination. Care must be taken to avoid contamination whenever handling bottles and lids. See Appendix B for a detailed description of more extensive clean sampling techniques.

For projects that require laboratory analysis of samples, clean sample bottles must be ordered from the analytical laboratory prior to each stormwater monitoring event. Sample bottles must be prepared by the laboratory as specified by analytical method protocols. This includes the addition of sample preservatives where applicable. See Table 4-1 for specific bottle and preservative requirements. Sample bottles should be stored in a clean environment with lids securely on until the time of use.

Any reusable sampling equipment that comes in contact with the sample must be cleaned according to protocols presented in Appendix B. New and disposable sampling equipment, such as disposable plastic bailers, do not need to be cleaned prior to use. Disposable sampling equipment cannot have been previously used for any other purpose

and can only be used once, then discarded. Reusable sampling equipment that most frequently comes in contact with the sample includes portable meter bottles or any reusable grab sampling device, such as a stainless-steel bailer.

Whenever possible, grab samples should be collected by opening, filling, and capping the sample bottle while submerged, to minimize exposure to airborne particulate matter. Note that sample bottles containing preservatives cannot be submerged. Additionally, whenever possible, samples should be collected upstream and upwind of field personnel to minimize introduction of contaminants. To reduce potential contamination, sample collection personnel must adhere to the following rules while collecting stormwater samples:

- No smoking during or immediately before or after sample collection.
- Never sample near a running vehicle. Do not park vehicles in immediate sample collection area (even non-running vehicles).
- Always wear clean, powder-free nitrile gloves when handling bottles, containers, and lids.
- Never touch the inside surface of a sample bottle or lid, even with gloved hands.
- Never allow the inner surface of a sample bottle or lid to be contacted by any material other than the sample water.
- Never allow any object or material to fall into or contact the collected sample water.
- Avoid allowing rainwater to drip from rain gear or other surfaces into sample bottles.
- Do not eat or drink during sample collection.
- Do not breathe, sneeze, or cough in the direction of an open sample bottle.

4.6.4 Grab Sample Collection

Manual grab sampling techniques will be used to collect samples. A grab sample is an individual sample collected at one specific location at one point in time. Analysis of a grab sample provides a "snapshot" of the water's quality. Grab samples will not be composited for this program. Samples may only be collected when discharge locations can be safely accessed.

Water quality in stormwater runoff may vary both laterally and vertically throughout the cross-section of flow, and with time. For instance, floatable materials (oil, grease, light particles and debris, scum) may be present in significant amounts near the water surface, while heavier sediments are often concentrated near the bottom of the conveyance. Also, concentrations of some constituents may be higher in the first hour or two of runoff; this scenario is often referred to as a "first flush" effect. During the course of a storm, rainfall intensity also may increase, raising runoff flow rates to the point where sediments are mobilized and scour occurs, resulting in temporarily higher concentrations of sediment and sediment-bound constituents.

Manual grab samples are typically collected by direct filling of each individual sample bottle in the sample stream, or by use of an intermediate container to collect the sample. To collect samples, the flows will need to be at least 1 centimeter or 0.5 inches in depth. Overland sheet flows may not reach this depth. For sheet flows, an intermediate container such as a second (unpreserved) sample bottle can be used to collect multiple sample aliquots to fill a single sample bottle. To collect shallow or sheet flows the intermediate container must be placed as close to the ground as possible without touching the ground.

For collection of sheet flow samples using an intermediate container, an appropriate container or sample collection equipment must be used as specified in Section 4.6.2. For most analytical constituents borosilicate glass (Pyrex) is an appropriate container. Other sample collection devices, such as an open handle dustpan, may be used if they are fully Teflon-coated. Sandbags and other unapproved collection equipment may not be used for sample collection as such materials may contaminate samples. Refer to Section 4.6.2 for a list of approved materials. Keep the sediment in suspension during transfer of each sample aliquot by stirring or swirling the container. Otherwise, a portion of the sediment may settle out in the intermediate container and not be included in the sample that will be analyzed.

A grab pole can be employed as a means to extend the sample bottle or container out or down into the flow. The pole is designed so the sample bottle or container can be attached to the end.

As described in Section 4.6.2, sample collection devices must be made of chemically resistant materials that will not affect the quality of the sample. It is important to evaluate each component used to collect a sample for possible sources of sample contamination. Intermediate containers or sampling devices cannot be used to collect samples for oil and grease.

The sampling location should be approached from downstream. Samples or field measurements must be collected facing upstream to avoid stirring up sediment or otherwise affecting the sample water. Sample bottles should be filled to the top. Where possible, grab samples should be collected by completely submerging the bottle or container below the surface of the water, to avoid collecting any material floating on the surface. When submerging the bottle, avoid hitting the bottom of the conveyance, as this may disturb the sediment and impact the sample. If hitting the bottom cannot be avoided due to water depth, lower the bottle slowly into the water to minimize the disturbance.

When the sample bottle can be fully submerged, the bottle should be opened at the last possible moment and the lid screwed back on immediately after the sample is collected. The lid should be handled carefully during this time to avoid contaminating the inner lining. For sample bottles without preservatives, hold the lid around the rim and face it down. If possible open and close the bottle under water when collecting a sample. Do not touch the inside of the bottle or lid.

Samples for pH and turbidity analyses may be collected in the same manner as grab samples, as described above. If flow depth is sufficient, and site conditions allow safe access, the pH and turbidity field meter probe may be inserted into the sample stream for direct measurement, without collection of grab samples for those analytes. In either case, analyze samples for pH and turbidity immediately in the field.

4.6.5 Sample Preservation

All samples that will be sent to a laboratory are kept on ice or refrigerated to 4 degrees Celsius from the time of sample collection until delivery to the analytical laboratory. The grab samples are placed in an ice chest filled with ice in the field *immediately following collection*. In addition to keeping the samples cool, it is also important to minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample, resulting in unreliable analytical results. Therefore, all samples are covered or placed in an ice chest with a closed lid immediately following collection.

Note that analyses for pH and turbidity are to be performed in the field immediately following sample collection; therefore, these samples are not placed on ice.

Sample bottles for nutrients, metals, and some volatile organics may contain acid or other chemical preservatives. Laboratories clearly mark each bottle if it contains a preservative. Normally, the volume added is very small, such as 1 or 2 milliliters, so the actual

preservative may be hard to see. Do not rinse or over fill sample bottles that contain a preservative. Use an intermediate container to carefully fill these bottles. Do not submerge the bottle in the flow. Rinsing and overfilling the bottle may flush out the preservative or dilute it to the point where it will no longer be effective.

Be careful when handling bottles that contain acid. Spilling the acid can cause burns to the skin and eyes or damage clothes. Flush the area with water if an open bottle containing an acid preservative is accidentally spilled.

4.6.6 Laboratory Sample Delivery/Chain-of-Custody Form

All samples must be kept on ice, or refrigerated, from the time of onset of sample collection to the time of receipt by laboratory personnel. If samples are being shipped to the laboratory, place sample bottles inside coolers with ice, ensure that the sample bottles are well packaged to prevent breakage, and secure cooler lids with packaging tape. It is imperative that all samples be delivered to the analytical laboratory and analysis begun within the maximum holding times specified by laboratory analytical methods (see Table 4-1). The holding times for water quality analyses range from six hours to six months. To minimize the risk of exceeding the holding times for bacteria (6 hours), biochemical oxygen demand (48 hours), and nutrients (48 hours), samples must be transferred to the analytical laboratory as soon as possible after sample collection. The field sampling and testing personnel must in such cases coordinate activities with the analytical laboratory to ensure that holding times can be met. Special arrangements for the laboratory to work the weekend may be necessary.

Chain-of-custody form CEM-2050 for samples is to be filled out by the field sampling and testing personnel for all samples submitted to the analytical laboratory. The purpose of chain-of-custody forms is to keep a record of the transfer of sample custody and the requested analyses. Sample date, sample location, and analyses requested are noted on each chain-of-custody form.

Any special instructions for the laboratory should also be noted, such as specifications of laboratory QC requirements (e.g., laboratory duplicate samples and matrix spike/matrix spike duplicate [MS/MSD] samples; see Section 4.8).

Chain-of-custody forms should be checked by the WPC manager to ensure that all analyses specified by the sampling plan are included. When chain-of-custody forms are reviewed immediately following a precipitation event, the WPC Manager is able to address any field notes and notify the laboratory of additional analyses or provide

necessary clarification. Copies of chain-of-custody forms are filed to the appropriate SWPPP file category.

4.7 Field Measurements

Analysis of pH and turbidity must be performed in the field by monitoring personnel using portable field meters, immediately after sample collection. The measurements are made according to the test methods, detections limits, and reporting units specified in Table 4-2. Field measurements must be performed according to the manufacturer's specifications for the field measurement device employed. For pH, the meter will be equipped with a probe-mounted sensor. For turbidity, the meter may have either a probe-mounted sensor or require filling a cuvette or sample cell with a separate sample aliquot that is read by the turbidity meter. If required by RWQCB, other common field parameters may also be measured in the field, such as electrical conductivity, dissolved oxygen, and temperature.

Table 4-2. Test Methods, Reporting Limits, Reporting Units, and Applicable NALs and NELs

Parameter	Test Method/ Protocol	Discharge Type	Reporting Limit	Reporting Units	Maximum Holding Time	Numeric Action Level	Numeric Effluent Limitation
pH	Field Test with calibrated portable instrument	Risk Level 2 and 3	0.2[1]	pH units	15 minutes	Lower NAL = 6.5 Upper NAL = 8.5	*Risk Level 3 only:* Lower NEL = 6.0 Upper NEL = 9.0
Turbidity	Field test with calibrated portable instrument	Risk Level 2 and 3	1	NTU	48 hours	250 NTU	*Risk Level 3 only:* 500 NTU
SSC[3]	ASTM Method D 3977-97[2]	Risk Level 3 (if turbidity exceeded)	5	mg/L	120 days	N/A	N/A

Notes:
[1] Measured on a scale of 0-14; must be able to read within +/- 0.2 pH units.
[2] ASTM, 1999, *Standard Test Method for Determining Sediment Concentration in Water Samples: American Society of Testing and Materials*, ASTM D 3977-97 (2007), Vol. 11.02, pp. 389-394.
[3] SSC is not a field measurement. Samples must be collected, preserved, and analyzed according to Table 4-1.

ASTM = ASTM International
N/A = not applicable
NAL = numeric action level
NEL = numeric effluent limitation
NTU = nephelometric turbidity unit
SSC = suspended sediment concentration

Field measurements may be made by inserting the probe directly into the sample stream, or by using a clean container to collect a sample for measurement. When site conditions require collection of a sample for field measurement, a clean laboratory sample bottle may be used at each site to avoid cross contamination. Field measurements are made immediately, under ambient temperatures, without placing the samples on ice. The United States Environmental Protection Agency (EPA) requires pH measurements to be

performed within 15 minutes of sample collection. The field meter probes must be thoroughly rinsed in the field after each measurement, using laboratory-supplied, reagent grade, deionized water. Deionized water can be carried into the field and applied using a plastic squirt bottle dedicated to the purpose.

The pH is a measure of the acid/base condition of water, and technically represents the negative logarithm of the hydrogen ion concentration. It is measured on a scale of 0-14 pH units, where pH below 7 is acidic, 7 is neutral, and above 7 is basic or alkaline.

Field measurement of pH should be performed using a portable meter equipped with a glass electrode in which the electrolyte solution can be replaced. Such electrodes provide more reliable measurement of surface water pH than plastic, gel-filled electrodes, and the replaceable electrolyte allows for maintenance to ensure long-term reliability. Because the accuracy of field pH measurement depends principally upon the condition of the electrode, the probe must be scrupulously maintained according to manufacturer specifications. Note that glass electrodes are fragile and care must be taken not to break the electrode in the field.

Turbidity is a measure of the cloudiness of water, or, more accurately, the degree to which a water sample becomes less transparent as a result of the presence of suspended matter. The most common cause of turbidity in stormwater is suspended sediment, although other materials such as phytoplankton and algae can also contribute to the turbidity of a stormwater sample.

The instrument used to analyze turbidity is called a nephelometer; the units of a turbidity measurement are nephelometer turbidity units (NTUs). Nephelometers are commonly referred to as turbidimeters.

When using a turbidity meter that does not have a probe-based sensor, a turbidity sample is poured into a clean cuvette or sample cell and placed into the meter. The meter is activated and light is shined through the sample. The meter then measures light transmission through the sample, and computes turbidity in NTUs.

Field meters must be calibrated and maintained according to manufacturer's specifications to ensure accurate measurements. Calibration records must be recorded on the Stormwater Turbidity Meter Calibration Record (CEM-2056), Stormwater pH Meter Calibration Record (CEM-2057), and Stormwater Meter Calibration Record (CEM-2058 for conductivity, dissolved oxygen, or other parameters).

4.8 Laboratory Analysis

Laboratory analyses must be conducted according to test procedures approved by EPA under 40 CFR Part 136, unless other test procedures have been specified in the CGP or by RWQCB. With the exception of field analysis for turbidity and pH, and any other parameters for which field analysis is specified, all samples should be sent to a laboratory certified for the relevant analyses by the State Department of Health Services (DHS). All testing laboratories must receive samples within 48 hours of sample collection unless otherwise required by the laboratory or EPA protocols (e.g., bacteria samples must be delivered to the laboratory within six hours of sample collection), and samples must be collected only in appropriate sample containers as provided by the laboratory.

When the project includes requirements for analysis of samples by analytical laboratories, several steps must be undertaken to make the necessary arrangements with the laboratories, and to ensure that laboratories are prepared for monitoring events. The following topics are discussed below:

- Laboratory selection and contracting
- Pre-sampling preparations
- Analytical methods, including holding times and reporting limit (RL) requirements
- Laboratory data package deliverables

4.8.1 Laboratory Selection and Contracting

Important considerations in selecting an analytical laboratory include location, past performance, ability to meet analytical RLs, ability to meet all analytical holding times, laboratory report turn-around time, and experience with stormwater and other types of samples that will be generated by the monitoring program.

DHS certification is required for laboratory analytical work. A list of state-certified laboratories that are approved is available online at: http://www.dhs.ca.gov/ps/ls/elap/html/lablist_county.htm.

4.8.2 Pre-Sampling Preparations

The analytical laboratory will be involved in a number of activities prior to the actual analysis of samples, including:

- Determination of key laboratory performance requirements (e.g., analytical methods, maximum RLs, and turnaround times) for analytical services contract.
- Discussion of the data quality evaluation procedures, QC sample schedule/frequency, and QC sample volumes.
- Providing clean sample containers, blank water, and other equipment/support as needed.
- Coordination with field sampling and testing personnel prior to each anticipated storm-based monitoring event, including number of samples anticipated, approximate date and time of sampling and sample delivery (if known), and when sample containers will be required.

4.8.3 Analytical Methods

Samples typically will be analyzed for one or more of the constituents presented in Table 4-1. Required analytical method, sample bottle type, target RL, volume required for analysis, sample preservation, and maximum holding time are presented for each analyte in Table 4-1.

The recommended analytical methods shown in Table 4-1 are specified by EPA in 40 CFR 136 and also described either in *Standard Methods for the Examination of Water and Wastewater* (American Public Health Association, current version) or in the listed EPA method.

Samples must be analyzed within established holding times to ensure reliability and validity of the results. Maximum acceptable holding times are method-specified for various analytical methods. The holding time starts for each individual grab sample when it is collected, and the time is counted until analysis of the sample. If a sample is not analyzed within the designated holding times, the analytical results may be suspect. Prompt analysis also allows the laboratory time to review the data and, if analytical problems are found, re-analyze the affected samples.

The RL is the minimum concentration at which the analytical laboratory can reliably report detectable values. The RL varies by analyte and can vary by laboratory. It is important to ensure that the RLs produced for the project are low enough to provide useful results. The RLs listed in Table 4-1 match the RLs recommended by Caltrans in the *Caltrans Comprehensive Protocols Guidance Manual* (Caltrans, 2003a).

4.8.4 Laboratory Data Package Deliverables

As a part of the laboratory contract, the data package that will be delivered to the contractor and the timing of its delivery (turnaround time) should be defined. The data package should be delivered in hard copy and electronic copy (typically on compact disc).

The hard copy data package should include a narrative that outlines any problems, corrections, anomalies, and conclusions, as well as completed chain-of-custody documentation. A summary of the following QA/QC elements must be in the data package: sample analysis dates, RLs, results of method blanks, summary of analytical accuracy (MS recoveries, blank spike recoveries, surrogate compound recoveries), and summary of analytical precision (comparison of laboratory split results and MSD results, expressed as relative percent difference [RPD]). Because the laboratory must keep the backup documentation (raw data) for all data packages, raw data (often called Contract Laboratory Program data packages) should not be requested.

In addition to the hard copy data report, an electronic copy of the data can be requested from the laboratory. The electronic copy includes all the information found in the hard copy data package. Data should be reported in a standardized electronic format.

Common turnaround times for laboratory data packages are two to 3 weeks for faxed or emailed (PDF format) data and 3 weeks to 30 days for hard copy and electronic copy. Receiving the faxed or emailed data quickly allows an early data review to identify any problems that may be corrected through sample re-analysis.

4.9 QA/QC – Field Measurements

The quality of analytical data is dependent on the ways in which samples are collected, handled, and analyzed. For field measurements, QA/QC measures pertaining to field testing that should be included in the CSMP include:

- Daily calibration of field meters prior to use during each monitoring event
- Maintenance of field meters – especially probes
- Thorough rinsing of probes between measurements
- Field duplicates of field measurements

Daily calibration of field meters (prior to any monitoring event) is an essential part of QA/QC for field measurements (see details in Section 4.7).

Proper maintenance of field equipment – particularly probes – is also essential. Follow manufacturer's specifications for maintenance; replace probes as needed.

The field meter probes must be thoroughly rinsed in the field after each measurement, using laboratory-supplied, reagent grade, deionized water. Deionized water can be carried into the field and applied using a plastic squirt bottle dedicated to the purpose.

Duplicate Field Measurements. To verify the precision of field measurements, duplicate measurements must be conducted in the field on not less than 1 in every 10 samples. The duplicate measurements should be performed in rapid succession in the field, from duplicate samples collected side-by-side or in rapid succession from the same spot. If the measurement is made by inserting the probe into the discharge flow, the duplicate measurements should be made in rapid succession. After recording the initial result, withdraw the probe following the first measurement, and then immediately reinsert the probe into the same spot for the duplicate measurement.

In contrast to field duplicate samples collected for laboratory analysis (see Section 4.10.1), which must be sent in to the laboratory "blind" (i.e., both labeled as regular samples), both replicates for field measurements can be done by the same personnel, and are generally not done as a "blind" test (i.e., the same personnel may perform and observe both measurements).

The results of the field duplicates should be reported on the Stormwater Sample Field Test Report form (CEM-2052). The RPD between each pair of duplicate measurements must then be calculated and compared to the data quality objectives as specified in the CSMP (see Section 4.11.1).

4.10 QA/QC – Laboratory Analyses

The quality of analytical data is dependent on the ways in which samples are collected, handled, and analyzed. Various procedures discussed above, such as clean sampling techniques and documentation (i.e., forms) are essential elements in the overall QA/QC effort. Additional measures pertaining to samples that are submitted for laboratory testing should be included in the CSMP to maximize the data's quality and usefulness, as described in this section. The information presented in this section was adapted from Section 11 of the Caltrans' *Guidance Manual: Stormwater Monitoring Protocols* (Third Edition) contained within *Caltrans Comprehensive Protocols Guidance Manual* (Caltrans, 2003a).

Improved control of laboratory data quality is achieved by incorporating the following elements within the sample collection effort:

- Duplicate samples
- Blank samples
- MS/MDS samples
- QC sample schedule

Each of these types of samples and the relevant responsibilities of monitoring field personnel are described below, followed by a discussion of recommended minimum frequencies for the various types of QC samples. The results of the field QC samples are then used to evaluate the quality of the reported data (data evaluation is discussed in Section 4.11).

4.10.1 Duplicate Samples

Analytical precision is a measure of the reproducibility of data and is assessed by analyzing two samples that are presumed to be identical. Any significant differences between the samples indicate an unaccounted-for factor or a source of bias. There are typically two types of duplicate samples that require special sampling considerations: field duplicates and laboratory duplicates.

Field Duplicate Samples. Field duplicates are used to assess variability attributable to sample collection procedures. For grab samples, duplicate samples are collected by simultaneously or sequentially (in rapid succession) filling two grab sample bottles at the same location. If intermediate containers are used, first pour an incremental amount into one sample bottle and then pour a similar amount into the second. Continue going back and forth until both bottles are full.

For laboratory analyses, the field duplicate sample should be submitted to the laboratory "blind" (i.e., not identified as QC sample, but labeled as if it were a normal sample, with a different site identification and slightly different sample time than the regular sample).

A field duplicate sample should be analyzed once for every 10 samples collected from a project site, or one duplicate sample per project site annually, whichever is more frequent.

Laboratory Duplicate Samples. Laboratory duplicates (also called laboratory splits) are used to assess the precision of the analytical method and laboratory sample handling. For

the laboratory duplicate analysis, the analytical laboratory will split one sample into two portions and analyze each one.

When collecting samples to be analyzed for laboratory duplicates, typically double the normal sample volume is required. This effort requires filling a larger size sample bottle, or filling two normal size sample bottles, labeling one with the site name and the second with the site name plus "laboratory duplicate." Laboratory duplicate samples are collected, handled, and delivered to the analytical laboratory in the same manner as environmental samples (but not as blind samples).

Enough extra sample volume for the laboratory to create a duplicate should be collected once every 10 samples collected from a project site, or one duplicate sample per project site annually, whichever is more frequent.

4.10.2 Blank Samples

Potential sample contamination is assessed using blank samples. Blanks are prepared to identify potential sample contamination occurring during field collection, handling, shipment, storage, and laboratory handling and analysis. Blanks are evaluated during various stages of the sampling and analytical process to determine the level of contamination, if any, introduced at each step. The collection and uses of the types of blank samples associated with typical stormwater monitoring field procedures are described below.

"Blank water" refers to contaminant-free, reagent-grade water provided by the laboratory performing the environmental and blank analyses. Typically, this water is the laboratory's reagent water that is used in the analytical or cleaning processes, as well as for the lab's internal method blanks. The analytical laboratory should provide the blank water used for equipment and field blanks.

Equipment Blanks. Equipment blank samples are typically prepared only when samples are being collected for metals, nitrates, and organic contaminants such as pesticides, herbicides, polycyclic aromatic hydrocarbons (PAHs), organic carbon, and phthalate compounds, and when sample collection equipment is involved (i.e., when the sample bottles are not filled by direct submersion). Before using sampling equipment for sample collection activities, blanks should be collected to verify that the equipment is not a source of sample contamination. To account for any contamination introduced by sampling equipment or intermediate containers, equipment blanks are prepared by using the equipment to fill a clean container with blank water. The concentrations of the

specific parameters of concern are then measured. These blanks may be submitted "blind" to the laboratory by field personnel or prepared internally by the laboratory.

Collection of equipment blanks from intermediate sample containers may not be required if certified pre-cleaned bottles are used as the intermediate sample containers. The manufacturer can provide certification forms that document the concentration to which the bottles are "contaminant-free." These concentrations should be equivalent to or less than the program RLs. If the certification level is above the program RLs, 2 percent of the bottles in a "lot" or "batch" should be blanked at the program detection limits with a minimum frequency of one bottle per batch.

Field Blanks. Field blanks are typically used only when samples are being collected for laboratory analysis for bacteria, trace metals, nitrates, and trace organic contaminants such as pesticides, herbicides, PAHs, organic carbon, and phthalate compounds. Field blanks are necessary to evaluate whether contamination is introduced during field sampling activities.

Field blanks are prepared by the field crew, under normal sample collection conditions, at some time during the collection of normal samples. Field blanks are prepared by transporting a container of laboratory-provided blank water into the field, and processing the water through the same procedures used for sample collection. For samples collected by direct submersion, grab sample field blanks should be prepared by pouring a sample directly from the bottle of blank water into the grab sample containers in the field. When intermediate containers or equipment are used, field blanks should be collected using clean intermediate containers or other clean equipment with laboratory-supplied blank water in the same manner as normal sample collection. The filled blank sample bottles should be sealed, placed on ice, and sent to the laboratory to be analyzed for the required constituents.

As with field duplicate samples, field blank samples should be submitted to the laboratory "blind" (i.e. not identified as a QC sample, but labeled with a different site identification and slightly different sample time than the regular sample). For additional information, see Caltrans naming guidelines described in the *SWPPP Template* (Caltrans, 2011b).

Field blanks should be collected at a frequency no less than once per year per project site, or once every 10 samples at a given site annually, whichever is more frequent. Additional blanks should be collected when there is a change in field personnel, equipment, or procedures.

Trip Blanks. Trip blanks are typically used only when samples are being collected for laboratory analysis for volatile organic compounds. Trip blanks are used to determine whether sample contamination is introduced during sample transportation and delivery. Trip blanks are prepared at the analytical laboratory, by filling the sample bottle with blank water and securing the bottle lid. Trip blanks are transported unopened to and from the sampling location along with normal sample bottles. Trip blanks are analyzed like normal samples.

Method Blanks. For each batch of samples, method blanks (also called control blanks) are typically run by the laboratory to determine the level of contamination associated with laboratory reagents and glassware. The laboratory prepares method blanks using laboratory reagent-grade blank water. Results of the method blank analysis should be reported with the sample results. At a minimum, the laboratory should report method blanks at a frequency of 5 percent (one method blank with each batch of up to 20 samples).

4.10.3 Laboratory MS and MSD Analyses

MS and MSD analyses are typically used only when samples are being collected for trace metals, nutrients, and trace organics analysis. MS/MSD analyses are used to assess the accuracy (MS) and precision (MSD) of the analytical methods in the sample matrix. The analytical laboratory prepares MS samples by splitting off three aliquots of the environmental sample and adding known amounts of target analytes to two of the three environmental sample aliquots. The results of the analysis of the unspiked environmental sample are compared to the MS analysis results, and "percent recovery" of each spike is calculated to determine the accuracy of the analysis. The results of the two MS analyses are compared to calculate RPD as an additional measure of analytical precision.

When collecting samples to be specified for MS/MSD analysis, typically triple the normal sample volume is required. This effort will require filling a larger size sample bottle, or filling three normal size sample bottles, labeling one with the site name and the other two with the site name plus "MS/MSD." MS/MSD samples are collected, handled, and delivered to the analytical laboratory in the same manner as environmental samples (but not as blind samples). Analytical laboratories often will perform MS/MSD analyses at no charge on a specified sample when a certain minimum number of samples are submitted for analysis.

Enough extra sample volume for the laboratory to create MS/MSD samples should be collected once every 10 samples collected at a given project site, or once annually per project site, whichever is more frequent.

4.10.4 QC Sample Schedule

Table 4-3 summarizes the minimum frequencies of QC sample collection/preparation for the Caltrans' stormwater monitoring programs based on EPA guidance (EPA, 1995). These frequencies are minimal and may be increased depending on the nature and objectives of the study being undertaken, or if QA/QC problems (e.g., contamination) are discovered.

Table 4-3. Recommended Minimum QC Sample Frequency

QA/QC Sample Type Minimum	Sampling Frequency	Constituent Class
Duplicate Field Measurements	For each parameter, once every 10 measurements at a given project site, or once annually per project, whichever is more frequent.	Field-measured parameters (pH and Turbidity)
Field Duplicate Samples	Once every 10 samples collected at a given project site, or once annually per project, whichever is more frequent.	All laboratory analyses
Laboratory Duplicate Samples	Once every 10 samples collected at a given project site, or once annually per project, whichever is more frequent.	All laboratory analyses
Equipment Blanks	Sample bottles should be blanked every batch[2]; or manufacturer or laboratory-certified to concentrations below the reporting limits used for the sampling program. Annually for field equipment used in sample collection, when the equipment is used for direct sample collection.	Metals and organic contaminants.[1]
Field Blanks	Once every 10 samples collected at a given project site, or once annually per project site, whichever is more frequent.	Metals and organic contaminants.[1]
Trip Blanks	Once every three trips to a given project site, or once annually per project site, whichever is more frequent.	VOCs
Matrix Spike/Matrix Spike Duplicate	Once every 10 samples collected at a given project site, or once annually per project site, whichever is more frequent.	Metals and organic contaminants.[1]

Notes:
[1] Common contaminants include phthalate compounds, pesticides, and organic carbon (total organic carbon and biochemical oxygen demand), nitrate as N, and polycyclic aromatic hydrocarbons. Analyze blanks for these constituents as appropriate for constituents monitored in specific projects.
[2] A batch is defined as the group of bottles that has been cleaned at the same time, in the same manner; or, if decontaminated bottles are sent directly from the manufacturer, the batch would be the lot designated by the manufacturer in their testing of the bottles.

A QC sample schedule should be developed, included in the CSMP, and followed closely by field personnel. The project QC sample schedule should meet the minimum QC sample frequency criteria each year over the term of the project.

4.11 Data Management

4.11.1 Field Data Screening and Validation

When the field data sheets are received following each sampling event, it is important for the WPC Manager to check the reported data as soon as possible to identify any errors committed in sampling or reporting, as well as exceedance of NALs and NELs. The initial screening includes the following checks:

- Completeness. The field sheets should be checked to ensure that all field tests and measurements specified in the CSMP were performed, including the requested QA/QC analyses.
- Labeling Errors. On occasion field personnel commit errors on sample labels, field log forms, or chain-of-custody forms. Reported values that appear out of range or inconsistent are indicators of potential field reporting or equipment problems, and should be investigated when detected.
- Irregularities found in the initial screening should immediately be reported to the monitoring field crew for clarification or correction. This process can identify and correct errors that would otherwise cause problems further along in the data evaluation process, or in subsequent uses of the data for higher-level analysis.

Field QA/QC parameters that should be reviewed are classified into the following categories:

Precision (analysis of duplicate field measurements). The RPD between the initial result and the duplicate result is calculated to evaluate differences in duplicate results for pH or turbidity. See Section 4.12.2 for detailed information on calculating RPD. A duplicate measurement RPD of plus/minus 25 percent or greater indicates an unacceptable level of difference between the two measurements.

Field measurement duplicate results exceeding 25 percent RPD may indicate either inconsistent sample collection/measurement, or highly variable discharge quality. The duplicate measurements should be repeated with new samples, with special care taken to collect consistent duplicate samples.

Accuracy (field meter calibration). Record the results of field meter calibration on the Stormwater Turbidity Meter Calibration Record (CEM-2056), Stormwater pH Meter Calibration Record (CEM-2057), and Stormwater Meter Calibration Record (CEM-2058 for conductivity, dissolved oxygen, or other parameters).

Evaluation of QA/QC results. Each of these field measurement QA/QC parameters should be compared to the data quality objectives established for the study. The key steps in the analysis of each of these field QA/QC parameters are as follows:

1. Compile a complete set of the QA/QC results for the parameter being analyzed.
2. Compare the field QA/QC results to accepted criteria.
3. Compile any out-of-range values and report them to the monitoring crew for verification.
4. Attach appropriate qualifiers to data that do not meet QA/QC acceptance criteria.
5. Prepare a report that tabulates the success rate for each QA/QC parameter analyzed.

4.11.2 Laboratory Data Package Review

Laboratory Data Screening. When the laboratory reports are received following each sampling event, it is important to check the reported data as soon as possible to identify errors committed in sampling, analysis, or reporting. The laboratory must report results in a timely fashion (as defined in the Contractor's contract with the laboratory and in compliance with the Caltrans contract) and the results then must be reviewed immediately upon receipt. This review may allow for re-analysis of questionable (out-of-range) results within the prescribed holding times. The initial screening includes the following checks:

- **Completeness.** The chain-of-custody forms should be checked to ensure that all laboratory analyses specified in the CSMP were requested. The laboratory reports should also be checked to ensure that all laboratory analyses are performed as specified on the chain-of-custody forms, including the requested QA/QC analyses.
- **Holding Times.** The laboratory reports should be checked to verify that all analyses were performed within the prescribed holding times.

- **Reporting Limits.** The reported analytical limits should meet or be lower than the levels agreed upon prior to laboratory submission.
- **Reporting Errors.** On occasion, laboratories commit typographical errors or send incomplete results. Reported concentrations that appear out of range or inconsistent are indicators of potential laboratory reporting problems, and should be investigated when detected. Examples of this would be a reported value that is an order of magnitude different than levels reported for the same constituent for other events.

Irregularities found in the initial screening should immediately be reported to the laboratory for clarification or correction. This process can identify and correct errors that would otherwise cause problems further along in the data evaluation process, or in subsequent uses of the data for higher-level analysis. When appropriate, re-analysis of out-of-range values can increase confidence in the integrity of questionable data.

Laboratory Data Validation. The data quality evaluation process is structured to provide checks to ensure that the reported data accurately represented the concentrations of constituents actually present in water quality samples. Data evaluation can often identify sources of contamination in the sampling and analytical processes, as well as detect deficiencies in the laboratory analyses or errors in data reporting. Data quality evaluation allows monitoring data to be used in the proper context with the appropriate level of confidence.

QA/QC parameters that should be reviewed are classified into the following categories:

1. Contamination check results (method, field, and equipment blanks)
2. Precision analysis results (laboratory, field, and MSDs)
3. Accuracy analysis results (MSs and laboratory control samples)

Each of these QA/QC parameters should be compared to the data quality objectives listed in Table 4-4. The key steps in the analysis of each of these QA/QC parameters are as follows:

1. Compile a complete set of the QA/QC results for the parameter being analyzed.
2. Compare the laboratory QA/QC results to accepted criteria.
3. Compile any out-of-range values and report them to the laboratory for verification.

Table 4-4. Control Limits for Precision and Accuracy for Water Samples

Constituent	Maximum Allowable RPD	Recovery Lower Limit	Recovery Upper Limit
VOCs-Solvents	20%	Constituent specific	
SVOCs	30%-50%	Constituent specific	
Pesticides/Herbicides	25%	Constituent specific	
TDS	20%	80%	120%
BOD	20%	80%	120%
Total Phosphorus	20%	80%	120%
NH_3-N	20%	80%	120%
NO_3-N	20%	80%	120%
pH	20%	N/A	N/A
Turbidity	20%	N/A	N/A
Alkalinity	20%	80%	120%
Phosphate	20%	80%	120%
Metals	20%	75%	125%
Coliform bacteria	N/A	N/A	N/A

Notes:
Recovery, lower and upper limits refer to analysis of spiked samples
BOD = biochemical oxygen demand
N/A = not applicable
NH_3-N = ammonia nitrogen
NO_3-N = nitrate nitrogen
RPD = relative percent difference between duplicate analyses
SVOC = semi-volatile organic compounds
TDS = total dissolved solids
VOC = volatile organic compounds

4. Attach appropriate qualifiers to data that do not meet QA/QC acceptance criteria.
5. Prepare a report that tabulates the success rate for each QA/QC parameter analyzed.

Refer to Section 13 of the *Caltrans' Guidance Manual: Stormwater Monitoring Protocols* (Third Edition) contained within *Caltrans Comprehensive Protocols Guidance Manual* (Caltrans, 2003a) for specific direction on evaluating the results of contamination, accuracy, and precision checks, and on qualifying data that do not meet data quality objectives.

The laboratory data can also be screened using the Caltrans' Stormwater Management Program Laboratory Electronic Data Delivery (EDD) Error Checker. The laboratory will need to be trained to use the tool and must report the data in the Caltrans' standard electronic format for stormwater monitoring data (*Data Reporting Protocols*, Caltrans, 2003b). The project's data manager will need to be trained to use the EDD Error Checker.

4.12 Data Evaluation

4.12.1 Calculating Daily Average

The daily average is calculated by dividing the sum of the set of daily results by the number of results in the set. For example, on a single day, assume three samples were collected from a project site representative discharge point with turbidity results of 260, 680, and 550 NTUs. The turbidity daily average would be calculated by summing the turbidity results and dividing the sum by three ([260+680+550]/3), resulting in a daily average turbidity of 497 NTU, which exceeds the NAL but not the NEL.

However, pH is defined as the negative log (base ten) of the hydrogen (or hydronium) ion concentration, represented by the following equation: $pH = -\log_{10}[H^+]$. Calculating the pH daily average requires the following steps:

- Take the negative of each pH value,
- Take the antilog (inverse) of each negative pH value,
- Sum the set of antilog pH values,
- Divide the sum by the number of pH values to obtain an average, and
- Calculate the negative log of that average value.

For example, on a single day, assume three samples were collected from a discharge point with pH results of 7.5, 6.5, and 9. The pH daily average would be calculated by taking the antilogs of -7.5, -6.5, and -9, which are 31.6×10^{-9}, 316×10^{-9}, 1.00×10^{-9}, summing the antilog values, which is 349×10^{-9}, dividing that sum by 3, which is 116×10^{-9}, and taking the log of that sum and converting to its negative value, which is 6.93. The calculated daily pH value does not exceed the NAL or NEL.

If any of the results are reported as non-detect, a value of one-half the RL should be used in the calculation of the daily mean. This approach cannot be used with pH measurements.

4.12.2 Calculating Relative Percent Difference

The RPD is calculated using the following formula:

$$RPD = \frac{(\text{Sample result A} - \text{Sample result B})}{([\text{Sample result A} + \text{Sample result B}]/2)} * 100$$

For example, a sample and a duplicate sample were collected for a project site with total dissolved solids results of 260 and 300, respectively. The RPD would be calculated by taking the difference between the results, dividing the difference by the calculated mean of the results, and multiplying by 100 ((260-300)/([260+300]/2)* 100), resulting in a percent difference of 14.3 percent. This would be an acceptable RPD.

Note that pH is defined as the negative log (base ten) of the hydrogen (or hydronium) ion concentration, represented by the following equation: $pH = -\log_{10}[H^+]$. Calculating the percent difference for pH results, therefore, requires taking the antilog (inverse of each negative pH value) prior to calculating the RPD. On the log scale, a difference of 25 percent corresponds to a difference of just over 0.1 pH unit. Therefore, duplicate pH measurements may be simply compared directly; a difference greater than 0.1 pH units is considered an unacceptable level of difference.

RPD should not be calculated from any results reported as non-detect.

4.12.3 Monitoring and Reporting Run-on

Run-on from surrounding areas must be monitored and reported in the Stormwater Site Inspection Report form (CEM-2030) if there is reason to believe run-on may contribute to an exceedance of NALs or NELs. To determine if the source of an observed NEL exceedance is run-on to the construction site, the levels of pH, turbidity, and suspended sediment concentrations (SSC) (if appropriate) from run-on samples should be evaluated. High levels will indicate that the sources outside of the construction site may be contributing to the measured pH level or sediment load. Identification of adjacent landowner discharges and implementation of other BMP measures should be the first steps taken to remove pollutants from run-on or eliminate unauthorized discharges from run-on.

Inspect the site perimeter for evidence of run-on flowing on to the site from outside areas. Existing drainage channels (large and small) and their flow paths through the construction site should be noted. Non-stormwater run-on could be caused by a forest fire or any other natural disaster or could be from authorized or unauthorized discharges from an adjacent property.

4.12.4 Assessing the Need for Corrective Measures

If an NAL or NEL exceedance occurs, the project site should be evaluated in an effort to determine the cause or source of the exceedance. Runoff patterns should be examined to

determine whether the exceedance is due to run-on or a failed, missing, or poorly maintained BMP. Information gathered from the site inspection will be used to identify the source(s). Storm Water Quality Task Force (SWQTF) (2001) developed the following list of conditions or areas on a construction site that may cause sediment, silt, and/or turbidity in runoff:

- Exposed soil areas with inadequate erosion control measures
- Active grading areas
- Poorly stabilized slopes
- Lack of perimeter sediment controls
- Areas of concentrated flow on unprotected soils
- Poorly maintained erosion and sediment control BMP
- Unprotected soil stockpiles
- Failure of an erosion or sediment control BMP

Document on the Stormwater Site Inspection Report form (CEM-2030) any instances where the discharge flow path crosses one or more of the conditions or areas listed above. If any one of these conditions and areas is found during the inspections, their presence should be documented, preferably with GPS coordinates and photographs.

5.0 NON-VISIBLE POLLUTANTS MONITORING

5.1 Permit Requirements

Non-visible pollutant sampling and testing must be conducted if a breach, malfunction, leakage, or spill is observed that could result in non-visible pollutant(s) being discharged into surface waters during a rain event. Non-visible pollutant monitoring is only required when a rain event producing a discharge occurs during project working hours.

5.2 What and When to Monitor

Samples for non-visible pollutant(s) monitoring must be collected when all four conditions listed below exist:

1. At least one pollutant is identified in the pollutant source assessment conducted as part of the SWPPP.
2. A breach, malfunction, leakage, or spill is observed during last visual inspection.
3. As a result of observation in item 2 above, the pollutant(s) could be discharged into surface waters.
4. A rain event (not restricted to only a "qualifying rain event") produces runoff during project working hours.

When all four conditions are met, samples must be collected and analyzed as follows:

1. Collect one grab sample of the discharge from all locations that meet the criteria above and that can be safely accessed, during the first two hours of discharge occurring during project working hours. Discharges from a project site can occur anytime during a rain event, but may not occur for some time after the start of the rain. Therefore, the site will need to be monitored throughout the day when rain is falling.
2. Collect one grab sample of stormwater that has not come in contact with the disturbed soil or the materials stored or used on site (uncontaminated sample) during the first two hours of discharge.
3. Collect the appropriate number and type of QA/QC samples (see Section 4.10).
4. Analyze the discharge samples and uncontaminated samples for all non-visible pollutant parameters that were identified in the pollutant source assessment conducted as part of the SWPPP, and that could be discharged into surface waters.

Conditions Triggering Sampling. The SWPPP pollutant source assessment may identify areas within the project site that require monitoring to be performed, if the area is exposed to stormwater that produces a discharge during project working hours, and pollutant(s) could be discharged into surface waters. Construction activities or BMP failures that may trigger sampling include:

- The use and application of certain products, if application occurred during a rain event or within 24 hours preceding a rain event, and the products are exposed to stormwater that produces a discharge during project working hours. Examples include: methyl methacrylate concrete sealant applied to bridge decks; solvents that have been used to clean equipment; fertilizers, herbicides, or pesticides applied for landscaping; or soil amendments, including soil stabilization products, with the potential to alter pH levels or contribute toxic pollutants to stormwater runoff.
- Materials or wastes containing potential non visible pollutants not stored under watertight conditions. Examples include the storage of lead-contaminated soils without plastic covers, or pressure-treated wood in stockpiles without plastic covers.
- Materials or wastes containing potential non-visible pollutants stored under watertight conditions, but: (a) a breach, leakage, malfunction, or spill is observed; and (b) the leak or spill has not been cleaned-up prior to the rain event producing discharge; and (c) there is the potential for discharge of non-visible pollutants to surface waters or drainage system during the rain event.

Sampling and analysis is not required under the following conditions (SWQTF, now known as the California Stormwater Quality Association [CASQA], 2001):

- Where a construction project is self-contained and does not allow any contaminated runoff to exit the site.
- Where construction materials and compounds are kept or used so that they never come in contact with stormwater (e.g., in water-tight containers, under a water-tight roof, inside a building, etc.).
- Where, for specific materials, the BMPs implemented at the construction site fully contain the exposed pollutants (e.g., bermed concrete washout area).
- For building or landscape materials that are in their final constructed form or are designed for exposure (e.g., fence materials, guardrails, painted structures,

support structures and equipment that will remain exposed at the completion of the project, etc.).

- Where pollutants may have been spilled or released on site, but have been properly cleaned up and stormwater exposure has been eliminated prior to a rain event.
- When the rain event discharge occurs outside of project working hours or does not produce a discharge.
- For a project site where no potential pollutants were identified.
- For a project site where the last visual inspection does not identify any breach, malfunction, leakage, or spill.

Sample Collection and Analysis. Samples must be analyzed for the non-visible pollutant parameters identified in the pollutant source assessment to identify the level of contamination and the potential impacts to receiving waters. Construction material inventories and the project SWPPP provide information on materials currently in use or proposed for use on the construction site. Table 5-1 lists common materials used at construction sites that can contaminate runoff with non-visible pollutants, their potential pollutants, and water quality indicators. This list is not meant to be inclusive but to provide information to the QSD and WPC Manager.

For some construction materials, the pollutant parameter will be the compound itself. For example, if the pesticide malathion is used on the site, samples of runoff will be analyzed specifically for the malathion concentration. For sites contaminated by historic practices, the runoff samples are typically analyzed for specific compounds known to be historical contaminants. For other materials, an associated indicator will be measured. In the case of general masonry products, their potential impact on water quality involves alteration of the pH level. Some potential pollutants are visually observable and do not require testing (i.e., petroleum products including gasoline, diesel, and lubricants; colored paints; sand, gravel, or topsoil; asphalt cold mix; Portland cement; antifreeze).

Table 4-1 includes sample collection and analysis methods for typical non-visible pollutants. Some of the indicators potentially can be analyzed in the field (i.e., pH, residual chlorine, total dissolved solids); others require analysis in laboratories. It is important that the method of measurement be consistent during each sampling event and throughout the program to maximize the comparability of the various samples. Samples analyzed by different methods cannot be easily compared.

Table 5-1. Pollutant Testing Guidance Table[1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
Asphalt Products	Hot Asphalt	Yes – Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		
	Asphalt Emulsion				
	Liquid Asphalt (tack coat)				
	Cold Mix				
	Crumb Rubber	Yes – Black, solid material	Visually Observable – No Testing Required		
	Asphalt Concrete (Any Type)	Yes – Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		
Cleaning Products	Acids	No	**pH** Acidity Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	pH Meter	EPA 150.2 (pH)
					SM 2310B (Acidity)
					EPA 300.0 (Anion)
	Bleaches	No	**Residual Chlorine**	Chlorine test kit	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes – Foam	Visually Observable - No Testing Required		
	TSP	No	**Phosphate**	None	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)

Table 5-1. Continued

Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
Portland Concrete Cement & Masonry Products	Portland Cement (PCC)	Yes – Milky Liquid	Visually Observable – No Testing Required		
	Masonry products	No	**pH**	pH Meter	EPA 150.2 (pH)
			Alkalinity		SM 2320 (Alkalinity)
	Sealant (Methyl Methacrylate)	No	**Methyl Methacrylate**	None	EPA 625 (SVOC)
			Cobalt		EPA 200.8 (Metal)
			Zinc		
	Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash Municipal Solid Waste	No	**Aluminum** **Calcium** **Vanadium** **Zinc**	None	EPA 200.8 (Metal) EPA 200.7 (Calcium)
	Mortar	Yes – Milky Liquid	Visually Observable – No Testing Required		
	Concrete Rinse Water	Yes – Milky Liquid	Visually Observable – No Testing Required		
	Non-Pigmented Curing Compounds	No	Acidity	pH Meter	SM 2310B (Acidity)
			Alkalinity		SM 2320 (Alkalinity)
			pH		EPA 150.2 (pH)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)

Table 5-1. Continued

Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
Landscaping and Other Products	Aluminum Sulfate	No	Aluminum	TDS Meter	EPA 200.8 (Metal)
			TDS		SM2540 C (TDS)
			Sulfate		EPA 300.0 (Sulfate)
	Sulfur-Elemental	No	**Sulfate**	None	EPA 300.0 (Sulfate)
	Fertilizers-Inorganic[4]	No	**Nitrate**	None	EPA 300.0 (Nitrate)
			Phosphate	None	EPA 365.3 (Phosphate)
			Organic Nitrogen	None	SM4500-NH3 C (TKN)
			Potassium	None	EPA 200.8 (Metal)
	Fertilizers – Organic	No	TOC	None	SM 5310 C (TOC)
			Nitrate		EPA 300.0 (Nitrate)
			Organic Nitrogen		SM4500-NH3 C (TKN)
			COD		EPA 410.4 (COD)
	Natural Earth (Sand, Gravel, and Topsoil)	Yes – Cloudiness and turbidity	Visually Observable – No Testing Required		
	Herbicide	No	**Herbicide**	None	Check lab for specific herbicide or pesticide
	Pesticide		**Pesticide**		
	Lime		Alkalinity	pH Meter	SM 2320 (Alkalinity)
			pH		EPA 150.2 (pH)

Table 5-1. Continued

Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
Painting Products	Paint	Yes	Visually Observable - No Testing Required		
	Paint Strippers	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
	Resins	No	**COD**	None	EPA 410.4 (COD)
			SVOC		EPA 625 (SVOC)
	Sealants	No	**COD**	None	EPA 410.4 (COD)
	Solvents	No	**COD**	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Lacquers, Varnish, Enamels, and Turpentine	No	**COD**	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Thinners	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			COD		EPA 410.4 (COD)
Portable Toilet Waste Products	Portable Toilet Waste	Yes	Visually Observable – No Testing Required		

Table 5-1. Continued

Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
Contaminated Soil [5]	Aerially Deposited Lead[3]	No	**Lead**	None	EPA 200.8 (Metal)
	Petroleum	Yes – Rainbow Surface Sheen and Odor	Visually Observable – No Testing Required		
	Mining or Industrial Waste, etc.	No	**Contaminant Specific**	Contaminant Specific – Check with laboratory	Contaminant Specific – Check with laboratory
Line Flushing Products	Chlorinated Water	No	**Total chlorine**	Chlorine test kit	SM 4500-CL G (Res. Chlorine)
Adhesives	Adhesives	No	COD	None	EPA 410.4 (COD)
			Phenols	None	EPA 420.1 (Phenol)
			SVOC	None	EPA 625 (SVOC)
Dust Palliative Products	Salts (Magnesium Chloride, Calcium Chloride, and Natural Brines)	No	Chloride	None	EPA 300.0 (Chloride)
			TDS	TDS Meter	SM 2540 C (TDS)
			Cations (Sodium, Magnesium, Calcium)	None	EPA 200.7 (Cations)
Vehicle	Antifreeze and Other Vehicle Fluids	Yes – Colored Liquid	Visually Observable – No Testing Required		
	Batteries	No	Sulfuric Acid	None	EPA 300.0 (Sulfate)
			Lead	None	EPA 200.8 (Metal)
			pH	pH Meter	EPA 150.2 (pH)
	Fuels, Oils, Lubricants	Yes – Rainbow Surface Sheen and Odor	Visually Observable – No Testing Required		

Table 5-1. Continued

Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
Soil Amendment/ Stabilization Products	Polymer/Copolymer[6, 7]	No	**Organic Nitrogen**	None	EPA 351.3 (TKN)
			BOD	None	SM 5210 B (BOD)
			COD	None	EPA 410.4 (COD)
			DOC	None	SM 5310 C (DOC)
			Nitrate	None	EPA 300.0 (Nitrate)
			Sulfate	None	EPA 300.0 (Sulfate)
			Nickel	None	EPA 200.8 (Metal)
	Straw/Mulch	Yes – Solids	Visually Observable – No Testing Required		
	Lignin Sulfonate	No	Alkalinity	None	SM 2320 (Alkalinity)
			TDS	TDS Meter	SM 2540 C(TDS)
	Psyllium	No	COD	None	EPA 410.4 (COD)
			TOC		SM 5310 C (TOC)
	Guar/Plant Gums	No	COD	None	EPA 410.4 (COD)
			TOC		SM 5310 C (TOC)
			Nickel		EPA 200.8 (Metal)
	Gypsum	No	pH	pH Meter	EPA 150.2 (pH)
			Calcium	None	EPA 200.7 (Calcium)
			Sulfate	None	EPA 300.0 (Sulfate)
			Aluminum	None	EPA 200.8 (Metal)
			Barium		
			Manganese		
			Vanadium		

Table 5-1. Continued

Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
Treated Wood Products	Ammoniacal-Copper-Zinc-Arsenate Copper-Chromium-Arsenic Ammoniacal-Copper-Arsenate Copper Naphthenate	No	Arsenic Total Chromium **Copper** Zinc	None	EPA 200.8 (Metal)
	Creosote	Yes – Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		

Adapted from Attachment S of the *Storm Water Pollution Prevention Plan/Water Pollution Control Program Preparation Manual* (Caltrans, 2007)

Notes:

1. If specific pollutant is known, analyze only for that specific pollutant. See Material Data Safety Sheet to verify.
2. For each construction material, test for one of the pollutant indicators. **Bolded** pollutant indicates lowest analysis cost or best indicator. However, the composition of the specific construction material, if known, is the first criterion for selecting which analysis to use.
3. See www.hach.com, www.lamotte.com, www.ysi.com and www.chemetrics.com for some of the test kits.
4. If the type of inorganic fertilizer is unknown, analyze for all pollutant indicators listed.
5. Only if special handling requirements are required in the Standard Special Provisions for aerially deposited lead
6. If used with a dye or fiber matrix, it is considered visually observable and no testing is required.
7. Based upon research conducted by Caltrans, the following copolymers/polymers do not discharge pollutants and water quality sampling and analysis is not required: Super Tak, M-Binder, Fish Stik, Pro40dc, Fisch-Bond, Soil Master WR, and EarthGuard.

Acronyms:

BOD = biochemical oxygen demand
COD = chemical oxygen demand
DOC = dissolved organic carbon
EPA = United States Environmental Protection Agency
HACH = Global company that provides advanced analytical systems and technical support for water quality testing.
SM = Standard Method
SVOC = semi-volatile organic compounds
TDS = total dissolved solids
TKN = total kieldah nitrogen
TOC = total organic carbon
TSP = tri-sodium phosphate
VOC = volatile organic compounds

References:

California Storm Water Quality Task Force, 2001 (now known as the California Stormwater Quality Association). *Construction Storm Water Sampling and Analysis Guidance Document*. October.
National Cooperative Highway Research Program, 2001. *Environmental Impact of Construction and Repair Materials on Surface and Ground Waters, Report 448*.
California Department of Transportation (Caltrans), Environmental Program, 1999. *Soil Stabilization for Temporary Slopes*. October 1.
Caltrans, Division of Environmental Analysis, 2002. *Statewide Storm Water Management Plan*. April.
Caltrans, Environmental Program, 2000. *Statewide Storm Water Quality Practice Guidelines*. August.
Caltrans, 2000a. *Soil Stabilization for Temporary Slopes and District 7 Erosion Control Pilot Study*. June.
Caltrans, 2000b. *Stormwater Monitoring Protocols, Guidance Manual*. May.

5.3 Where to Monitor

One grab sample must be collected at any discharge location identified as potentially discharging non-visible pollutants, per the criteria stated above. See Section 4.2 for monitoring location selection guidelines. For non-visible pollutants, samples should be collected only from sites that be safely accessed during the first two hours of discharge occurring during project working hours.

One grab sample of uncontaminated stormwater that has not come in contact with the disturbed or contaminated soil or with the exposed materials stored or used on site also must be collected during the first two hours of discharge. The uncontaminated sample could be collected upgradient from the non-visible pollutant source/spill or from discharge locations whose drainage areas do not come into contact with the non-visible pollutant source/spill. Historical (pre-construction) contamination or exposed materials, such as soil amendments, may be widely spread throughout the site. An uncontaminated sampling location may not exist on the site itself and may have to be located at the perimeter of the site.

Discharge location(s) are sites where the construction site's stormwater runoff flows off site, whether to a municipal separate storm sewer system or receiving water body. Discharge locations could include catch basin inlets, sheet flow, culverts, or outfalls. A site's discharge locations are identified in the SWPPP.

5.4 How to Monitor

Manual grab sampling techniques will be used to collect samples. See Section 4.6.4 for detailed information on grab sample collection and analysis.

5.5 Data Evaluation and Follow-up, Reporting

5.5.1 Data Evaluation

Once the field and laboratory test results of the non-visible pollutant monitoring are available, compare the results of the uncontaminated sample to the results of the discharge sample. To identify substantial changes of non-visible pollutants in the runoff, the RPD between the uncontaminated sample result and the discharge sample result is calculated for the constituents of concern. See Section 4.12.2 for detailed information on calculating RPD.

Caltrans has determined that a difference (calculated as RPD) between the uncontaminated and discharge sample concentrations greater than plus/minus 25 percent indicates an impact from a non-visible pollutant. Twenty-five percent has been selected to represent a substantial change in water quality. If the result for the uncontaminated sample is not detected and the result for the contaminated sample is detected, then there is an impact from a non-visible pollutant.

Document on the Stormwater Sample Laboratory Results Report form (CEM-2054) whether the contaminated sample test results are lower or higher than the uncontaminated test results.

5.5.2 Assessing the Need for Corrective Measures

Corrective measures are required for any breach, malfunction, leakage, or spill observed during a visual inspection. Corrective measures are also required if a substantial change in water quality was measured (per above, RPD greater than 25 percent).

5.5.3 Implementing Corrective Measures

If any breach, malfunction, leakage, or spill is observed during a visual inspection, corrective measures must be taken to repair any break, malfunction, or leakage, and to remove or prevent pollutants from contacting stormwater discharges.

If the construction site is found to be contributing non-visible pollutants to the runoff, the following steps should be taken as soon as possible:

1. Identify the source.
2. Repair or replace any BMP that has failed or clean up any spilled non-visible pollutants.
3. If there are elevated levels in run-on, notify the RE.
4. Maintain any BMP that is not functioning properly due to lack of maintenance.
5. Evaluate whether additional, alternative, or redesigned BMPs should be implemented.

If sampling and analysis results do not show a substantial change in water quality, non-visible sampling can be stopped. If sampling and analysis results show a substantial

change in water quality, then repeat the steps above until the analytical results of upstream and downstream samples are relatively comparable.

Examples of corrective actions include:

- Removing the pollutant source by removing impacted soil, cleaning pavement, applying absorbent materials, then removing and disposing of absorbed materials.
- Covering the pollutant source with methods such as tarps or closing lids.
- Containing the pollutant source by implementing double containment, such as surrounding the source with an impermeable berm.

5.5.4 Reporting

For non-visible pollutants, complete the following forms and submit to the RE as detailed in Section 11:

Prior to storm event:

- CEM-2045 Rain Event Action Plan Highway Construction Phase form (if required), or

  CEM-2046 Rain Event Action Plan Plant Establishment Phase form (if required), or
  CEM-2047 Rain Event Action Plan Inactive Project form (if required)

- CEM-2048 Storm Event Sampling and Analysis Plan, or

  CEM-2049 Qualifying Rain Event Sampling and Analysis Plan

During sampling:

- CEM-2050 Sample Information, Identification, and Chain-of-Custody Record
- CEM-2051 Stormwater Sampling and Testing Activity Log
- CEM-2052 Stormwater Sample Field Test Report form, and/or

  CEM-2054 Stormwater Sample Laboratory Test Report form

- CEM-2061 Notice of Discharge Report form

Use the Stormwater Sample Laboratory Test Results Report form (CEM-2054) to document whether the contaminated sample test results are substantially greater than the uncontaminated test results. See Section 11 for additional information on data reporting and recordkeeping requirements

6.0 NON-STORMWATER DISCHARGE MONITORING

6.1 Permit Requirements

If non-stormwater runoff is discharged off site, Risk Level 2 and 3 projects must conduct non-stormwater effluent sampling and testing to comply with the CGP. Caltrans requires non-stormwater effluent sampling and testing for all risk levels. Discharge (effluent) samples must be collected at all non-stormwater discharge locations that can be safely accessed. The samples must be tested for pH and turbidity, as well as any other pollutants considered likely to be present in the discharge. Some types of non-stormwater discharges that are authorized by a RWQCB permit must also be sampled for additional parameters for which monitoring is required by a RWQCB.

6.2 What and When to Monitor

Effluent must be monitored from all discharge locations where non-stormwater runoff is discharged off site. Effluent samples must be collected and tested from both authorized and unauthorized non-stormwater discharges using the same protocols as those required for stormwater discharge monitoring (see Section 7.2). The appropriate number and type of QA/QC samples must also be collected (see Section 4.10).

During dewatering activities, monitoring must be performed daily when discharging. A minimum of three dewatering discharge samples per day must be collected and analyzed for pH, turbidity, and residual additives if any additives are used.

In addition, run-on from surrounding areas must be monitored and reported in the Stormwater Site Inspection Report form (CEM-2030) if there is reason to believe run-on may contribute to an exceedance of NALs.

The quarterly non-stormwater inspections include specific requirements for identification and assessment of non-stormwater discharges (see Section 3.2.2). Non-stormwater effluent samples must be collected when the discharges are identified. The WPC Manager should prepare to collect potential non-stormwater samples prior to conducting quarterly non-stormwater inspections. Sample collection should be conducted during daylight hours. Sample collection should not be performed during dangerous weather conditions.

Authorized Non-Stormwater Discharges: The CGP authorizes certain non-stormwater discharges that may be necessary for the completion of construction projects. Authorized non-stormwater discharges may include those from dechlorinated potable water sources such as: fire hydrant flushing; irrigation of vegetative erosion control measures; pipe flushing and testing; water to control dust; uncontaminated ground water from dewatering; and other discharges not subject to a separate NPDES permit adopted by a RWQCB. The CGP requires that authorized non-stormwater discharges must:

- Be infeasible to eliminate.
- Comply with BMPs as described in the SWPPP.
- Meet the NELs and NALs for pH and turbidity.
- Not cause or contribute to a violation of water quality standards.

The Caltrans Statewide NPDES Permit authorizes certain non-stormwater discharges unless they are identified as a source of pollutants. However, specific control measures may be required to minimize adverse impacts from these discharges. Some RWQCBs may require a separate NPDES permit or specific monitoring and reporting requirements for authorized discharges. Authorized non-stormwater dewatering discharges may require a permit because some RWQCBs have adopted General Permits for dewatering discharges. Check with the RE or the applicable RWQCB for requirements in the project area. All dewatering discharges from sedimentation basins must be filtered or treated, using appropriate technology. The appropriate technology must be selected based upon potential pollutants and SSCs and concentration.

The Caltrans Statewide NPDES Permit specifies three types of authorized non-stormwater discharges:

1. Discharges authorized by a separate NPDES Permit (Because these discharges have a separate permit, they are not addressed in this manual.)

2. Conditionally exempt discharges

3. Exempted discharges

Conditionally exempt non-stormwater discharges are specified in the Caltrans Statewide NPDES Permit and include: water line and fire hydrant flushing; irrigation water, landscape irrigation; uncontaminated ground water dewatering; and other discharges not subject to a separate general NPDES permit adopted by a region. Conditionally exempt discharges are not prohibited (i.e., they are authorized) if they are identified as not being

sources of pollutants to receiving waters or if appropriate control measures (i.e., BMPs) to minimize the adverse impacts of such sources are developed and implemented.

Authorized non-stormwater discharges exempted by the Caltrans Permit (Exempted Discharges) include:

- Flows from riparian habitats or wetlands.
- Diverted stream flows.
- Springs or rising groundwater.
- Uncontaminated groundwater that infiltrates into the project site and is discharged.

Unauthorized Non-Stormwater Discharges: Examples of unauthorized non-stormwater discharges common to construction activities include:

- Vehicle and equipment wash water, including concrete washout water.
- Slurries from concrete cutting and coring operations, or grinding operations.
- Slurries from concrete or mortar mixing operations.
- Residue from high-pressure washing of structures or surfaces.
- Wash water from cleaning painting equipment.
- Runoff from dust control applications of water or dust palliatives.
- Sanitary and septic wastes.
- Chemical leaks and/or spills of any kind including but not limited to petroleum, paints, cure compounds, etc.

Non-stormwater samples must be tested for pH and turbidity, and any other likely pollutant in the discharge as identified by the WPC Manager. Likely non-stormwater discharge pollutants should be determined by evaluating the non-stormwater discharge source and the non-stormwater flow path to the discharge location. Table 6-1 shows potential authorized non-stormwater sources, potential pollutants, and water quality indicator constituents. Table 6-2 shows unauthorized non-stormwater sources common to construction sites, their potential pollutants, and water quality indicators. With the exception of field analyses, including the measurements performed in the field for turbidity and pH, all analyses must be performed by a laboratory certified for such analyses by the DHS.

Table 6-1. Common Construction Site Authorized Non-Stormwater Sources, Potential Pollutants, and Water Quality Indicator Constituents

Authorized Stormwater Source	Potential Pollutants	Water Quality Indicator Constituent
Conditionally exempt discharges including:		
Water line and fire hydrant testing	Chlorinated water Suspended solids	Residual chlorine Turbidity
Irrigation	Chlorinated water Suspended solids Fertilizers Soil Amendments and Stabilization Products □ Gypsum □ Polymer/Copolymer □ Lignin Sulfonate □ Psyllium □ Guar/Plant Gums	Residual chlorine Turbidity PO_4, TKN, **NO_3**, TOC, COD □ pH, Ca, **SO_4**, Al, Br, Mn, V □ **TKN**, NO3, BOD, COD, DOC, SO4, Ni □ Alkalinity, **TDS** □ COD, **TOC** □ COD, **TOC**, Ni
Landscape irrigation	Chlorinated water Suspended solids Landscaping amendments □ Pesticides/ Herbicides □ Fertilizers □ Lime □ Aluminum sulfate, sulfur□ Other	Residual chlorine Turbidity □ Contaminant specific □ PO_4, TKN, **NO_3**, TOC, COD □ **pH**, alkalinity □ Al, **TDS**, SO_4
Uncontaminated groundwater dewatering	Suspended solids	Turbidity
Caltrans Statewide National Pollutant Discharge Elimination System Permit authorized discharges (exempted discharges): Flows from riparian habitats or wetlands, diverted stream flows, springs, rising groundwaters, and uncontaminated groundwater infiltration.	Suspended solids Naturally occuring acids	Turbidity pH

Notes:
Bolded water quality indicator indicates lowest analysis cost or best indicator. However, the composition of the specific chemical, if known, is the first criterion for selecting which analysis to use.

Al = aluminum
BOD = biochemical oxygen demand
BR = bromine
Ca = calcium
COD = chemical oxygen demand
DOC = dissolved organic carbon
Mn = manganese
Ni = nickel
NO_3 = nitrate
PO_4 = phosphate
SO_4 = sulfate
TDS = total dissolved solids
TKN = total Kjeldahl
TOC = total organic carbon
V= vanadium

Table 6-2. Common Construction Site Unauthorized Stormwater Sources, Potential Pollutants, and Water Quality Indicator Constituents

Unauthorized Non-Stormwater Source	Potential Pollutants	Water Quality Indicator Constituent
Vehicle and equipment wash water	Hydrocarbons and other organic compounds	**TOC**, VOCs, SVOCs
	Oils and greases	TOC
	Nutrients	Nitrate
	Trisodium phosphate or other phosphate-containing detergents	Phosphate
	Metals	Al, Cu, Fe, Pb, Ni, Zn
	Suspended solids	Turbidity
Batteries	Metals, acids	Pb, **pH**
Concrete washout water	Suspended solids	Turbidity
	Concrete	pH
Slurries from concrete cutting and coring operations, Portland cement concrete grinding or asphalt concrete grinding operations	Suspended solids	Turbidity
	Concrete	pH
	Hydrocarbons (gasoline, oil, grease, lubricants)	TOC, SVOCs
Slurries from concrete or mortar mixing operations	Masonry products	**pH**, alkalinity
	Sealant (MMA)	**Methyl Methacrylate**
	Ash, slag, sand, waste	**Al, Ca, V, Zn**
	Curing compounds	**pH**, VOC, SVOC
Blast residue from high-pressure washing of structures or surfaces	Suspended solids	Turbidity
	Masonry products	**pH**, alkalinity
	Metals	Al, Cu, Fe, Pb, Ni, Zn
		TOC, SVOCs
Wash water from cleaning painting equipment	Resins	**COD**, SVOCs
	Thinners	VOCs, **COD**
	Paint Strippers	**VOCs**, SVOCs
	Solvents	**COD**, VOCs, SVOCs
Wash water from cleaning painting equipment (cont)	Lacquers, varnish, enamels, turpentine	**COD**, VOCs, SVOCs
	Sealants	**COD**
Runoff from dust control applications of water or dust palliatives	Salts	Chloride, **TDS**, cations (Ca, Mg, Na, K)
Sanitary and septic wastes	Bacteria, disinfectants	Total/fecal coliform, disinfectant (chemical specific)
Chemical leaks and/or spills of any kind including but not limited to petroleum, paints, cure compounds, etc.	Chemical specific	Chemical specific

Table 6-2. Continued

Notes:

Bolded water quality indicator indicates lowest analysis cost or best indicator. However, the composition of the specific chemical, if known, is the first criterion for selecting which analysis to use.

Al = aluminum
Ca = calcium
Cu = copper
COD = chemical oxygen demand
Fe = iron
K = potassium
Mg = magnesium
MMA = methyl methacryl
Na = sodium
Ni = nickel
Pb = lead
SVOC = semi-volatile organic compound
TDS = total dissolved solids
TOC = total organic carbon
V = vanadium
VOC = volatile organic compound
Zn = zinc

6.3 Where to Monitor

Samples must be collected from all discharge locations that can be safely accessed where non-stormwater runoff is discharged off site. Discharge location(s) are the sites where the construction site runoff flows off site, whether to a municipal separate storm sewer system or receiving water body. Discharge locations could include catch basin inlets, sheet flow, culverts, or outfalls. Project discharge locations are identified in the project-specific SWPPP. See Section 4.2 for monitoring location selection guidelines.

6.4 How to Monitor

Manual grab sampling techniques will be used to collect samples. See Section 4.6.4 for detailed information on grab sample collection and analysis. Table 4-1 specifies sample collection and analysis methods for typical non-stormwater pollutants. See Table 4-2 for details on field testing for pH and turbidity.

6.5 Data Evaluation and Follow-up, Reporting

6.5.1 Data Evaluation

Once pH and turbidity sampling and analysis are completed, the daily average (arithmetic mean) of sample results from each sampled discharge point are compared to NALs and, for Risk Level 3 sites, to NELs (see Table 4-2). See Section 4.12.1 for information on calculating daily averages.

Results for monitoring of other constituents are also compared to other standards as required by RWQCB, such as total maximum daily load (TMDL) waste load allocations (if specifically required by RWQCB). In the event a parameter exceeds TMDL Waste

Load Allocation or other standard designated by RWQCB, follow RWQCB-required reporting instructions.

For dewatering discharges, Caltrans requires the turbidity of any sample must not exceed 200 NTU. The pH value of any sample must be within the range of 6.7 to 8.3 pH units. Corrective measures must be implemented if sample results exceed either of these values (See Section 6.5.4 for additional information on implementing corrective measures).

6.5.2 Monitoring and Reporting Run-on

Run-on from surrounding areas must be monitored and reported if there is reason to believe run-on may contribute to an exceedance of NALs or NELs. See Section 4.12.3 for additional information.

6.5.3 Assessing the Need for Corrective Measures

Sample results are compared to NALs, and to NELs (for Risk Level 3 sites), as designated in Table 4-2. Corrective measures are required for unauthorized non-stormwater discharges and for NAL or NEL exceedances of either authorized or unauthorized non-stormwater discharges.

6.5.4 Implementing Corrective Measures

If an NAL or NEL exceedance occurs, the project site should be evaluated in an effort to determine the cause or source of the exceedance. See Section 4.12.4 for additional information.

If an unauthorized non-stormwater discharge occurs, corrective measures must be taken to eliminate the unauthorized non-stormwater discharge and to reduce or prevent pollutants from contacting non-stormwater discharges. Corrective actions to prevent pollutants from contacting non-stormwater discharges may include:

- Removing the pollutant source by removing impacted soil, cleaning pavement, applying absorbent materials, then removing and disposing of absorbed materials.
- Covering the pollutant source with methods such as tarps.
- Containing the pollutant source by implementing double containment, such as surrounding the source with an impermeable berm.

If the source of the exceedance is run-on to the construction site, the levels of pH, turbidity, and SSC (if turbidity NEL is exceeded) from run-on samples should be

evaluated. High levels in run-on samples will indicate that sources outside of the construction site may be contributing to the measured pH level or sediment load. Identification of adjacent landowner discharges and implementation of other BMP measures should be the first steps taken to remove pollutants from run-on or eliminate unauthorized discharges from run-on.

6.5.5 Reporting

For non-stormwater discharge monitoring, complete the following forms and submit to the RE as detailed in Section 11:

- CEM-2050 Sample Information, Identification, and Chain-of-Custody Record
- CEM-2051 Stormwater Sampling and Testing Activity Log
- CEM-2052 Stormwater Sample Field Test Report form
- CEM-2054 Stormwater Sample Laboratory Test Report form (if required)
- CEM-2056 Stormwater Turbidity Meter Calibration Record
- CEM-2057 Stormwater pH Meter Calibration Record
- CEM-2058 Stormwater Meter Calibration Record (if required)
- CEM-2061 Notice of Discharge Report form (if required)
- CEM-2062 NAL Exceedance Report form (if required)
- CEM-2063 NEL Violation Report form (if required)

The RE must be notified of sample testing results and discharges per the Caltrans specifications. See Section 11 for detailed information on reporting and recordkeeping requirements.

7.0 STORMWATER DISCHARGE (PH AND TURBIDITY) MONITORING

7.1 Permit Requirements

For all Risk Level 2 and 3 projects, stormwater discharge (effluent) monitoring must be performed to characterize discharges associated with construction activity from the entire project disturbed area during qualifying rain events. Effluent samples must be collected from representative discharge points (defined below in Section 7.3) where stormwater is discharged off site, and tested on site for pH and turbidity.

7.2 What and When to Monitor

A minimum of three effluent samples must be collected from each representative discharge point (defined in Section 7.3) daily during qualifying rain events. The "qualifying rain event" is a single storm that produces at least 0.5 inch of rainfall. A qualifying rain event may occur over multiple days. A rain event is considered to have ended when no more than 0.125-inch of rainfall is recorded within a consecutive 48-hour period. Weather tracking must be conducted in advance to determine if a rain event is forecasted to produce 0.5 inch or more of precipitation. A precipitation forecast can be obtained online at:
http://www.weather.gov/forecasts/graphical/sectors/pacsouthwest.php?element=Wx

Additional information on weather tracking is provided in Section 4.4.1. Rain gauge reading must be made before, during, and after storm events from an on-site rain gauge. See Section 4.5 for additional information on rain gauge readings.

The Caltrans stormwater site inspector and Contractor inspector must coordinate activities to select the sampling locations and schedule the time to meet for collection of simultaneous samples for QA/QC purposes.

A minimum of three effluent samples must be collected from each representative discharge point (defined in Section 7.3) each day during a storm event forecasted to be a qualifying rain event, even if the storm event has not yet produced 0.5 inch of rain on the day of sampling. Sampling should start immediately after the flow begins or as soon as possible thereafter. It is preferable that the three rounds of sampling are done over the first three hours of the flow; however, depending on the time of day or other dictating

conditions in the field, the three rounds of sampling could be done over a shorter period of time to ensure that three samples are collected daily per location.

Samples are to be collected during project working hours from representative discharge points. Discharges from a project site can occur anytime during a rain event, but may not occur for some time after the start of the rainfall. Therefore, the site will need to be monitored throughout the day when rain is falling. Sample collection should not be performed during dangerous weather conditions, such as flooding and electrical storms. For sites with stored or contained stormwater (accumulated stormwater) that may discharge after operating hours, samples should be collected prior to the discharge during working hours as a contingency. During discharge of accumulated stormwater, monitoring must be performed daily when discharging. A minimum of three samples per day must be collected and analyzed for pH, turbidity, and residual additives, if any additives are used. The appropriate number and type of QA/QC samples also must be collected (see Section 4.9).

Samples must be analyzed for pH and turbidity.

For Risk Level 3 sites that exceed the turbidity daily average NEL, samples must also be analyzed for SSC.

For Risk Level 3 sites that exceed an NEL and for which stormwater has direct discharge into a receiving water, the receiving water also must be subsequently monitored for pH, turbidity, SSC (if turbidity daily average exceeds NEL), and any additional parameters for which monitoring is required by RWQCB, for the duration of coverage under the CGP. See Section 10 for further information on receiving water monitoring.

Analysis must be performed according to the test methods, detections limits, and reporting units specified in Table 4-2.

Risk Level 3 projects that disturb 30 acres or more and directly discharge stormwater into a designated impaired receiving water body must also conduct a bioassessment of receiving waters. Caltrans will conduct pre-project and post-project construction bioassessments when required. “Designated impaired receiving waters” requiring bioassessment are defined as freshwater wadeable streams that are either:

- Listed by SWRCB or EPA as impaired due to sediment, and/or are a tributary to any downstream water body that is listed for sediment; and/or
- Have the beneficial uses SPAWN, COLD, and MIGRATORY.

7.3 Where to Monitor

Samples must be collected from representative discharge points as defined below. Discharge point(s) are the sites where the construction site's stormwater flows off site, whether to a municipal separate storm sewer system or receiving water body. Discharge points could include catch basin inlets, sheet flow, culverts, or outfalls. For sites with stored or contained stormwater, samples must be collected from discharges of stored or contained stormwater subsequent to a qualifying rain event. A project's discharge points are identified in its SWPPP Section 700. Stormwater discharge locations are shown on the WPCDs attached to the project SWPPP.

Monitoring for stormwater effluent at Caltrans project sites must be conducted from representative locations[1], selected to characterize discharges associated with the construction activity from the entire project site. Selection of sampling locations, therefore, must be based on knowledge of the features or conditions of the construction site and existing construction activities.

Representative sampling for a Caltrans project is based on sampling 20 percent of the project discharge points per qualifying rain event. If 20 percent of the total discharge locations results in less than five locations to be sampled, then a minimum of five (5) locations (or all discharge points if less than five) must be sampled per qualifying rain

[1] The CGP in Section I.5.a of Attachment D and E requires that sampling and analysis of stormwater discharges be performed "to characterize discharges associated with construction activity from the entire project disturbed area". Section I.5.b of CGP Attachment D and E further defines that effluent samples must be collected at "all discharge points where stormwater is discharged off site." However, Section I.5.c of Attachment D and E states that "stormwater discharge collected and observed must represent the effluent in each drainage area based on visual observation of the water and upstream conditions." An example is provided in a footnote stating that, if there has been concrete work recently in an area, or drywall scrap is exposed to the rain, a pH sample shall be taken of drainage from the relevant work area. Similarly, if sediment-laden water is flowing through parts of a silt fence, samples shall be taken of the sediment-laden water even if most water flowing through the fence is clear. This example infers that all discharge points, such as those through a silt fence, should not be sampled, but those that are representative of certain conditions must be sampled. This implies that samples do not have to be collected from all discharge points but only those representative of effluent in each drainage area. Caltrans has determined that when considering all these separate requirements together, sampling will be performed of selected discharge points that are representative of all discharges associated with construction activity from the entire project disturbed area, considering visual observations of the water and upstream conditions. Representative discharge sampling is considered to meet permit requirements with limited personnel, time, and financial resources. In addition, because a typical Caltrans highway construction project is linear in nature with many discharges points, sampling every discharge point at these sites would not be feasible within a single work day. Therefore, representative sampling prioritizes the discharge points so that the highest priority or key discharge points can be sampled during the precipitation event. The goal of the representative location discharge sampling is to efficiently use all of the resources, information, and expertise available so that the data collected meets the permit requirement for characterization of discharges associated with construction activities.

event. Although the default is to sample 20 percent with a minimum of five locations, samples from additional locations should be collected if the rain event and working hours allow.

The WPC Manager selects representative monitoring points to be sampled based on a project's site conditions and in-progress construction activities. Representative monitoring points must be selected from the following categories, as applicable:

- Discharge points from drainage areas with the highest percentages of disturbed soil areas.
- Discharge points from drainage areas where construction activities in progress could have an impact on stormwater run-off pH.
- At least one monitoring point from drainage areas where the disturbed soil areas have been stabilized.

If construction activity has not started within the drainage area at a monitoring location, and there is no disturbed soil within a drainage area, monitoring from the stormwater discharge point from that drainage area is not required. The monitoring locations are selected by the WPC Manager for every forecasted qualifying rain event using the Qualifying Rain Event Sampling and Analysis Plan (CEM-2049) form and included on the REAP for the storm event.

If turbidity test results from the selected monitoring locations exceed 200 NTU or pH test results are outside the range of 6.5-8.5, the WPC Manager will select additional monitoring locations for the next monitoring event. The additional monitoring locations will include another 30 percent of the project discharge locations so that 50 percent of all discharge locations will be sampled and tested. The additional locations will be selected based on drainage areas with the highest percentages of disturbed soil area.

If the average value of the turbidity test results for a monitoring event from any selected location exceeds 250 NTU or pH test results are outside the range of 6.2-8.8, all stormwater discharge locations must be sampled and tested during the next qualifying rain event.

The WPC Manager determines the exact monitoring locations using the Qualifying Rain Event Sampling and Analysis Plan (CEM-2049) form. The Qualifying Rain Event Sampling and Analysis Plan includes a list of sampling locations for monitoring a forecasted qualifying rain event. The sampling locations should be arranged in the following order on the list: starting with the sampling location on the north-west corner of

the WPCDs as the first entry, move clockwise or counterclockwise on the WPCDs and enter all the sampling locations on the list. If an alternative sampling location order is used (e.g., monitoring priority locations first at a small project site or flow began in another area of the site), the rationale must be documented in the Qualifying Rain Event Sampling and Analysis Plan (CEM-2049) form. The individual responsible for collecting samples must begin monitoring starting with the first monitoring location identified on the list and move on to the next until all locations are sampled.

Receiving waters also must be monitored upstream and downstream of the construction site's discharge point in the receiving water for Risk Level 3 sites that exceed an NEL, when stormwater has direct discharge into receiving waters. See Section 10 for additional information on receiving water monitoring.

7.4 How to Monitor

Manual grab sampling techniques will be used to collect samples. See Section 4.6.4 for detailed information on grab sample collection and analysis for pH and turbidity. Samples must be collected such that they are representative of the flow and characteristics of the discharge. The sampled stormwater discharge should represent the effluent in each drainage area, based on visual observation of the water and upstream conditions.

7.5 Rain Gauge Readings

Rain gauge readings must be made from the on-site rain gauge before, during, and after storm events, and the event rainfall total must be computed for comparison to the Qualifying Storm (greater than or equal to 0.5 inch event total) and the Compliance Storm Event criteria (see Section 7.6.1). Refer to the manufacturer's instructions for operation of the rain gauge installed on site.

For verification purposes the CGP also requires recording of rain gauge readings from a nearby government-operated rain gauge. These gauges may be operated by local, regional, state, or national agencies, such as county flood control districts or the NWS. See NWS' website at http://www.wrh.noaa.gov/.

7.6 Data Evaluation and Follow-up, Reporting

7.6.1 Data Evaluation

Once pH and turbidity sampling and analysis are completed, the daily average (arithmetic mean) of the sample results from each representative discharge point is calculated and compared to NALs and, for Risk Level 3 sites, to NELs (see Table 4-2). See Section 4.12.1 for information on calculating daily averages. When specifically required by a RWQCB, results must also be compared to TMDL and/or Waste Load Allocations. In the event a parameter exceeds TMDL and/or Waste Load Allocations, follow RWQCB-required reporting instructions.

For accumulated stormwater discharges (e.g., stormwater held in a holding pond), Caltrans requires that the turbidity of any effluent sample must not exceed 200 NTU. The pH value of any effluent sample must be within the range of 6.7 to 8.3 pH units. Corrective measures must be implemented if turbidity or pH sample results exceed these limits (See Section 7.6.4 for additional information on implementing corrective measures).

The event rainfall total computed from the on-site rain gauge must be compared to the Qualifying Rain Event (greater than or equal to 0.5 inch event total) and the Compliance Storm Event criteria. Comparing the rain gauge reading to the qualifying storm event criteria will determine if the rainfall event was a qualifying rain event during which effluent monitoring is required. Comparing the rain gauge reading to the Compliance Storm Event criteria will determine if the storm event exceeds the Compliance Storm Event. For Risk Level 3 projects, compliance with NELs is required unless an NEL exceedance occurs during a storm event that is equal or greater than a Compliance Storm Event.

The Compliance Storm Event for Risk Level 3 discharges is the 5-year, 24-hour storm event (expressed in inches of rainfall), as determined using maps found at the following locations:

- Isopluvials of 5-year 24-hour precipitation for the northern half of California in tenths of an inch (divide number on map by 10 to get inches) are available at: http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif
- Isopluvials of 5-year, 24-hour precipitation for the southern half of California in tenths of an inch (divide number on map by 10 to get inches) are available found at: http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif

Compliance storm event verification must be done by reporting the on-site rain gauge readings, with verification from nearby governmental rain gauge readings. See Section 11.2 for reporting of rainfall event totals to document the Compliance Storm Event for cases where there is an exceedance of an NEL at Risk Level 3 sites.

7.6.2 Monitoring and Reporting Run-on

Run-on from surrounding areas must be monitored and reported if there is reason to believe run-on may contribute to an exceedance of NALs or NELs. See Section 4.12.3 for additional information.

7.6.3 Assessing the Need for Corrective Measures

Sample results are compared to NALs for Risk Level 2 and 3 sites and to NELs for Risk Level 3 sites, as defined in Table 4-2. If stormwater discharges exceed an NAL or NEL, the source needs to be identified and corrective measures implemented. See Section 4.12.4 for additional information.

7.6.4 Implementing Corrective Measures

If the project site or run-on is found to be contributing to an NAL or NEL exceedance, the following steps should be taken as soon as possible:

1. Repair or replace any BMP that has failed, resulting in a discharge and/or elevated levels of pH or turbidity in the runoff.

2. Improve maintenance at all BMPs that did not function as designed, resulting in a discharge and/or elevated levels of pH or turbidity in the runoff.

3. Implement BMPs in areas identified as generating discharges or sources of elevated pH or turbidity.

4. Implement additional, alternative, or redesigned BMPs to provide an effective combination of control measures on the site.

5. Identify the source of run-on resulting in a discharge and/or elevated levels of pH or turbidity in project site runoff.

7.6.5 Reporting

Complete the following forms and submit to the RE as detailed in Section 11:

Prior to storm event or monitoring:

- CEM-2045 Rain Event Action Plan Highway Construction Phase form (if required), or

  CEM-2046 Rain Event Action Plan Plant Establishment Phase form (if required), or

  CEM-2047 Rain Event Action Plan Inactive Project form (if required)
- CEM-2049 Qualifying Rain Event Sampling and Analysis Plan
- CEM-2055 Stormwater Equipment Maintenance Log form
- CEM-2056 Stormwater Turbidity Meter Calibration Record
- CEM-2057 Stormwater pH Meter Calibration Record
- CEM-2058 Stormwater Meter Calibration Record (if required)

During or after monitoring:

- CEM-2050 Sample Information, Identification and Chain-of-Custody Record (if applicable)
- CEM-2051 Stormwater Sampling and Testing Activity Log
- CEM-2052 Stormwater Sample Field Test Report form, and
- CEM-2054 Stormwater Sample Laboratory Test Report form (if applicable)
- CEM-2061 Notice of Discharge Report form (if required)
- CEM-2062 NAL Exceedance Report form (if required)
- CEM-2063 NEL Violation Report form (if required)

See Section 11 for detailed information on reporting and recordkeeping requirements.

8.0 RWQCB-REQUIRED MONITORING

8.1 Permit Requirements

RWQCBs enforce the CGP and retain discretionary authority over certain issues that may arise from the discharges in their respective regions. RWQCB may issue orders (including NPDES permits) with additional monitoring and sampling requirements. The orders could regulate stormwater discharges, non-stormwater discharges (i.e., dewatering), receiving water monitoring, etc.

The CGP does not apply to discharges of stormwater within the Lake Tahoe Hydrologic Unit. The Lahontan RWQCB has adopted its own permit to regulate stormwater discharges from construction activity in the Lake Tahoe Hydrologic Unit (RWQCB 6SLT; Caltrans Districts 3 and 10). Owners of construction projects in this watershed must apply for the Lahontan RWQCB permit rather than the statewide CGP. Construction projects within the Lahontan region must also comply with the Lahontan Region Project Guideline for Erosion Control (R6T-2005-0007 Section), details of which are available online at:
http://www.swrcb.ca.gov/rwqcb6/board_decisions/adopted_orders/2005/docs/r6t_2005_0007.pdf

Lahontan RWQCB Order No. R6T-2005-007, NPDES No. CAG616002 requires analysis of stormwater discharge samples in the Lake Tahoe region for settable solids, turbidity, and non-visually detected pollutants. The Order establishes NELs for total nitrogen, total phosphorus, total iron, turbidity, and oil and grease.

TMDLs and Waste Load Allocations. Projects located within the watershed of a Clean Water Act (CWA) § 303(d) impaired water body, for which a TMDL for suspended sediment has been adopted by the State of California and approved by EPA, must comply with the approved TMDL if "construction activity" or land disturbance is identified as a source of sediment. If so, the TMDL may include a specific waste load allocation for this activity/source. The TMDL Implementation Plan may require additional BMPs, additional monitoring activities, and/or compliance with an applicable waste load allocation and implementation schedule. If a specific waste load allocation has been established that would apply to a specific discharge, RWQCB may adopt an order requiring specific implementation actions necessary to meet that allocation. In the instance where an approved TMDL has specified a general waste load allocation for construction stormwater discharges, but no specific requirements for construction sites

have been identified in the TMDL, RWQCB must be consulted to confirm that adherence to a SWPPP that meets the requirements of the CGP will be consistent with the approved TMDL.

8.2 What and When to Monitor

Specific requirements for monitoring will be included in a RWQCB Order or TMDL Implementation Plan. For example, North Coast RWQCB (Region 1) has previously issued CWA §401 Water Quality Certifications to Caltrans projects requiring monitoring for pH, turbidity, temperature, dissolved oxygen, specific conductance, and total dissolved solids.

Sample collection and analysis protocols must conform to the test methods, detections limits, and reporting units specified in Tables 4-1 and 4-2, unless other methods are specified by RWQCB.

8.3 Where to Monitor

Monitoring locations will be based on the specific requirements of an order issued by RWQCB, or requirements specified in a TMDL Implementation Plan. If monitoring locations are not specified, see Section 10 for receiving water monitoring.

8.4 How to Monitor

Monitoring methods will be based on the specific requirements of a RWQCB-issued order, or requirements specified in a TMDL Implementation Plan. However, typically manual grab sampling techniques will be used to collect samples. Grab sample collection is described in Section 4.6.4. For receiving water sampling, see Section 10.

8.5 Data Evaluation and Follow-up, Reporting

Data evaluation, follow-up, and reporting will be based on the RWQCB-issued order and the type of discharge. For typical data evaluation requirements, see Section 5 for non-visual pollutants, Section 6 for non-stormwater discharges, Section 7 for information for stormwater discharges (pH and Turbidity), Section 9 for ATS discharges, and Section 10 for receiving waters.

Projects located within the watershed of a CWA 303(d) impaired water body, with an approved TMDL from EPA, must comply with the approved TMDL if it identifies

"construction activity" or land disturbance as a source of the pollution. The website links to watersheds with TMDLs and the list of 303(d) water bodies is provided below.

Watersheds with TMDLs:
http://www.swrcb.ca.gov/water_issues/programs/tmdl/

CWA § 303(d)-listed Water Bodies:
http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Complete the following forms and submit to that RE as detailed in Section 11:

Prior to storm event or sampling:

- CEM-2045 Rain Event Action Plan Highway Construction Phase form (if required), or

  CEM-2046 Rain Event Action Plan Plant Establishment Phase form (if required), or

  CEM-2047 Rain Event Action Plan Inactive Project form (if required)
- CEM-2049 Qualifying Rain Event Sampling and Analysis Plan
- CEM-2055 Stormwater Equipment Maintenance Log form
- CEM-2056 Stormwater Turbidity Meter Calibration Record
- CEM-2057 Stormwater pH Meter Calibration Record
- CEM-2058 Stormwater Meter Calibration Record (if required)

During or after sampling:

- CEM-2050 Sample Information, Identification, and Chain-of-Custody Record
- CEM-2051 Stormwater Sampling and Testing Activity Log
- CEM-2052 Stormwater Sample Field Test Report form, and/or CEM-2054 Stormwater Sample Laboratory Test Report form
- CEM-2061 Notice of Discharge Report form (if required)
- CEM-2062 NAL Exceedance Report form (if required)
- CEM-2063 NEL Violation Report form (if required)

See Section 11 for detailed information on reporting and recordkeeping requirements.

9.0 ACTIVE TREATMENT SYSTEM CALTRANS MONITORING PROTOCOLS

9.1 Active Treatment System Overview

The use of an ATS may be necessary on construction sites where traditional erosion and sediment controls do not effectively control accelerated erosion, or under circumstances where stormwater discharges leaving the site may cause or contribute to an exceedance of a receiving water quality standard. An ATS is a treatment system that employs chemical coagulation, chemical flocculation, or electrocoagulation to reduce turbidity caused by fine suspended sediment. Additionally, it may be appropriate to use an ATS when site constraints prohibit the construction of a correctly-sized sediment basin, when clay and/or highly erosive soils are present, or when the site has very steep or long slope lengths.

An ATS is operated in one of two modes, either batch or flow-through. In batch treatment, water is held in a basin or tank, and is not discharged until treatment is complete. In flow-through treatment, water is pumped into the ATS directly from the runoff collection system or stormwater holding pond, where it is treated and filtered as it flows through the system, and is then continuously discharged.

The CGP requires visual monitoring, operational and (effluent) compliance monitoring, and, for an ATS operating in batch mode, toxicity monitoring. Guidance to perform the CGP-required monitoring is provided in Appendix D. This section presents only additional Caltrans-required monitoring, beyond what is required by the CGP. This monitoring of the ATS is to provide QA and independent verification by Caltrans, to ensure that the ATS instrumentation, which automatically measures and records effluent water quality data, is working properly.

9.2 What and When to Monitor

When an ATS is discharging water from the project site, effluent grab samples must be collected and analyzed for pH, turbidity, and residual chemical/additive on a daily basis. Collect a minimum of three effluent grab samples per day and test for pH and turbidity using a handheld meter to verify the continuous pH and turbidity monitoring.

If continuous residual chemical/additive monitoring is occurring (i.e., when a continuous monitoring probe is available for the specific chemical or additive), collect one sample within 1 hour after startup, and one sample at least once during every 8 hours of

operation thereafter, and test for the residual chemical/additive to verify the accuracy of the continuous residual chemical/additive monitoring. Caltrans stormwater site inspector will collect 1 residual chemical sample for every 10 samples collected by the Contractor, and analyze those samples for QA/QC purposes.

The residual chemical test method must have a method detection limit of 10 percent or less than the maximum allowable threshold concentration for the specific coagulant and for the most sensitive species. The residual chemical test method must be capable of producing a result within one hour of sampling. In addition, a California state-certified laboratory must validate the selected residual chemical test. Specifically, the lab must review the test protocol, test parameters, and the detection limit for the specific chemical. This documentation must be electronically submitted as part of the ATS Plan described in Appendix D.

The Caltrans stormwater site inspector and Contractor inspector must coordinate activities to schedule the time to meet for collection of simultaneous samples for QA/QC purposes. The Contractor must notify the RE at least 24 hours prior to potential ATS sampling events.

9.3 Where to Monitor

The effluent samples must be collected from the discharge pipe or another location representative of the nature of the discharge.

9.4 How to Monitor

The required grab samples must be collected from the outlet pipe such that they are representative of the flow and characteristics of the discharge. Grab sampling techniques are described in detail in Section 4.6.4.

9.5 Data Evaluation and Follow-up, Reporting

9.5.1 Data Evaluation

Results of effluent testing for pH, turbidity, and residual coagulant/flocculant chemical levels (for ATS in flow-through mode) are compared to the daily recorded water quality test results from the ATS Operator to determine if further action is required. To identify substantial differences between the monitoring test results and the ATS Operator's daily recorded test results, the RPD between the data sets is calculated. See Section 4.12.2 for detailed information on calculating RPD.

9.5.2 Assessing the Need for Corrective Measures

If the RPD of the monitoring test results and the ATS daily recorded test results are greater than 25 percent, then the WPC Manager or other personnel must evaluate possible causes of the discrepancy and determine the probable cause for the non-verification.

9.5.3 Implementing Corrective Measures

Corrective actions must be implemented as soon as possible. The WPC Manager should compare test results, sample collection methods and timing, and testing methods with the ATS Operator, and discuss potential corrective measures with the ATS Operator.

Additional BMPs may be needed on site so that flow receives additional treatment prior to the ATS.

9.5.4 Reporting

An evaluation of the ATS water quality sample analytical results must be submitted to the RE within five days of the ATS sampling event.

Complete the following forms and submit to RE as detailed in Section 11:

Prior to ATS sampling:

- CEM-2055 Stormwater Equipment Maintenance Log form
- CEM-2056 Stormwater Turbidity Meter Calibration Record
- CEM-2057 Stormwater pH Meter Calibration Record
- CEM-2058 Stormwater Meter Calibration Record (if required)

During or after sampling:

- CEM-2050 Sample Information, Identification and Chain-of-Custody Record
- CEM-2051 Stormwater Sampling and Testing Activity Log
- CEM-2052 Stormwater Sample Field Test Report form, and/or
- CEM-2054 Stormwater Sample Laboratory Test Report form
- CEM-2061 Notice of Discharge Report form (if required)
- CEM-2063 Numeric Effluent Limitation Violation Report form (if required)

See Section 11 for detailed information on reporting and recordkeeping requirements.

10.0 RECEIVING WATER MONITORING

10.1 Permit Requirements

Receiving water monitoring is required by the CGP for all Risk Level 3 projects that violate an NEL and have direct discharge into receiving waters (also referred to as "waters of the state"). A receiving water is a water body, such as a creek, river, lake, ocean, or other water course into which stormwater is discharged. Stormwater runoff from the construction site is not considered a direct discharge to a receiving water if it first flows through a MS4 or a separate stormwater conveyance system where there is co-mingling of site stormwater with off-site (non-Caltrans) sources. Upon violation of an NEL, for Risk Level 3 project sites, the receiving waters must be subsequently monitored for pH, turbidity, SSC (if turbidity daily average exceeds NEL) for the duration of the project's coverage under the CGP.

For Risk Level 2 and Risk Level 3 projects, Caltrans requires receiving water monitoring where stormwater discharges cannot be sampled prior to a direct discharge to receiving water. The CGP allows RWQCBs the authority to require additional monitoring and reporting program requirements, including sampling and analysis of discharges to sediment-impaired water bodies; see Section 8 for RWQCB requirements.

10.2 What and When to Monitor

When a project discharge locations is found to violate an NEL in a discharge (effluent) sample, receiving water samples must be collected and analyzed for pH, turbidity, SSC (if turbidity daily average exceeds NEL) for the duration of coverage under the CGP. Analysis must be performed according to the test methods, RLs, and reporting units specified in Table 4-2.

For Risk Level 2 and Risk Level 3 projects where stormwater discharges cannot be sampled prior to a direct discharge to receiving water, Caltrans requires water samples to be collected and analyzed for pH and turbidity. Analysis must be performed according to the test methods, RLs, and reporting units specified in Table 4-2.

For any additional receiving water monitoring required by RWQCB[1], conduct monitoring as specified by RWQCB-issued order or TMDL Implementation Plan. Analysis must be performed according to the test methods, RLs, and reporting units specified in Table 4-4, unless otherwise specified in a RWQCB- issued order.

Suspended solids and turbidity levels are highly variable in receiving water bodies, especially during wet-weather events. Collecting a single sample at the upstream and downstream locations during a discharge event may not provide a set of samples that represent the typical conditions at either location. Therefore, a minimum of three samples should be collected daily during qualifying rain events.

Receiving water samples should be collected following collection of stormwater discharge samples (daily during qualifying rain events; see Section 7), assuring that receiving water monitoring occurs after the project site's stormwater begins to discharge into the receiving water. Sample collection should be conducted only during scheduled project working hours. Sample collection should not be performed during dangerous weather conditions, such as flooding and electrical storms, or when site conditions are unsafe.

10.3 Where to Monitor

Both upstream and downstream samples from a discharge location must be collected. If two or more discharge locations discharge to the same receiving water, the receiving water may be sampled at a single upstream and downstream location.

- **Upstream/Up-gradient receiving water samples:** Samples must be collected from a representative and accessible receiving water location as close as possible and upstream from the effluent discharge point.
- **Downstream/Down-gradient receiving water samples:** Samples must be obtained from a representative and accessible receiving water location downstream from the effluent discharge point. The receiving water sampling location must be as close as possible to the effluent discharge point, but also where the discharge is fully mixed with the receiving water stream.

[1] For example, the North Coast Regional Water Quality Control Board (Region 1) has issued multiple 401 Water Quality Certifications for Caltrans projects requiring effluent, upstream (background), and downstream monitoring four times daily for flow, pH, temperature, dissolved oxygen, total dissolved solids, turbidity, and specific conductance.

The upstream location is required to establish the water quality of the receiving water prior to coming in contact with the discharges from the construction site. The downstream location is required to establish the water quality of the receiving water after coming in contact with the discharges.

Upstream and downstream receiving water sampling may take place on a variety of water bodies, including rivers and creeks, lakes, or tidally-influenced bays, estuaries, and sloughs. Each type of water body will have a unique pair of upstream/downstream sampling points.

10.3.1 Rivers and Creeks

Establishing upstream and downstream monitoring locations on rivers and creeks is relatively straightforward, because the flow typically occurs in the downstream direction. Exceptions include tidally influenced or flow-controlled rivers and creeks; for such situations, see discussion of bays, estuaries and sloughs in Section 10.3.3.

The upstream sampling location should be established at a point along the stream bank that is upstream of all possible direct discharge points from the construction site. The actual samples should be collected in or as near as possible to the main stream flow/current. If the discharge creates a visible plume in the river or creek, avoid collecting a sample near this plume.

The downstream sampling location should be established along the stream bank downstream of all direct discharge points from the construction site. Inspect the stream bank (and opposite stream bank if possible) for discharge points from other sites or sources that could add pollutants to the downstream sampling location, and avoid locating downstream sampling locations where they may be affected by other discharges. If possible, the location should be far enough downstream so the project discharge(s) has mixed with the upstream flows, but not so far downstream that other discharges may affect stream quality. Avoid establishing the sampling location near the point of discharge or in the initial zone of dilution (within 5 meters or 20 feet). Establishing the sampling point at least 15 meters (50 feet) downstream from the discharge is a good general rule.

Be prepared to change locations for each event. The actual downstream sampling location will depend on the size of the plume and most likely vary for each event. The size of the plume will depend on the upstream flow rate and associated sediment load as well as the

discharge flow rate and associated sediment load. Section 10.4 includes further details of the sample collection process.

10.3.2 Lakes

Establishing upstream and downstream stations along lakes presents a challenge because there is no consistent flow direction, and often there is no discernable flow pattern. Wind direction usually dictates the direction of flow, if any. Sampling personnel should expect to identify both the upstream and downstream locations during each individual sampling event.

The upstream sampling location should be established well away from any discharge point. Wave action may stir up sediments near the shore, so samples should be collected out from the shore and away from any visual plume.

The downstream sampling location should be established based on the direction the plume travels. Samples should be collected at the point closest to the discharge where the plume has mixed with the surrounding water, but before the plume commingles with another discharge or with sediment stirred up by the action of waves. If the plume heads out from shore, sampling may have to be performed from a boat.

10.3.3 Bays, Estuaries, and Sloughs (Tidally-Influenced Waters)

For bays, estuaries, and sloughs, the flow direction is dictated by tides and/or wind. The direction of the flow typically will change throughout the day as the tide flows in and out. Sampling personnel should consult daily tide charts to know whether the tide is coming in or going out. Upstream and downstream locations will depend on the flow patterns at the time sampling takes place.

For linear water bodies (estuaries, sloughs, rivers, creeks) that are tidally influenced, collect samples on the outgoing (ebb) tide whenever feasible.

The upstream sampling location should be established at a point along the shore that is upstream of all possible direct discharge points from the construction site. Wave or tidal action may stir up sediments near the shore so samples should be collected out from the shore and away from any other visual plume.

The downstream sampling location should be established based on the direction the plume travels. Samples should be collected at the point closest to the discharge where the discharge has mixed with the surrounding water, but before the plume commingles with

either another discharge or sediment stirred up by the action of waves. If the plume heads out from shore, sampling may have to be performed from a boat.

10.3.4 General Considerations

In general, each potential monitoring location should be visited in advance to confirm the expected site characteristics and verify whether the site is suitable for monitoring. Access into the monitoring locations must be feasible, practical, legal, and safe. Ease of vehicle and personnel access to the monitoring locations should be assured for the full range of weather conditions that may be encountered. Safe access must be confirmed, especially during wet-weather conditions. For example, ensure that the access point and available parking are at a safe distance from traffic, that any roads to the sampling location are adequate and reliable (e.g., limited potential to be muddy or flooded during wet weather), and that access does not require crossing private property. Check with local agencies as to whether any permits will be required to gain legal access to the sites.

When possible, a visit should be conducted during a storm, when the in-stream flow conditions can be observed. A wet-weather visit can provide valuable information regarding logistical constraints that may not be readily apparent during dry weather. However, a dry weather visit should also be conducted to observe any non-stormwater flows. A number of potential sampling locations will have to be identified at constructions sites along lakes, bays, estuaries, and sloughs, as the actual direction of the flow will not be known until the time of the discharge.

Information to gather during a site visit may include whether an appropriate sampling location exists, potential safety issues, and site access. In addition, it is useful to identify potential contributions of runoff from adjacent areas and in-stream conditions such as other point sources, backwater effects, tidal or wind influences, and poorly mixed flows.

Monitoring locations for upstream and downstream sampling stations may vary with each event. Field sampling and testing personnel should be prepared to modify sampling locations to maximize the representativeness of the samples. Sampling locations must be identified on form CEM-2049 for each monitoring-event. Detailed field notes and or photographs should be used to document the conditions and reasons for selecting a specific monitoring location, including GPS coordinates, post miles, etc. to define locations. Photographs are helpful to show the discharge(s), in-stream conditions, and sample collection methods.

10.4 How to Monitor

10.4.1 Grab Sample Collection

Manual grab sampling techniques will be used to collect receiving water samples. A grab sample is an individual sample collected at one specific site at one point in time. Analysis of a grab sample provides a "snapshot" of the water's quality. Manual grab samples are typically collected by direct submersion of each individual sample bottle into the flow stream. See Section 4.6 for additional detail on sample collection techniques.

When collecting samples at the upstream/downstream stations, samples should be collected at the downstream station first. Sampling may disturb the bottom sediment. If the upstream sample is collected first, the disturbed sediment may be carried downstream and possibly impact the downstream sample. At both sites, face upstream to collect a sample, and always collect the sample upstream of the sampler's body and/or sampling vessel.

Wading into a water body to collect a sample should be avoided when feasible. Wading will disturb the bottom sediment and increase the suspended sediment levels in the water column where the samples will be collected. Wading into a river or creek is also dangerous during wet-weather events because flow rates are often higher. Wading should only be performed if the flow depth is less than 1 foot. Approach the sampling point from the downstream direction.

Standing on the bank and using a sampling pole to collect a sample is a preferred technique when it is necessary to reach into a stream for the sample. A boat can be used to access sites out in lakes, bays, estuaries, sloughs, and large slow-moving rivers.

Samples should be collected from below the surface of the receiving water body, at a depth of approximately 4 inches, if possible.

10.4.2 Measurement of pH and Turbidity

When feasible, pH and turbidity measurements should be made in the field by immersing the probe directly into the receiving water body, below the surface, at a depth of approximately 8 inches. The probe may be attached to the end of the sampling rod in order to reach the receiving water sampling location. When that is not possible, the measurements should be made from a sample collected in an intermediate sample container from a depth of approximately 4 inches. If pH and turbidity measurements are taken using separate meters, the measurements should be made in separate containers to

ensure sample integrity. Samples that are used to measure pH and turbidity should not be sent to the laboratory for other analyses.

10.4.3 Sampling and Analysis Requirements

See Tables 4-1 and 4-2 for sampling and analysis requirements.

10.5 Data Evaluation and Follow-up, Reporting

10.5.1 Data Evaluation

The CGP requires that projects be subject to ensuring that all stormwater discharges and authorized non-stormwater discharges to any surface or ground water will not adversely affect human health or the environment. In addition, stormwater discharges and authorized non-storm water discharges may not cause or contribute to an exceedance of any applicable WQOs or water quality standards. Water quality standards are published in Basin Plans adopted by each RWQCB, the California Toxics Rule, the National Toxics Rule, and the Ocean Plan. Projects located within the watershed of a CWA 303(d) impaired water body, with an approved TMDL from EPA, must comply with the approved TMDL if it identifies "construction activity" or land disturbance as a source of the pollution. The website links to watersheds with TMDLs and the list of 303(d) water bodies is provided below.

Watersheds with TMDL:
http://www.swrcb.ca.gov/water_issues/programs/tmdl/

CWA 303(d)-listed Water Bodies:
http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml

The applicable water quality standards for a given receiving water can be determined by consulting the Regional "Water Quality Control Plans" (commonly called "Basin Plans"), which are available on each RWQCB website. The WQOs are generally specified in Chapter 3 of the Basin Plan, listed alphabetically by constituent. The WQOs listed in a Basin Plan generally cover all surface water bodies within that region; exceptions for specific water bodies are listed under the WQOs for each constituent. Table 10-1 lists links to each of the various regional Basin Plans.

Table 10-2 summarizes each region's turbidity WQOs. Table 10-3 summarizes each region's pH WQOs.

Table 10-1. Regional Water Board Basin Plans Online Resources

Regional Water Quality Control Board	Caltrans District	Basin Plan Online Resource
1 (North Coast)	1 and 2	http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan
2 (San Francisco Bay)	4	http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml
3 (Central Coast)	5	http://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/
4 (Los Angeles)	7	http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/
5 (Central Valley)	1 and 2; 3 and 10; and 6	http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/
6 (Lahontan)	2, 3, 9, and 10; 8 and 9	http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/
7 (Colorado River)	8 and 11	http://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_planning/
8 (Santa Ana)	8 and 12	http://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/index.shtml
9 (San Diego)	11	http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

Table 10-2. Regional Water Board Basin Plans, Water Quality Objectives for Turbidity

Regional Water Quality Control Board	Caltrans District	Water Quality Objective	Background/ Natural Turbidity	Maximum Increase
1 (North Coast)	1 and 2	Based on background	All levels	20%
2 (San Francisco Bay)	4	Based on background	> 50 NTU	10%
3 (Central Coast)	5	Based on background	0-50 JTU 50-100 JTU > 100 JTU	20% 10 JTU 10%
4 (Los Angeles)	7	Based on background	0-50 NTU >50 NTU	20% 10%
5 (Central Valley)	1 and 2; 3 and 10; and 6	Based on background	0-5 NTU 5-50 NTU 50-100 NTU > 100 NTU	1 NTU 20% 10 NTU 10%

Table 10-2. Continued

Regional Water Quality Control Board	Caltrans District	Water Quality Objective	Background/ Natural Turbidity	Maximum Increase
6 (Lahontan)	2, 3, 9, and 10; 8 and 9	Based on background	All levels	10% Additional water quality objectives for turbidity apply for certain water bodies specified in the Basin Plan (e.g., the turbidity shall not be raised above 3 NTUs mean of monthly means).
7 (Colorado River)	8 and 11	Based on background	N/A	N/A
8 (Santa Ana)	8 and 12	Based on background	0-50 NTU 50-100 NTU >100 NTU	20% 10 NTU 10%
9 (San Diego)	11	Surface waters, 20 NTUs All others, based on background	0-50 NTU 50-100 NTU > 100 NTU	20% 10 NTU 10%

Notes:
Source: CGP Fact Sheet Table 1
JTU = Jackson turbidity unit
NTU = nephelometer turbidity unit
N/A = not applicable
> = greater than
% = percent

Table 10-3. Regional Water Board Basin Plans, Water Quality Objectives for pH

Regional Water Board	Caltrans District	Water Quality Objective
1 (North Coast)	1 & 2	The pH limits are listed in Table 3-1 of the Basin Plan. For other waters not listed in Table 3-1 of the Basin Plan and where pH objectives are not prescribed, 6.5 ≤ pH ≤ 8.5. AND Normal ambient pH levels shall not be changed greater than 0.2 units in waters with designated marine (MAR) or saline (SAL) beneficial uses nor greater than 0.5 units within the range specified above in fresh waters with designated COLD or WARM beneficial uses.
2 (San Francisco Bay)	4	6.5 ≤ pH ≤ 8.5 AND Normal ambient pH levels shall not be changed greater than 0.5 units.

Table 10-3. Continued

Regional Water Board	Caltrans District	Water Quality Objective
3 (Central Coast)	5	General objectives: 7.0 ≤ pH ≤ 8.5 For water with designated municipal and domestic supply (MUN), agricultural supply (AGR), water contact recreation (REC-1) and non-contact water recreation (REC-2), beneficial uses, 6.5 ≤ pH ≤ 8.3 Normal ambient pH levels shall not be changed greater than 0.5 units in waters with designated cold freshwater habitat (COLD) or warm freshwater habitat (WARM) beneficial uses nor greater than 0.2 units within the range specified above in fresh waters with designated marine (MAR) beneficial uses.
4 (Los Angeles)	7	6.5 ≤ pH ≤ 8.5 Inland surface waters ambient pH levels shall not be changed more than 0.5 units from natural conditions as a result of waste discharge. Bays or estuaries ambient pH levels shall not be changed more than 0.2 units from natural conditions as a result of waste discharge.
5 (Central Valley)	1&2; 3& 10; and 6	6.5 ≤ pH ≤ 8.5 For Goose Lake , 7.5 ≤ pH ≤ 9.5
6 (Lahontan)	2,3,9,&,10; and 8 & 9	In fresh waters with designated beneficial uses of COLD or WARM, changes in normal ambient pH levels shall not exceed 0.5 pH units. For all others, 6.5 ≤ pH ≤ 8.5. In the hypolimnion of Eagle Lake, the pH shall not be depressed below 7.6 at any time. For all other Eagle Lake waters, changes in normal ambient pH shall not exceed 0.1 units. For Honey Lake, the pH (based on the average of values from at least 3 samples from 3 different locations) shall not at any time be depressed below 8.0 nor raised above 10.0. For Little Truckee River, West Fork Carson River, East Fork Carson River, and Truckee River Hydrologic Units, Changes in normal ambient pH levels shall not exceed 0.5 unit. In Lake Tahoe, the pH shall not be depressed below 7.0 nor raised above 8.4. For certain water bodies Fallen Leaf Lake, Lake Tahoe Hydrologic Unit, pH shall be 6.5 - 7.9
7 (Colorado River)	8 & 11	6.0 ≤ pH ≤ 9.0
8 (Santa Ana)	8 & 12	Inland surface waters, 6.5 ≤ pH ≤ 8.5. Bays or estuaries, 7.0 ≤ pH ≤ 8.6 and ambient pH levels shall not be changed more than 0.2 units.
9 (San Diego)	11	For ocean waters, the pH value shall not be changed at any time more than 0.2 pH units from that which occurs naturally. Changes in normal ambient pH levels shall not exceed 0.2 units in waters with designated marine (MAR), or estuarine (EST), or saline (SAL) beneficial uses. Changes in normal ambient pH levels shall not exceed 0.5 units in fresh waters with designated cold freshwater habitat (COLD) or warm freshwater habitat (WARM) beneficial uses. In bays and estuaries, 7.0 ≤ pH ≤ 9.0 In inland surface waters, 6.5 ≤ pH ≤ 8.5

≤ = less than or equal to
≥ = greater than or equal to

To determine if the receiving water turbidity monitoring results exceed the RWQCB's Basin Plan WQOs, the upstream and downstream sample results are compared to the WQOs. For example, if a project located in RWQCB Region 1 has an upstream sampling result of 10 NTU and a downstream sampling result of 13 NTU (an increase of 30 percent), the turbidity WQO would be exceeded in all regions as shown in Table 10-2.

10.5.2 Assessing the Need for Corrective Measures

If a comparison of the upstream and downstream samples indicates a substantial increase in pH, turbidity, or SSC (i.e., concentration exceeds WQOs), the source needs to be identified and corrective measures identified. See Section 4.12.4 for additional information.

10.5.3 Implementing Corrective Measures

If the project site conditions or run-on from off site are found to be contributing sediment, silt, or other RWQCB-specified constituent to the runoff, the following steps should be taken as soon as possible:

1. Repair or replace any BMP that has failed, resulting in a discharge and/or elevated levels of pH, turbidity, or SSC in the runoff.
2. Improve maintenance at all BMPs that did not function as designed, resulting in a discharge and or elevated levels of pH, turbidity, or SSC in the runoff.
3. Implement BMPs in areas identified as generating discharges or sources of elevated pH, turbidity, or SSC.
4. Implement additional, alternative, or redesigned BMPs to provide an effective combination of control measures on the site.

10.5.4 Reporting

See Section 11 for reporting and recordkeeping requirements.

11.0 TIMELINE, REPORTING, AND RECORDKEEPING

This section summarizes the monitoring and sampling schedule by Risk Level. This section also describes recordkeeping and reporting requirements necessary to implement the CSMP.

11.1 Monitoring Timeline

All Caltrans SWPPP projects must conduct visual monitoring and runoff water quality sampling and testing to comply with the CGP. Table 2-1 summarizes the CGP requirements. A summary of the timeline of requirements is presented below.

11.1.1 Risk Level 1 Timeline for Storm-Based Monitoring

- Within two business days (**48 hours**) *prior* to each forecasted storm event[1]:
  - Conduct pre-storm inspections
- Within **first two hours** of discharge occurring during project working hours:
  - Collect non-visible pollutant samples (if required)
- At least once each **24-hour period** during extended storm events:
  - Conduct stormwater BMP inspections
- Within **24 hours** of a discharge event or discovery of evidence of a prior discharge:
  - Submit Notice of Discharge Report form (CE-2061) to the RE

[1] The CGP requires a pre-storm inspection prior to a "qualifying rain event" which is defined as any event producing precipitation of 0.5 inch or more over the duration of the rain event. Because the size of a rain event cannot be accurately predicted, Caltrans requires a pre-storm inspection based on a forecasted storm event, which is defined as any rain event that is forecasted to produce 0.1 inches or more of precipitation within any 24-hour period. The trigger for a pre-storm event visual inspection is the same as for a Rain Event Action Plan: 50 percent or greater probability of producing 0.1 inches or more of precipitation within any 24 hour period in the project area based on the National Weather Service Forecast Office (National Oceanic and Atmospheric Administration).

- Within two business days (**48 hours**) ***after*** each qualifying rain event:[2]
  - Conduct post-storm inspections
- Within **48 hours** after collecting non-visible pollutant samples:
  - Submit field analysis measurements to the RE
- Within **30 days** of collecting non-visible pollutant samples:
  - Submit laboratory analyses to the RE

11.1.2 Risk Level 2 Timeline for Storm-Based Monitoring

- Within two business days (**48 hours**) ***prior*** to each forecasted storm event[1]:
  - Conduct pre-storm inspections
- Within **first two hours** of discharge occurring during project working hours:
  - Collect non-visible pollutant samples (if required)
- At least **once each 24-hour period** during extended storm events:
  - Conduct stormwater BMP inspections
- Three samples **per day** (minimum) from each representative monitoring location (defined in Section 7.4) during qualifying rain events[2]:
  - Collect effluent (stormwater discharge) samples
  - Perform field pH and turbidity measurements
- Within **24-hours** of a discharge event or discovery of evidence of a prior discharge:
  - Submit Notice of Dischage Report form (CEM-2061) to the RE
- Within two business days (**48 hours**) ***after*** each qualifying rain event[2]:
  - Conduct post-storm inspections
- Within **48 hours** after storm event:
  - Contractor submits NAL exceedance report (Numeric Action Level Exceedance Report, CEM- 2062) to the RE if NAL exceeded
- Within **10 days** after storm event:

[2] A qualifying rain event is defined as any event producing precipitation of 0.5 inch or more over the duration of the rain event.

- RE submits testing results to SWRCB if NAL exceeded

- If NAL exceedance report is requested by RWQCB:
  - RE submits NAL exceedance report to RWQCB
- Within **48 hours** of collecting samples:
  - Submit field analysis measurements to the RE
- Within **30 days** of collecting samples:
  - Submit laboratory analyses to the RE

11.1.3 Risk Level 3 Timeline for Storm-Based Monitoring

- Within two business days (**48 hours**) ***prior*** to each forecasted storm event[1]:
  - Conduct pre-storm inspections
- Within **first two hours** of discharge occurring during project working hours:
  - Collect non-visible pollutant samples (if required)
  - Conduct stormwater storm BMP inspections
- At least **once each 24-hour period** during extended storm events:
  - Conduct stormwater BMP inspections
- Three samples **per day** (minimum) from each representative sampling point (defined in Section 7.4) during qualifying rain events[2]:
  - Collect effluent (stormwater discharge) samples
  - Perform field pH and turbidity measurements
- Within **24-hours** of a discharge event or discovery of evidence of a prior discharge:
  - Submit Notice of Discharge Report form (CEM-2061) to the RE
- Within **two business days** (**48 hours**) after each qualifying rain event[2]:
  - Conduct post-storm inspections
- Within **48 hours** after storm event:
  - Contractor submits results to the RE
- If NAL is exceeded, Contractor submits NAL exceedance report (Numeric Action Level Exceedance Report, CEM- 2062) to the RE

- If NAL exceedance report is requested by RWQCB:
  - RE submits NAL exceedance report to RWQCB
- Within **five days** after storm event:
  - RE submits results to SWRCB
- Within **6 hours** after NEL exceedance:
  - Contractor submits results to the RE
- Within **24 hours** after NEL exceedance:
  - RE submits results to SWRCB
- When NEL is exceeded:
  - Sample upstream and downstream of discharge in receiving water
- Within **48 hours** of collecting samples:
  - Submit field analysis measurements to the RE
- Within **30 days** of collecting samples:
  - Submit laboratory analyses to the RE

11.2 Data Reporting

To facilitate data management, analysis, and the comparison of results to NALs/NELs, a standard system for data reporting should be followed for each project. Both electronic and hardcopy data must be filed in Category 20 of the project files in an organized and easily accessible fashion (see Section 11.3).

To keep the data organized, each monitoring site, location, and sampling event should be assigned a unique identification number. All the data should be organized and associated with these numbers. See Section 4.4.3 for additional information on assigning unique identification numbers.

The RE must be notified of sample testing results per the contract specifications. The RE will access the SWRCB's Storm Water Multi-Application and Report Tracking System (SMARTS) and electronically upload any required reports or field data. Results must be submitted to the RE within:

- 6 hours after an NEL violation is identified (Risk Level 3 sites only)

- 48 hours after an NAL violation is identified (Risk Level 2 or 3 sites)
- 48 hours of field analysis measurements (with no exceedance)
- 30 days of collecting samples for laboratory analyses.

All test results shall be documented on either the CEM-2052 Stormwater Sample Field Test Report form, or the CEM-2054 Stormwater Sample Laboratory Test Report form, and entered on the CEM-2051 Stormwater Sampling and Testing Activity Log. These forms shall be considered accountable documents. If an error is made on an accountable document, the individual responsible for the error shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated by the individual responsible.

A copy of all water quality analytical results and QA/QC data shall be submitted to the RE within 48 hours of sampling for field analyzed samples, and within 30 days for laboratory analyses. For field tests, the submitted information shall include a signed copy of the Sample Information, Identification and Chain-of-Custody Record (CEM-2050), Stormwater Sample Field Test Report (CEM-2052), and an updated Stormwater Sampling and Testing Activity Log (CEM-2051).

Attribute data (also known as meta data) also should be collected to assist with data interpretation. The attribute data usually describes the sample, event, and site; each of these attribute types is described below.

The sample description may provide information on the sample itself: when and how it was collected, what it was analyzed for, the method and laboratory used to perform the analysis, and the result of the analysis. This section also can characterize the sample source, as well as the portion of a rain event that is represented by the sample.

The event information describes the discharge event itself. This includes when the rain started and stopped, when runoff started and ended, when the discharge to the receiving stream started and ended, and antecedent dry days.

Site description information spans a range of categories from geographic information and boundaries, such as coordinates, hydrologic sub-area, land use, and size of the watershed, to local data such as county, Caltrans District, and RWQCB district.

All original data documented on sample bottle identification labels, Chain of Custody forms, Sampling Activity Logs, and Inspection Checklists will be recorded using

waterproof ink. These will be considered accountable documents. If an error is made on an accountable document, the individual will make corrections by lining through the error and entering the correct information. The erroneous information must not be obliterated. All corrections must be initialed and dated.

In addition to a paper copy of the water quality test results, the test results shall be submitted electronically in Microsoft Excel (.xls) format, and shall include, at a minimum, the following information from the laboratory: Sample ID Number, Contract Number, Constituent, Reported Value, Laboratory Name, Method Reference, Method Number, Method Detection Limit, and Reported Detection Limit. When possible, electronic data should be reported in a format consistent with the Caltrans' *Data-Reporting Protocols* (Caltrans, 2003b). Electronic copies of stormwater data shall be forwarded by e-mail to the RE.

Requirements for reporting discharges are detailed in Section 3.2.2 and include completing and submitting the Notice of Discharge Report form (CEM-2061). Completed Notice of Discharge reports must be submitted to the RE within 24 hours of a discharge event or discovery of evidence of a prior discharge. Copies of the Notice of Discharge reports must be kept in SWPPP file category 20.11 "Notice of Discharge Reports."

Reporting requirements for non-visible pollutants are detailed in Section 5.

Reporting requirements for NAL or NEL exceedances for non-stormwater discharges (Section 6), stormwater discharges (Section 7), ATS discharges (Appendix D), and receiving waters (Section 10) are detailed below.

Procedure for Reporting and Correcting NAL Exceedances

In the event that any effluent measurement exceeds an applicable NAL:

1. Submit records (Numeric Action Level Exceedance Report, CEM-2062) to the RE within 48 hours per the contract specifications. The RE will electronically submit the storm event sampling results only (obtained from the NAL Exceedance Report) to SWRCB via SMARTS no later than 10 days after the conclusion of the storm event for Risk Level 2 projects and 5 days after the conclusion of the storm event for Risk Level 3 projects. RWQCB may also require the submittal of the NAL Exceedance Report upon review of the sampling results.

2. Assess the need for corrective actions. For example, determine whether the exceedance is due to run-on or a failed BMP. The WPC Manager must inspect all

BMPs to determine if any repairs are required. If the BMPs do not require repairs and the exceedance is not due to run-on, the WPC Manager must redesign or implement new BMPs.

3. Implement corrective actions (if necessary), such as repairs or design changes, to BMPs.

4. After submitting the sampling results, RWQCB may request the NAL Exceedance Report. The RE, in turn, will submit the NAL Exceedance Report to RWQCB.

If RWQCB requires an NAL Exceedance Report, (CEM-2062), the report must be certified by the discharger in accordance with Section IV of the CGP and include:

- The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit must be reported as "less than the method detection limit").
- The date, place (sampling location), time of sampling, visual inspections results, and/or measurements, including rain gauge readings.
- A description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions to correct the deficiency.
- Run-on monitoring results if there is reason to believe run-on may contribute to an exceedance of NALs.

Procedure for Reporting and Correcting NEL Exceedances

In the event that any effluent measurement exceeds an applicable NEL (Risk Level 3 projects only):

- If any monitoring result exceeds any applicable NEL, the system operator must immediately notify the RE, and an NEL Violation Report must be submitted to the RE within six hours after the violation is identified (Numeric Effluent Limitation Violation Report form, CEM-2063) per the contract special provisions. The RE will electronically submit an NEL Violation Report to SWRCB *within 24 hours after the NEL exceedance has been identified*.
- If stormwater runoff has a direct discharge into receiving waters, the receiving waters must be subsequently sampled (upstream and downstream of outfall) for pH, turbidity, and any additional parameters for which monitoring is required by RWQCB.

- If the turbidity daily average NEL is exceeded, subsequent effluent samples must be analyzed for SSC in addition to pH and turbidity.

NEL Violation Report. The NEL Violation Report must be certified by the RE in accordance with Section IV of the CGP and include:

- The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results less than the method detection limit shall be reported as "less than the method detection limit").
- The date, time, and place of sampling activities, visual inspections, and/or measurements, including rain gauge readings.
- A description of the current on-site BMPs, and the corrective actions taken to manage NEL exceedance.

Compliance Storm Exemption. In the event that an applicable NEL is exceeded during a storm event equal to or larger than the Compliance Storm Event, report the on-site rain gauge reading and nearby governmental rain gauge readings for verification.

Compliance storm event verification must be done by reporting the on-site rain gauge readings, with verification from nearby governmental rain gauge readings.

11.3 Recordkeeping

All field measurements and laboratory analytical data must be kept in the SWPPP file. To manage the various documents required to by the SWPPP and to provide easy access to the documents the following SWPPP file categories will be used to file SWPPP compliance documents:

File Category 20.01 Stormwater Pollution Prevention Plan (SWPPP)

File Category 20.02 Stormwater Pollution Prevention Plan Amendments

File Category 20.03 Water Pollution Control Schedule Updates

File Category 20.05 Notice of Construction or Notice of Intent

File Category 20.06 Legally Responsible Person Authorization of Approved Signatory

File Category 20.10 Correspondence

File Category 20.21 Subcontractor Contact Information and Notification Letters

File Category 20.22 Material Supplier Contact Information and Notification Letters

File Category 20.23 Contractor Personnel Training Documentation

File Category 20.31	Contractor Stormwater Site Inspection Reports
File Category 20.32	Caltrans Stormwater Site Inspection Reports
File Category 20.33	Site Visual Monitoring Inspection Reports
File Category 20.34	Best Management Practices Weekly Status Reports
File Category 20.35	Corrective Actions Summary
File Category 20.40	Weather Monitoring Logs
File Category 20.45	Storm/Rain Event Action, Sampling and Analysis Plans
File Category 20.50	Non-Stormwater Discharge Sampling and Test Results
File Category 20.51	Non-Visible Pollutant Sampling and Test Results
File Category 20.52	Turbidity, pH and SSC Sampling and Test Results
File Category 20.53	Required Regional Water Board Monitoring Sampling and Test Results
File Category 20.54	ATS Monitoring Sampling and Test Result
File Category 20.55	Field Testing Equipment Maintenance and Calibration Records
File Category 20.61	Notice of Discharge Reports
File Category 20.62	Numeric Action Level Exceedance Reports
File Category 20.63	Numeric Effluent Limitation Violation Reports
File Category 20.70	Annual Certification of Compliance
File Category 20.80	Stormwater Annual Reports
File Category 20.90	Notice of Termination

The forms listed in Table 11-1 (as applicable) must be completed, maintained at the site with the SWPPP, and submitted to Caltrans per the contract specifications. The Caltrans stormwater forms are available at:
http://www.dot.ca.gov/hq/construc/forms.htm

Retain all reports and records (including completed inspection forms) of all visual inspections and water quality monitoring for at least three years from the time Caltrans accepts the project. All records must be retained on site with the SWPPP while construction is ongoing.

Table 11-1. Caltrans Stormwater Forms

Form Number	Form Title	Description	Submittal Requirements	SWPPP File Category
CEM-2001	Form is obsolete and has been replaced with form CEM-2070. Form was used to certify compliance with Statewide NPDES Permit Order No. 92-08 DWQ, National Pollutant Discharge Elimination System (NPDES) No. CAS000002.			
CEM-2002	Notification of Construction	The Caltrans Statewide NPDES Stormwater Permit Order No. 99-06 DWQ, NPDES No. CAS000003 requires that Caltrans submit a Notification of Construction (NOC) for construction projects covered by the permit to the appropriate Regional Water Quality Control Board (RWQCB) at least 30 days before the start of construction.	Typically, Caltrans staff completes most information on the form; submits the NOC to the appropriate RWQCB at the time the Plans, Specifications, and Estimates (PS&E) package goes to the office engineer; and transmits a copy to the district construction division.	20.05 (copy)
CEM-2003	Form CEM-2003 is obsolete and has been replaced by form CEM-2090.			
CEM-2004	Notification of Construction (Desert Areas)	See notes for Form CEM-2002.	See notes for Form CEM-2002.	20.05 (copy)
CEM-2005	Rainfall Erosivity Waiver Notification Form	Used to document eligibility for the Rainfall Erosivity Waiver (i.e., that small construction site activities [1- to 5-acres construction activities] will occur when the Rainfall Erosivity Factor is less than 5 ["R" in the Revised Universal Soil Loss Equation]). No Storm Water Pollution Prevention Plan (SWPPP) required; Water Pollution Control Program (WPCP) required.	Typically, Caltrans staff completes and submits the form to the appropriate RWQCB at least 30 days before the start of construction.	NA
CEM-2006	Legally Responsible Person Authorization of Approved Signatory	Form is used by the Legally Responsible Person (LRP) to authorize an Approved Signatory in accordance with provisions in Section IV.I of the Construction General Permit (CGP).	Completed by Caltrans staff.	20.06
CEM-2008	SWPPP Amendment Certification and Acceptance Form	Complete form for each SWPPP amendment.	Must be used as the cover sheet for each amendment. Submit to the WPC Manager and RE for review and approval (signature).	20.02
CEM-2009	SWPPP/WPCP Amendment Log	Used to list all amendments to the SWPPP.	Submit updated copy to the RE with each amendment.	20.02 (original)
CEM-2023	Stormwater Training Record Form	Used to list all stormwater training conducted during the project. Use this form to document required weekly informal stormwater training.	Submit to the RE within five days of the date of training.	20.23
CEM-2024	Stormwater Training Log Form	Used to document training for employees responsible for activities associated with CGP compliance and contract specifications.	Submit updated copy to the RE within five days of the date of training.	20.23

Table 11-1. Continued

Form Number	Form Title	Description	Submittal Requirements	SWPPP File Category
CEM-2030	Stormwater Site Inspection Report	Used to document visual monitoring for storm-based monitoring (pre-storm, during storm, post-storm) and non-storm monitoring (quarterly non-stormwater, weekly Best Management Practices (BMP), and daily access roads).	Submit original to the RE within 24 hours of inspection.	Storm-based: 20.31 (copy) Non-storm-based: 20.33 (copy)
CEM-2034	Stormwater Best Management Status Report Form	Used to provide a weekly list of stormwater BMPs from the stormwater pollution prevention plan that are active on the project site.	Submit original to the RE weekly.	20.34 (copy)
CEM-2035	Stormwater Site Inspection Report Corrective Actions Summary	Shall be completed for any deficiencies that were identified during visual monitoring (site inspection) and for corrections of deficiencies.	Attach copy to corresponding inspection report. Submit to the RE when corrections are completed but must be submitted within five days of the site inspection.	20.35 (original) 20.31 or 20.33 (copy with corresponding inspection report)
CEM-2040	Weather Forecast Monitoring Form	Weekly form used to document daily weather forecasts for the project site on a weekly basis.	Submit weekly form to the RE within 48 hours of the ending date.	20.40
CEM-2041	Weather Monitoring Form	Weekly form used to record daily weather information for the project site.	Submit weekly form to the RE within five days the ending date.	20.40
CEM-2045	Rain Event Action Plan Highway Construction Phase Form	Must be completed for Risk Level 2 and Risk Level 3 projects with the chance for precipitation 50 percent or greater within 72 hours of the forecast date. The Rain Event Action Plan (REAP) must be developed 48 hours prior to any likely precipitation rain event (any weather pattern that is forecast to have a 50% or greater probability of producing precipitation in the project area).	Within 24 hours prior to a storm event, the REAP, and attached Sampling and Analysis Plan (SAP) (CEM-2048 or CEM-2049) must be submitted to the RE. The REAP must be made available on site and implementation begun no later than 24 hours prior to the likely precipitation event.	20.45
CEM-2046	Rain Event Action Plan Plant Establishment Phase Form	See notes for form CEM-2045.	See notes for form CEM-2045.	20.45
CEM-2047	Rain Event Action Plan Inactive Project Form	See notes for form CEM-2045.	See notes for form CEM-2045.	20.45

Table 11-1. Continued

Form Number	Form Title	Description	Submittal Requirements	SWPPP File Category
CEM-2048	Storm Event Sampling and Analysis Plan	Complete form to develop non-visible pollutant sampling and analysis plan (SAP). Required for Risk Level 1 sites with forecasted precipitation, or for Risk Level 2 or 3 project sites with forecasted cumulative amount of precipitation for storm event of less than 0.5 inch (not a qualifying rain event).	Within 24 hours prior to a storm event, a copy of the SAP shall be attached to the REAP (for Risk Level 2 and 3 projects) and submitted to the RE.	20.45
CEM-2049	Qualifying Rain Event Sampling and Analysis Plan	Complete form to develop SAP for qualifying rain events. Potential sampling types include non-visible, stormwater, run-on, and receiving water.	Within 24 hours prior to a storm event, a copy of the SAP shall be attached to the REAP and submitted to the RE.	20.45 (original)
CEM-2050	Sample Information, Identification, and Chain of Custody Record Form	Complete a separate form for each sampling location daily.	Submit to the laboratory with the samples to trace the possession and handling of samples from collection through analysis.	20.50, 20.51, 20.52, 20.53, or 20.54 (copy)
CEM-2051	Stormwater Sampling and Testing Activity Log	Required to document details of all sampling events and to record results for the samples collected.	Submit to the RE with forms CEM-2050 and CEM-2052 within 48 hours of sampling for field analyzed samples, and with forms CEM-2050 and CEM-2054 within 30 days of collection for laboratory analyses.	20.50, 20.51, 20.52, 20.53, or 20.54 (copy)
CEM-2052	Stormwater Sample Field Test Report Form	Required to be completed for each sample or set of samples.	Submit to the RE with forms CEM-2050 and CEM-2051 within 48 hours of sampling.	20.50, 20.51, 20.52, 20.53, or 20.54 (copy)
CEM-2054	Stormwater Sample Laboratory Test Report Form	Complete a separate form for each sampling location daily. If the form is not completed by the testing laboratory, then the laboratory report used to complete the form shall be attached to the completed form.	Submit to the RE with forms CEM-2050 and CEM-2051 within 30 days of collection.	20.50, 20.51, 20.52, 20.53, or 20.54 (copy)
CEM-2055	Stormwater Equipment Maintenance Log Form	Used to document maintenance of stormwater equipment.	Submit to WPC Manager for review and approval (signature).	20.55 (original)
CEM-2056	Stormwater Turbidity Meter Calibration Record Form	Used to document calibration of turbidity meter.	Submit to WPC Manager for review and approval (signature).	20.55 (original)
CEM-2057	Stormwater pH Meter Calibration Record Form	Used to document calibration of pH meter.	Submit to WPC Manager for review and approval (signature).	20.55 (original)
CEM-2058	Stormwater Meter Calibration Record Form	Used to document calibration of other meters (e.g., dissolved oxygen, conductivity). Must be conducted at least one time per year or per the manufacturer's recommendations.	Submit to WPC Manager for review and approval (signature).	20.55 (original)

Table 11-1. Continued

Form Number	Form Title	Description	Submittal Requirements	SWPPP File Category
CEM-2061	Notice of Discharge Form	To be completed when discharges are causing or contributing to an exceedance of an applicable water quality standard.	Discharges reported to the RE verbally when discovered. Submit original form to the RE within 24 hours of discovery.	20.61 (copy)
CEM-2062	NAL Exceedance Report Form	Complete if the daily average of effluent sample analysis results exceeds an applicable numeric action level (NAL).	Submit original form to the RE within 48 hours. The RE will electronically sampling results to the SWRCB via Storm Water Multi-Application and Report Tracking System (SMARTS) within 10 after the conclusion of the storm event for Risk Level 2 projects and within five days after the conclusion of the storm event for Risk Level 3 projects. RWQCB also may require the submittal of the NAL Exceedance Report upon review of the sampling results.	20.62 (copy)
CEM-2063	NEL Violation Report Form	Complete if the daily average of effluent sample analysis results exceeds an applicable numeric effluent limitation (NEL).	Immediately report to the RE verbally. Submit original form to the RE within six hours after violation is identified. The RE will electronically submit an NEL Violation Report to the SWRCB via SMARTS within 24 hours after the NEL exceedance has been identified.	20.63 (copy)
CEM-2065	Notice of Discharge Log	Used to list all discharges that occur during the project.	An updated Notice of Discharge Log is to be submitted to the RE with each Notice of Discharge Report, Numeric Action Level Exceedance Report, or Numeric Effluent Limitation Violation Report.	20.61
CEM-2070	SWPPP/WPCP Annual Certification of Compliance Form	Annual Certification of Compliance is required by July 15 of each year. The Annual Report consists of CEM-2070 and all file category items for the fiscal year to be submitted by the RE to RWQCB by September 1 of each year for all projects that are enrolled for more than one continuous three-month period.	Submit to the RE by July 15.	20.70 (copy)

Table 11-1. Continued

Form Number	Form Title	Description	Submittal Requirements	SWPPP File Category
CEM-2090	Notice of Completion of Construction	The Caltrans Statewide NPDES Stormwater Permit Order No. 99-06 DWQ, NPDES No. CAS000003 requires that Caltrans submit a Notice of Completion of Construction for construction projects that have been completed.	Typically completed by Caltrans staff.	20.90

FURTHER ASSISTANCE

California Department of Transportation
Environmental Program
http://www.dot.ca.gov/hq/env/index.htm

Storm Water Management Program
http://www.dot.ca.gov/hq/env/stormwater/

Department NPDES Permit
http://www.waterboards.ca.gov/water_issues/programs/stormwater/caltrans.shtml

Storm Water Quality Handbooks
http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

Regional Water Quality Control Boards

Regional Water Quality Control Board	Address	Contact E-mail/Website	Telephone/Fax
North Coast Region (1)	5550 Skylane Blvd., Suite A Santa Rosa, CA 95403	www.waterboards.ca.gov/northcoast E-mail: Info1@waterboards.ca.gov	(707) 576-2220 FAX: (707) 523-0135
San Francisco Bay Region (2)	1515 Clay St., Suite 1400 Oakland, CA 94612	www.waterboards.ca.gov/sanfranciscobay E-mail: Info2@waterboards.ca.gov	(510) 622-2300 FAX: (510) 622-2460
Central Coast Region (3)	895 Aerovista Place, Suite 101 San Luis Obispo, CA 93401	www.waterboards.ca.gov/centralcoast E-mail: Info3@waterboards.ca.gov	(805) 549-3147 FAX: (805) 543-0397
Los Angeles Region (4)	320 W. 4th St., Suite 200 Los Angeles, CA 90013	www.waterboards.ca.gov/losangeles E-mail: Info4@waterboards.ca.gov	(213) 576-6600 FAX: (213) 576-6640
Central Valley Region (5s) Sacramento Office	11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670-6114	www.waterboards.ca.gov/centralvalley E-mail: Info5@waterboards.ca.gov	(916) 464-3291 FAX: (916) 464-4645
Central Valley Region (5f) Fresno Branch Office	1685 E Street, Suite 200 Fresno, CA 93706	www.waterboards.ca.gov/centralvalley E-mail: Info5@waterboards.ca.gov	(559) 445-5116 FAX: (559) 445-5910
Central Valley Region (5r) Redding Branch Office	415 Knollcrest Dr. Redding, CA 96002	www.waterboards.ca.gov/centralvalley E-mail: Info5@waterboards.ca.gov	(530) 224-4845 FAX: (530) 224-4857

Regional Water Quality Control Board	Address	Contact E-mail/Website	Telephone/Fax
Lahontan Region (6slt) South Lake Tahoe Office	2501 Lake Tahoe Blvd. South Lake Tahoe, CA 96150	www.waterboards.ca.gov/lahontan E-mail: Info6@waterboards.ca.gov	(530) 542-5400 FAX: (530) 544-2271
Lahontan Region (6v) Victorville Office	14440 Civic Dr., Suite 200 Victorville, CA 92392	www.waterboards.ca.gov/lahontan E-mail: Info6@waterboards.ca.gov	(760) 241-6583 FAX: (760) 241-7308
Colorado River Basin Region (7)	73-720 Fred Waring Dr., Suite 100 Palm Desert, CA 92260	www.waterboards.ca.gov/coloradoriver E-mail: Info7@waterboards.ca.gov	(760) 346-7491 FAX: (760) 341-6820
Santa Ana Region (8)	3737 Main St., Suite 500 Riverside, CA 92501-3339	www.waterboards.ca.gov/santaana E-mail: Info8@waterboards.ca.gov	(951) 782-4130 FAX: (951) 781-6288
San Diego Region (9)	9174 Sky Park Court, Suite 100 San Diego, CA 92123	www.waterboards.ca.gov/sandiego E-mail: Info9@waterboards.ca.gov	(858) 467-2952 FAX: (858) 571-6972

State Water Resources Control Board

Division of Water Quality

Storm Water Permit Section

P.O. Box 1977

Sacramento, CA 95812-1977

Construction Inquiry Line: (916) 341-5537

Web Site: http://www.waterboards.ca.gov/water_issues/programs/stormwater/

E-mail: stormwater@waterboards.ca.gov

General Construction Permit

http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml

How to Obtain a List of State Certified Laboratories

http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx

Other Useful Web Sites

California Stormwater Quality Association

http://www.casqa.org/

GLOSSARY

ATS	active treatment system
Benthic Macroinvertebrate Bioassessment	required for projects disturbing 30 acres or more with direct discharge to a freshwater wadeable stream that is either: (a) listed by the SWRCB or United States Environmental Protection Agency as impaired due to sediment, and/or (b) tributary to any downstream water body that is listed for sediment; and/or has the designated beneficial uses SPAWN & COLD & MIGRATORY. (Guidance on bioassessment monitoring is not included in this manual.)
BMP	best management practice
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CFR	Code of Federal Regulations
CGP	Construction General Permit
CSMP	Construction Site Monitoring Program
CWA	Clean Water Act
DHS	Department of Health Services
EDD	electronic data delivery
EPA	United States Environmental Protection Agency
ID	identification
MS/MSD	matrix spike/matrix spike duplicate. An environmental sample spiked with known concentrations of target analytes that is used to evaluate the accuracy and precision of the laboratory extraction and analysis procedures.
MS4	Muncipal Separate Storm Sewer System. An MS4 is a conveyance or system of conveyances that is: • Owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.; • Designed or used to collect or convey stormwater (including storm drains, pipes, ditches, etc.); • Not a combined sewer; and

- Not part of a Publicly Owned Treatment Works (sewage treatment plant).

NAL	numeric action level
NEL	numeric effluent limitation
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometer turbidity unit
NWS	National Weather Service
PAH	polycyclic aromatic hydrocarbons
PPDG	Project Planning and Design Guide
QA	quality assurance
QAPrP	Quality Assurance Project Plan
QC	quality control
QPF	quantitative precipitation forecast
QSD	Qualified SWPPP Developer
QSP	Qualified SWPPP Practitioner
qualifying rain event	any event producing precipitation of 0.5 inch or greater over the duration of the rain event
RE	Resident Engineer
REAP	Rain Event Action Plan
RL	reporting limit. Minimum value that can be reported with confidence for any given parameter as established by a specific laboratory.
RPD	relative percent difference
RWQCB	Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SMARTS	Stormwater Multi-Application and Report Tracking System
SSC	suspended sediment concentration
SSP	Standard Special Provisions
SWAMP	Surface Water Ambient Monitoring Program
SWPPP	Storm Water Pollution Prevention Plan
SWQTF	Storm Water Quality Task Force
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load

VOC	volatile organic compound
WDR	waste discharge requirement
WPCD	Water Pollution Control Drawings
WPC	Water Pollution Control
WPCP	Water Pollution Control Program
WQO	water quality objective

REFERENCES

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ASTM, 1999. *Standard Test Method for Determining Sediment Concentration in Water Samples: American Society of Testing and Materials, ASTM D 3977-97* (2007), Vol. 11.02, pp. 389-394

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Caltrans, 2000b. *Guidance Manual: Stormwater Monitoring Protocols. Second Edition.* May (revised July).

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Caltrans, 2003b. *Data-Reporting Protocols.* November.

Caltrans, 2007. *Storm Water Pollution Prevention Program/Water Pollution Control Program Preparation Manual.* March.

Caltrans, 2010. *Storm Water Quality Handbook - Project Planning and Design Guide.* July.

Caltrans, 2011a. *Storm Water Pollution Prevention Program/Water Pollution Control Program Preparation Manual.* March.

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Caltrans, Environmental Program, 1999. *Soil Stabilization for Temporary Slopes.* October 1.

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Caltrans, Division of Environmental Analysis, 2002. *Statewide Storm Water Management Plan.* April.

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National Cooperative Highway Research Program, 2001. *Environmental Impact of Construction and Repair Materials on Surface and Ground Waters, Report 448.*

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ALPHABETICAL INDEX

APPENDIX A

FORMS INSTRUCTIONS

APPENDIX A – FORMS INSTRUCTIONS

This section describes how to complete the Caltrans forms required for compliance with the CGP, the Caltrans Stormwater Permit, and contract specifications. These forms (as applicable) must be completed, maintained at the site with the SWPPP, and submitted to Caltrans per the contract special provisions. These forms are available on the Caltrans website at:

http://www.dot.ca.gov/hq/construc/stormwater/inspection.html.

Instructions on completing the following forms are provided below:

- CEM-2023 Stormwater Training Record
- CEM-2024 Stormwater Training Log
- CEM-2030 Stormwater Site Inspection Report
- CEM-2031 Daily Stormwater Site Inspection Report
- CEM-2034 Stormwater Best Management Practices Status Report
- CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary
- CEM-2040 Weather Forecast Log
- CEM-2041 Weather Monitoring Log
- CEM-2045 Rain Event Action Plan – Highway Construction Phase
- CEM-2046 Rain Event Action Plan – Plant Establishment Phase
- CEM-2047 Rain Event Action Plan – Inactive Project
- CEM-2048 Storm Event Sampling and Analysis Plan
- CEM-2049 Qualifying Rain Event Sampling and Analysis Plan
- CEM-2050 Sample Information, Identification, and Chain-of-Custody Record
- CEM-2051 Stormwater Sampling and Analysis Log
- CEM-2052 Stormwater Sample Field Test Report
- CEM-2054 Stormwater Sample Laboratory Test Report
- CEM-2055 Stormwater Equipment Maintenance Log
- CEM-2056 Stormwater Turbidity Meter Calibration Record

- CEM-2057 Stormwater pH Meter Calibration Record
- CEM-2058 Stormwater Meter Calibration Record
- CEM-2061 Notice of Discharge Report
- CEM-2062 Numeric Action Level Exceedance Report
- CEM-2063 Numeric Effluent Limitation Violation Report
- CEM-2065 Notice of Discharge Log

A.1 General Project Title Block Form Instructions

Contract Number/Co/Rte/PM

For local agency encroachment permit projects, enter the encroachment permit number in the Contract Number field.

Project Identifier Number

Caltrans projects starting on or after July 1, 2010, will have a Project Identifier Number. For projects without a Project Identifier Number, enter N/A in the field.

WDID Number

The WDID number is the number that the SWRCB gives each permittee when the permittee applies for an NOI under the CGP. For projects with a Water Pollution Control Program (WPCP), enter "WPCP" in this field.

Project Site Risk Level

The CGP requires construction activity that results in soil disturbance of 1 acre or more to be permitted under the CGP and have a fully developed site SWPPP. Construction projects with a disturbed soil area of less 1 one acre do not require coverage under the CGP; however, Caltrans requires that a WPCP be prepared. For projects with a WPCP, check "WPCP," if applicable to the form.

For projects with SWPPPs, check the project's Risk Level. The CGP establishes three levels of possible risk for a construction site (Risk Level 1, 2, or 3). The CGP regulatory requirements vary depending on the risk level of the project. The project's Risk Level is specified in the contract special provisions.

A.2 CEM-2023 Stormwater Training Record

General Information:

This form is used to document each stormwater training (formal and informal) conducted for contractor and subcontractor managers, supervisors, and employees during the project. A new form must be completed for each stormwater training conducted. The form details which individuals have attended the training and topics covered. CEM-2024 Stormwater Training Log also must be updated when new training is conducted. See Section 4.3 for stormwater training requirements.

Stormwater raining includes CGP-required specific training or certifications for key personnel (e.g., SWPPP preparers, inspectors, etc.) to ensure that their level of knowledge and skills are adequate to capably design and evaluate project specifications in compliance with CGP requirements. Formal stormwater training includes QSD, QSP, Caltrans-approved 24-hour stormwater management training, and ATS operator training.

This form also documents informal stormwater training. For Caltrans QA/QC purposes, all training project managers, supervisory personnel, subconsultants, and employees involved in WPC work must be trained in stormwater BMP implementation and maintenance standards. This training includes WPC rules and regulations that provide guidelines in sediment and erosion control standards, spill prevention, identifying and handling hazardous substances, proper construction waste management, construction site monitoring, and stormwater quality sampling and analysis. WPC training must be completed prior to working on the job and be conducted weekly thereafter.

Submittal/Filing Requirements:

Provide this training record and an updated copy of CEM-2024, Stormwater Training Log, to the RE within five days of the date of training. File a copy of the form in SWPPP File Category 20.23. Include the form and required training documentation in the stormwater annual report.

Form Information:

Title Block

See Section A.1 for information on completing general project information section.

Stormwater Training Record

Complete form as indicated on form.

Training Audience

Check one of the following responses:

General—Training for individuals responsible for activities associated with compliance with the Construction General Permit (e.g., QSP, personnel supervised by QSP).

BMPs—Training for individuals responsible for BMP installation, inspection, maintenance, and repair (e.g., QSP, personnel supervised by QSP).

SWPPP—Training for individuals responsible for overseeing, revising, and amending the SWPPP (e.g., QSD, WPC Manager).

Attendee Roster

Enter employee name, employee's company name, and employee phone number.

Review and Record Keeping (CEM-2023, Page 2)

The WPC Manager must review and sign the form.

A.3 CEM-2024 Stormwater Training Log

General Information:

This form logs all stormwater training conducted for contractor and subcontractor managers, supervisors, and employees. The form provides a summary or running log of all training conducted for the project. See general information for form CEM-2023 for types of stormwater training required by the CGP and Caltrans.

Submittal/Filing Requirements:

Provide an updated copy of this form with attached training documentation to the RE within five days of the date of training. File a copy of the form in SWPPP File Category 20.23. Include the form and required training documentation in the stormwater annual report.

Form Information:

See instructions for Form CEM-2023.

A.4 CEM-2030 Stormwater Site Inspection Report

General Information:

This form documents stormwater inspections conducted to comply with the CGP. Inspections that must be documented on this form are:

- Weekly BMP Inspections
- Quarterly Non-Stormwater Inspections
- Pre-Storm, During Storm, and Post-Storm Inspections

See Section 3 for information on what is required for each inspection.

Submittal/Filing Requirements:

Submit the original from to the RE within 24 hours of inspection. File a copy of the form conducted for pre-storm, during storm, and post-storm inspections in SWPPP File Category 20.31. File a copy of the form conducted for weekly BMP and quarterly inspections in SWPPP File Category 20.33. If an inspection qualifies as more than one type, fill out each inspection separately and file as appropriate.

Form Information:

If the inspection form does not contain enough lines to report all job site locations or issues, attach additional copies of the form page so that all inspected locations are reported.

Title Block

See Section A.1 for information on completing general project information section.

Inspection Type (CEM-2030, Page 1)

Check one of the inspections types. See Section 3 for description of each inspection type. Complete Storm Information for the selected inspections type located on the same row.

Storm Information (CEM-2030, Page 1)

Complete the storm information for the selected inspection type. Weather information should be the best estimate of beginning of the storm event, duration of the event, and time elapsed since the last storm. A rain event is considered to have ended when no more than 0.125-inch of rainfall is recorded within a consecutive 48-hour period. For completing pre-storm information, see Section 4.4.1 for information on weather tracking.

Obtain forecasted precipitation information from the NWS Forecast Office website, http://www.srh.noaa.gov/forecast.

Rainfall amounts should be recorded from the project site rain gauge. See Section 4.5 for further information on rain gauge readings.

Site Inspection of Best Management Practices (CEM-2030, Pages 2-10)

Project BMPs must be inspected during weekly BMP inspections and during pre-storm, during storm, and post-storm inspections. See Section 3.2.3 for additional information on inspecting BMPs.

If BMP failures or shortcomings are identified during the inspection, repairs or design changes to BMPs, as directed by the WPC Manager, must be implemented as soon as possible, but must commence within 72 hours of identification and be completed as soon as possible. All corrective actions reported on this form also must be reported on form CEM-2035, Stormwater Site Inspection Report Corrective Actions Summary. See Section 3.2.3 for additional information on identifying corrective measures.

Pre-Storm Visual Inspection (CEM-2030, Page 11)

See Section 3.2.3 for additional information on conducting Pre-Storm inspections.

During-Storm Visual Inspection (CEM-2030, Pages 12-13)

See Section 3.2.3 for additional information on conducting During-Storm inspections.

Post-Storm Visual Inspection (CEM-2030, Pages 14-15)

See Section 3.2.3 for additional information on conducting Post-Storm Inspections.

Quarterly Non-Stormwater Visual Inspection (CEM-2030, Pages 16-17)

See Section 3.2.2 for additional information on conducting quarterly non-storm inspections.

Site Inspection Report General Comments (CEM-2030, Page 18)

Review the SWPPP and corrective actions identified during the inspection(s) to answer the questions.

Stormwater Inspection Report Certification (CEM-2030, Page 19)

The individual conducting the stormwater inspection, the WPC Manager, and the RE must sign and date the form.

A.5 CEM-2031 Daily Stormwater Site Inspection Report

General Information:

Form still in development by Caltrans.

A.6 CEM-2034 Stormwater Best Management Practices Status Report

General Information:

This form is used to provide a weekly list of stormwater BMPs from the SWPPP that are active or that will be active on the project site.

Submittal/Filing Requirements:

The WPC Manager must oversee preparation of the BMPs status report and submit the original from to the RE weekly. File a copy of the form in SWPPP File Category 20.34.

Form Information:

See Section A.1 for information on completing general project information section.

Attach additional copies of page 2 and page 3 of this form to include all required locations. Insert consecutive numbers for each location when using page 2 or page 3 of this form.

Identify the locations of project BMPs.

Identify area of disturbed soil in acres. Identify how many acres are active and inactive disturbed soil areas. Inactive areas are those with disturbed soil and are not scheduled to be re-disturbed for at least 14 days.

List the name and ID of all BMPs used at that location. BMP IDs are provided on page 4 of the form.

Identify the quantity installed to date and the quantity to be installed next week. See example below.

Repeat for all project locations where BMPs are installed.

No.	Stormwater Best Management Practices Status			
1	Location Slope on east side of bridge	Disturbed soil area 2.2 acres	Active disturbed soil area 1 acre	Inactive disturbed soil area 1.2 acres
	BMP Name	**BMP ID**	**Quality installed to date**	**Quality to be installed next week**
	Hydroseeding	SS-04	1.2 acres	1 acre
	Fiber rolls	SC-05	320 fee	250 feet
	Earth dike and drainage swale (control run-on, drains to slope drain)	SS-09	120 feet	75 feet
	Outlet protection and velocity dissipation devices (end of slope drain)	SS-10	1	1
	Slope Drains	SS-11	50 feet	50 feet

A.7 CEM-2035 Stormwater Site Inspection Report Corrective Actions Summary

General Information:

This form must be completed for any deficiencies that were identified during visual monitoring (site inspection) and for corrections of deficiencies.

Submittal/Filing Requirements:

A copy must be attached to corresponding inspection report (Form CEM-2030). The form must be submitted to the RE when corrections are completed but must be submitted within five days of the site inspection. File the original of the form in SWPPP File Category 20.35. File a copy of the form with the corresponding inspection report (CEM-2030) in SWPPP File Category 20.31 or 20.33.

Form Information:

See Section A.1 for information on completing general project information section.

If the summary form does not have enough lines to report all required actions, use additional copies of page 2 from this form to report all required corrective actions from an inspection form.

On page 2 of this form (and on additional copies of page 2, if applicable), insert consecutive numbers for each required corrective action.

If BMP failures or shortcomings are identified during the inspection, any repairs or design changes to BMPs, as directed by the WPC Manager, must be implemented as soon as possible, but must commence within 72 hours of identification and be completed as soon as possible. All corrective actions reported must be reported on this form. See

Section 3.3.2 for additional information on identifying corrective measures. Comments must be provided when the required action is changed from the Stormwater Site Inspection Report.

Certification and Review (CEM-2049, Page 4)

The WPC Manager and RE must review, sign, and date the completed form.

A.8 CEM-2040 Weather Forecast Log

General Information:

This form is used to document daily weather forecasts for the project site on a weekly basis. Complete the weather forecast log each working day. If the project is a calendar-day project (seven working-day week), attach an additional copy of page 2 to report all seven days.

Submittal/Filing Requirements:

The form must be submitted to the RE within 48 hours of the ending date. File the original of the form in SWPPP File Category 20.40.

Form Information:

Title Block

See Section A.1 for instructions on completing the title block.

Weather Monitoring Log

1. Within a 24-hour period obtain weather forecast information for the project site on the NWS Forecast Office website: http://www.srh.noaa.gov/

2. On NWS website, enter the site's nearest city, state, or zip code in the "Search for" box.

3. Click on “Forecast Weather Table Interface” on the bottom right side of the page.

4. Enter weather forecast information from the Forecast Weather Table. Record forecasted chance of precipitation and precipitation amounts for each 6-hour period for the next 24 hours, 48 hours, 72 hours, and 96 hours. For each day a forecast is recorded, do not include forecast information for the current date.

5. From the forecast information recorded, determine if the chance for precipitation is 50 percent or greater within 48 hours of the forecast date, and check the appropriate box.

6. From the forecast information recorded, determine if the chance for precipitation is 50 percent or greater within 72 hours of the forecast date, and check the appropriate box.

7. Using the forecasted amounts of precipitation for each 6-hour period, add the amounts to determine the cumulative amount of precipitation for a storm event, and record the amount on the form. A rain event is considered to have ended when no more than 0.125-inch of rainfall is recorded within a consecutive 48-hour period. You may need to use information within the 96-hour forecast to determine storm event forecasted cumulative amount of precipitation. Determine if the forecasted cumulative amount of precipitation for the storm event is 0.5 inch or greater, and check the appropriate box.

See Section 4.4.1 for additional information on weather tracking. See form instructions for WPCP/SWPPP implementation requirements based on weather forecast.

A.9 CEM-2041 Weather Monitoring Log

General Information:

This form is used to record daily weather information for the project site on a weekly basis. Complete the weather monitoring log each working day. If the project is a calendar day project (seven working-day week), attach an additional copy of page 2 to report all seven days.

Submittal/Filing Requirements:

The form must be submitted to the RE within five days of the ending date of work week. File the original of the form in SWPPP File Category 20.40.

Form Information:

Title Block

See Section A.1 for information on completing general project information section.

Weekly Reporting Period

Enter the first and last working day for the reporting period (i.e., work week).

Weather Information

Enter the date for which the weather information is being completed.

Complete the weather information using the Current Conditions section of the NWS' website at http://www.srh.noaa.gov/ or using data measured onsite (i.e., visual observation of weather conditions, measured temperature, measured wind speed, etc.).

Storm Precipitation Information

Complete this section when there is any precipitation within the 24-hour period. Enter precipitation information during working hours at least every two hours when precipitation is occurring.

Precipitation can be measured using either a portable "direct-reading" rain gauge (graduated collector that is read manually) or an electronic "tipping bucket" rain gauge. See Section 4.5 and form instructions for further information on rain gauge readings. Typically, electronic tipping bucket rain gauges record rainfall using a current or daily counter and a total or cumulative storm event counter. The cumulative counter must be reset to zero after each storm event (a storm event is considered to have ended when no more than 0.125-inch of rainfall is recorded within a consecutive 48-hour period).

If a portable, direct-reading rain gauge is used to collect precipitation data, field personnel must be present on site during the precipitation event to take periodic readings.

Indicate on the form if an electronic tipping bucket rain gauge or direct-reading rain gauge is being used.

Time
Enter the time of the rain gauge reading.

Rain Gauge Reading
If using an electronic tipping bucket rain gauge, enter the current/daily counter reading. If applicable to the meter, reset daily counter at the end of day.

If using a direct-reading rain gauge, enter the rainfall reading. Empty the gauge.

Storm Event Cumulative Precipitation Amount
If using an electronic tipping bucket rain gauge, enter the total or cumulative storm event counter reading. This column will be used to record the total cumulative storm event rainfall reading.

If using a direct-reading rain gauge, add the current rainfall reading to the previous cumulative storm event reading. This column should be used to record the daily cumulative rainfall reading.

Storm Event Information

Indicate the date and time the storm event began. Enter the cumulative amount of rainfall recorded for the storm event on the previous day from the previous day's form.

If the storm event ended, indicate the date and time the storm event ended. A storm event is considered to have ended when no more than 0.125-inch of rainfall is recorded within a consecutive 48-hour period. If the storm event lasted for longer than a 24-hour period, check the box for "Extended duration storm event."

Enter the cumulative amount of rainfall for the storm event to date in inches. If using an electronic tipping bucket rain gauge, this will be the total or cumulative storm event counter reading. If using a direct-reading rain gauge, this will be the calculated cumulative daily measurement from the current day's form added to the previous day's cumulative amount of rainfall for the storm event to date located on the previous day's form.

At the end of day, enter the cumulative amount of precipitation recorded for the last 24 hours. If using an electronic tipping bucket rain gauge, this amount will be the current/daily counter reading. If using a direct-reading rain gauge, this amount will be the calculated cumulative daily measurement.

If the cumulative rainfall measurement for the storm event is 0.5 inches or greater, check the "Yes" box. Otherwise, check the "No" box. If "Yes" is checked and the project is a Risk Level 2 or 3, check "Yes" that stormwater discharges are being sampled and analyzed. Otherwise, check the "No" box. Note that the CGP requires samples to be collected daily during a storm event that produces at least 0.5 inches of rainfall.

Additional Storm Event Information

For Risk Level 1 or 2 projects that do not have an ATS, enter "Not Applicable" in this section.

For Risk Level 3 projects, enter the Compliance Storm Event for your project site in inches. The Compliance Storm Event for Risk Level 3 discharges is the 5-year, 24-hour storm event (expressed in inches of rainfall), as determined using maps found at the following locations:

- Isopluvials of 5-year, 24-hour precipitation for the northern half of California in tenths of an inch (divide number on map by 10 to get inches) are available at: http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif
- Isopluvials of 5-year, 24-hour precipitation for the southern half of California in tenths of an inch (divide number on map by 10 to get inches) are available found at: http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif

For sites that use an ATS, enter the Compliance Storm Event for your project site in inches. The Compliance Storm Event for Risk Level 3 discharges is the 10-year, 24-hour storm event (expressed in inches of rainfall) (divide number on map by 10 to get inches), as determined using maps found at the following locations:

- Isopluvials of 10-year, 24-hour precipitation for the northern half of California in tenths of an inch (divide number on map by 10 to get inches) are available at: http://www.wrcc.dri.edu/pcpnfreq/nca10y24.gif
- Isopluvials of 10-year, 24-hour precipitation for the southern half of California in tenths of an inch (divide number on map by 10 to get inches) are available at: http://www.wrcc.dri.edu/pcpnfreq/sca10y24.gif

Compare the cumulative amount of precipitation for the storm event from the rain gauge reading(s) to the Compliance Storm Event criteria to determine if the storm event exceeds the Compliance Storm Event. Compliance with NELs is required unless an NEL exceedance occurs during a storm event that is equal or greater than a Compliance Storm Event. If the storm event exceeds the Compliance Storm Event, check the "Yes" box. Otherwise, check the "No" box.

If the storm event exceeds the Compliance Storm Event, the on-site rain gauge data must be verified with precipitation data from nearby government-operated rain gauge. These gauges may be operated by local, regional, state, or national agencies, such as county flood control districts.

The on-site rain gauge is used as the primary determinant of the on-site rainfall amount; the nearby governmental gauge is used as an approximation to verify the on-site readings. NWS weather station precipitation data are available at: http://www.cnrfc.noaa.gov/awipsProducts/RNOHYDRSA.php.

Print out governmental gauge precipitation data and attach to the form. Enter the weather station name and location on the form. The person who completes the form must print and sign the form.

A.10 CEM-2045 Rain Event Action Plan-Highway Construction Phase

General Information:

This form must be completed by the WPC Manager for Risk Level 2 and Risk Level 3 projects in the highway construction phase when the chance for precipitation is 50 percent or greater within 72 hours of the forecast date. The Rain Event Action Plan (REAP) must be developed 48 hours prior to any likely precipitation rain event (any weather pattern that is forecast to have a 50 percent or greater probability of producing precipitation in the project area). A REAP is designed to protect exposed areas of the project within 48 hours prior to a likely precipitation event. The REAP must be made available on site and implementation begun no later than 24 hours prior to the likely precipitation event.

Submittal/Filing Requirements:

This form and attached Sampling and Analysis Plan (SAP) (CEM-2048 or CEM-2049) must be submitted to the RE within 24 hours prior to a storm event. File the original of the form in SWPPP File Category 20.45.

Form Information:

Title Block

See Section A.1 for information on completing general project information section.

Enter the contact information for the WPC Manager, erosion and sediment control provider or subcontractor, and the stormwater sampling and testing agent or subcontractor.

Storm Information (CEM-2045, Page 1)

Enter the project site zip code.

Enter the date and time the forecast was checked.

Obtain weather forecast information for the project site on the NWS Forecast Office website:
http://www.srh.noaa.gov/forecast

1. On NWS website, enter the site's nearest city, state, or zip code in the "Search for" box.

2. Click on "Forecast Weather Table Interface" on the bottom right side of the page.

3. Enter weather forecast information from the Forecast Weather Table. Record forecasted chance of precipitation and precipitation amounts for each six-hour period for the next 24 hours, 48 hours, and 72 hours. For each day a forecast is recorded, do not include forecast information for the current date.

4. If the predicted weather pattern is forecasted to produce one-half inch or more of rain, check the "Yes" box. Otherwise, check the "No" box.

CEM-2045, Page 2

Check all boxes that apply to current project site.

Predicted Rain-Event-Triggered Actions (CEM-2045, Pages 3-6)

Check all boxes that apply to current project site.

Certification of Rain Event Action Plan (CEM-2045, Page 7)

The WPC Manager and RE must sign and date the completed form.

A.11 CEM-2046 Rain Event Action Plan-Plant Establishment Phase

General Information:

This form must be completed by the WPC Manager for Risk Level 2 and Risk Level 3 projects in the plant establishment phase with the chance for precipitation 50 percent or greater within 72 hours of the forecast date.

See instructions for form CEM-2045 for information on completing this form.

A.12 CEM-2047 Rain Event Action Plan-Inactive Project

General Information:

This form must be completed by the WPC Manager for Risk Level 2 and Risk Level 3 projects that are inactive with the chance for precipitation 50 percent or greater within 72 hours of the forecast date.

See instructions for form CEM-2045 for information on completing this form.

A.13 CEM-2048 Storm Event Sampling and Analysis Plan

General Information:

Complete this form to develop a non-visible pollutant sampling and analysis plan. This form is required for Risk Level 1 sites with forecasted precipitation (any rain event), or for Risk Level 2 or 3 project sites with forecasted cumulative amount of precipitation for storm event of less than 0.5 inch (not a qualifying rain event). See Section 5 for additional information on non-visible pollutant monitoring.

Submittal/Filing Requirements:

This form must be attached to a REAP if available (for Risk Level 2 and 3 projects) and submitted to the RE within 24 hours prior to a storm event. File the original of the form in SWPPP File Category 20.45.

Form Information:

Title Block (CEM-2048, Page 1)

See Section A.1 for information on completing general project information section.

Weather Forecast Information (CEM-2048, Page 1)

See instructions for form CEM-2045 for information on weather forecasting.

Sampling Schedule (CEM-2048, Page 1)

When non-visible pollutant sampling is required (See Section 5), (a) grab sample(s) must be collected during the first two hours of discharge occurring during project working hours from all discharge locations that meet the non-visible pollutant sampling criteria and that can be safely accessed. Based on the weather forecast, enter the date and time that stormwater discharge sampling is required to begin. Stormwater discharge sampling is required every 24 hours during an extended storm event. Based on the predicted duration of the storm event, enter the dates sampling is required.

Enter the order in which the stormwater discharge sample location(s) identified in Table 1 and 2 will be sampled. Document the rationale for the sampling order.

Non-Visible Pollutant Sampling Locations (CEM-2048, Page 2)

Complete the "Storm Event Sampling and Analysis Worksheet" on CEM-2048 pages 4-6 by following instructions on those pages to determine sampling locations.

If no sampling locations for non-visible pollutants exist for this storm event, check the "No" box and sign and date the form (CEM-2048 page 3). Otherwise, check the "Table 1 shows sampling locations for non-visible pollutants for this storm event" box, complete Tables 1 and 2, and sign and date the form (CEM-2048 page 3).

Table 1 (CEM-2048, Page 2)

One grab sample of the discharge from all locations that meet the non-visible pollutant sampling criteria and one grab sample of stormwater that has not come in contact with the disturbed soil or the materials stored or used on site (uncontaminated sample) must be collected per day of stormwater discharge.

Enter the discharge location identification number, the uncontaminated sample identification number, the location of sampling (e.g., Drainage Area 4 – Landscaping Material Storage Area), the sample type (e.g., grab stormwater), the water quality indicator constituent (see Table 5-1) (e.g., phosphate), and the analysis (e.g., EPA Method 365.3).

Table 2 (CEM-2048, Page 2)

List the sampling locations in numeric order. If a QA/QC sample is collected for a sampling location (e.g., a duplicate sample), check the "QCQA" box next to that sample location.

Certification and Review (CEM-2048, Page 3)

The WPC Manager and RE must review, sign, and date the completed form.

Storm Event Sampling and Analysis Worksheets (CEM-2048, Pages 4-6)

See CEM-2048 page 4 for instructions on completing the worksheets.

A.14 CEM-2049 Qualifying Rain Event Sampling and Analysis Plan

General Information:

Complete this form to develop a sampling and analysis plan for qualifying rain events. This form is required Risk Level 2 or 3 project sites with forecasted cumulative amount of precipitation for storm event of 0.5 inch or more (qualifying rain event). Potential sampling types include non-visible, stormwater discharge, run-on, and receiving water.

Submittal/Filing Requirements:

This form must be attached to a REAP if available (for Risk Level 2 and 3 projects) and submitted to the RE within 24 hours prior to a storm event. File the original of the form in SWPPP File Category 20.45.

Form Information:

Title Block (CEM-2049, Page 1)

See Section A.1 for information on completing general project information section.

Weather Forecast Information (CEM-2049, Page 1)

See instructions for form CEM-2045 for information on weather forecasting.

Sampling Schedule (CEM-2049, Page 1)

When non-visible pollutant sampling is required (see Section 5), grab sample(s) must be collected during the first two hours of discharge occurring during project working hours from all discharge locations that meet the non-visible pollutant sampling criteria and that can be safely accessed. Stormwater samples must be collected from each representative discharge point (defined in Section 7.3) daily during qualifying rain events. Run-on from surrounding areas must be sampled if there is reason to believe run-on may contribute to an exceedance of NALs or NELs. Receiving water monitoring is required by the CGP for all Risk Level 3 projects that violate an NEL and have direct discharge into receiving waters (see Section 10 for more information). Based on the weather forecast, enter the date and time that stormwater discharge sampling is required to begin.

Samples must be collected of stored or contained stormwater (accumulated stormwater) that is discharged subsequent to a storm event producing precipitation of 0.5 inch or more at the time of discharge. If stored or contained stormwater from a previous qualifying rain event needs to be sampled before being discharged, check the "Yes" box and notify the sampling and analysis provider. Otherwise, check the "No" box.

Enter the order in which stormwater discharge sample location(s) identified in Table 5 of the form will be sampled. Document the rationale for the sampling order.

Non-Visible Pollutant Sampling Locations (CEM-2049, Page 2)

Complete the "Storm Event Sampling and Analysis Worksheet" on CEM-2049 pages 5-6 by following instructions on those pages to determine sampling locations.

If no sampling locations for non-visible pollutants exist for this storm event, check the "No" box. Otherwise, check the "Table 1 shows sampling locations for non-visible pollutants for this storm event" box and complete Table 1 using the completed worksheet on CEM-2049 pages 5-6.

Stormwater Discharge Sampling Locations (CEM-2049, Page 2)

Complete the Worksheets on CEM-2049 pages 7-11 by following instructions on those pages to determine sampling locations.

If no sampling locations for stormwater discharge exist for this storm event, check the "No" box. Otherwise, check the "Table 2 shows sampling locations for required turbidity and pH analysis, optional SSC analysis, and other analysis for this storm event" box and complete Table 2 using the completed worksheet pages 7-11. Suspended sediment concentration (SSC) analysis is required for Risk Level 3 sites that exceed the turbidity daily average NEL. Other analyses may be required by the Regional Water Quality Control Board (RWQCB) (see Section 8 for more information).

Project Run-on Sampling Locations (CEM-2049, Page 3)

Complete the "Worksheet for Determining Rain Event Run-on Sampling Locations" on CEM-2049 page 12 by following instructions on those pages to determine sampling locations.

If no sampling locations for stormwater discharge exist for this storm event, check the "No" box. Otherwise, check the "Table 3 shows sampling locations for project site run-on for this storm event" box and complete Table 3 using the completed worksheet on CEM-2049 page 12.

Receiving Water Sampling Locations (CEM-2049, Page 3)

Complete the "Worksheet for Determining Storm Event Receiving Water Sampling Locations" on CEM-2049 pages 13-14 by following instructions on those pages to determine sampling locations. Enter information from worksheet completed on CEM-2049 pages 13-14 into the table on CEM-2049 page 3. Receiving water monitoring is required by the CGP for all Risk Level 3 projects that violate an NEL and have direct discharge into receiving waters (see Section 10 for more information).

If no sampling locations for stormwater discharge exist for this storm event, check the "No" box. Otherwise, check the "Table 4 shows receiving water sampling locations for this storm event" box and complete Table 4 using the completed worksheet pages 13-14.

Table 5 Sampling Locations for Rain Event Listed in Numeric Order (CEM-2049, Page 4)

The sampling locations should be arranged in the following order on the list: starting with the sampling location on the north-west corner of the WPCDs as the first entry, move clockwise or counterclockwise on the WPCDs and enter all the sampling locations on the list. If an alternative sampling location order is used (e.g., monitoring priority locations first at a small project site or flow began in another area of the site), the rationale must be documented in on page 1 of the CEM-2049. If a QA/QC sample is collected for a sampling location (e.g., a duplicate sample), check the "QCQA" box next to that sample location.

Certification and Review (CEM-2049, Page 4)

The WPC Manager and RE must review, sign, and date the completed form.

A.15 CEM-2050 Sample Information, Identification, and Chain-of-Custody Record

General Information:

Complete a separate form for each sampling location daily.

Submittal/Filing Requirements:

This form must be submitted to the laboratory with the samples to trace the possession and handling of samples from collection through analysis. A copy of this form must be attached with forms CEM-2051 and CEM-2052 and submitted to the RE within 48 hours of sampling for field analyzed samples. A copy of this form must be attached with forms CEM-2051 and CEM-2054 and submitted to the RE within 30 days of collection for laboratory analyses. File a copy of this form in SWPPP File Category 20.50, 20.51, 20.52, 20.53, or 20.54, as applicable.

Form Information:

Title Block (CEM-2048, Page 1)

See Section A.1 for information on completing general project information section.

Daily Sample Record

Enter the sampling location (e.g., site discharge location near Interstate 5), date of sampling, sample location identification number (see Section 4.4.3 and forms CEM-2048 and CEM-2049), and sample type ("Other" could include other non-stormwater sources

described in Section 6). The sampler must sign and print their name and company (e.g., Caltrans). Enter the parameters that the sample should be analyzed for (see forms CEM-2048 and CEM-2049 for additional information).

Sample Information

Enter the sample identification number, the time the sample was collected, the storm event precipitation amount at time of sampling (see form CEM-2041), sample preservation (see Section 4.6.5 and Table 4-1), note any comments about the sample, and check box if any photos were taken of the sampling location, sample collection, or sample.

Sampling Exception

Check the corresponding "Yes" or "No" box if there was an exception as to why sampling was not conducted. Provide an explanation why samples were not collected. Visual monitoring and sample collection should be conducted only during scheduled project working hours. Sample collection should not be performed during dangerous weather conditions, such as flooding and electrical storms.

Chain-of-Custody Form

See Section 4.6.6 for additional information. Every time the sample(s) changes possession, the Chain-of-Custody (COC) form must be signed and dated by the person releasing custody and the person receiving custody of the sample. For example, the sampler may release custody of the sample to a courier. At the transfer, both the sampler and the courier sign and date/time the COC form. Then the courier delivers the sample to the laboratory where now the courier and lab representative sign and date/time the COC form.

Review and Recordkeeping

The WPC Manager and RE must review, sign, and date the completed form.

A.16 CEM-2051 Stormwater Sampling and Analysis Log

General Information:

Complete this form to document details of all sampling events and to record results for the samples collected. Complete this form for every storm event that requires sampling and analysis. Complete this form weekly for logging non-stormwater sampling and

analysis, and indicate in the sampling location column the reason for non-stormwater samples (e.g., sample from dewatering operation).

Submittal/Filing Requirements:

Submit to the RE with forms CEM-2050 and CEM-2052 within 48 hours of sampling for field analyzed samples, and with forms CEM-2050 and CEM-2054 within 30 days of collection for laboratory analyses. File a copy of this form in SWPPP File Category 20.50, 20.51, 20.52, 20.53, or 20.54, as appropriate.

Form Information:

Title Block (CEM-2051, Page 1)

See Section A.1 for information on completing general project information section.

Stormwater Sampling and Analysis Log Review (CEM-2051, Page 1)

The WPC Manager must review, sign, and date the completed form.

Stormwater Sampling and Analysis Log (CEM-2051, Page 2)

Complete the table for all samples collected on the sample date. See CEM-2051 page 3 for instructions. Include sample result units with sample result (e.g., 29 NTU for turbidity or 275 mg/L for TSS). See Section 4.12.1 for more information on calculating daily average.

A.17 CEM-2052 Stormwater Sample Field Test Report

General Information:

Complete this form for each sample or set of samples that are tested in the field (as opposed to analyzed by a laboratory).

Submittal/Filing Requirements:

Submit to the RE with forms CEM-2050 and CEM-2051 within 48 hours of sampling. File a copy of this form in SWPPP File Category 20.50, 20.51, 20.52, 20.53, or 20.54.

Form Information:

Title Block (CEM-2052, Page 1)

See Section A.1 for information on completing general project information section.

Stormwater Samples Field Analysis (CEM-2052, Page 1)

Enter the sampling location (e.g., site discharge location near Interstate 5), date of sampling, and sample location identification number (see Section 4.4.3 and forms CEM-2048 and CEM-2049). The person who analyzes the sample must sign and print their name, phone number, and company (e.g., Caltrans). Enter the parameters that the sample should be analyzed for (see forms CEM-2048 and CEM-2049 for additional information). "Other" field parameters could include those required by RWQCB (see Section 6).

Enter the sample identification number (see Section 4.4.3 and forms CEM-2048 and CEM-2049) and testing results. See Section 4.12.1 for more information on calculating daily average.

Turbidity, pH, and Other Analysis Information (CEM-2052, Page 2)

Enter meter information. Information may be obtained from the meter instruction manual(s) available in the SWPPP files.

Review and Recordkeeping (CEM-2052, Page 2)

Check the corresponding "Yes" or "No" box if test results were entered into the sampling and testing activity log (CEM-2051).

Check the corresponding "Yes" or "No" box if the NAL was exceeded.

Check the corresponding "Yes" or "No" box if the NEL was exceeded.

See Table 4-2 for NALs and NELs. See Section 11.2 for requirements if an NAL or NEL is exceeded.

Review and Recordkeeping (CEM-2052, Page 2)

The WPC Manager and RE must review, sign, and date the completed form.

A.18 CEM-2054 Stormwater Sample Laboratory Test Report

General Information:

Complete this form for each sample or set of samples that are analyzed by a laboratory (as opposed to tested in the field). Complete a separate form for each sampling location daily. If the form is not completed by the testing laboratory, then the laboratory report used to complete the form must be attached to the completed form.

Submittal/Filing Requirements:

Submit to the RE with forms CEM-2050 and CEM-2051 within 30 days of collection. File a copy of this form in SWPPP File Category 20.50, 20.51, 20.52, 20.53, or 20.54.

Form Information:

See instructions for forms CEM-2050 and CEM-2052.

A.19 CEM-2055 Stormwater Equipment Maintenance Log

General Information:

This form is used to document maintenance of stormwater equipment, such as turbidity or pH meters.

Submittal/Filing Requirements:

File a copy of this form in SWPPP File Category 20.55.

Form Information:

Title Block (CEM-2055, Page 1)

See Section A.1 for information on completing general project information section.

Maintenance Log (CEM-2055, Page 1)

Enter meter information. Information may be obtained from the meter instruction manual(s) available in the SWPPP files.

Enter repair or maintenance information as performed.

A.20 CEM-2056 Stormwater Turbidity Meter Calibration Record

General Information:

This form is used to document calibration of turbidity meter(s).

Submittal/Filing Requirements:

File a copy of this form in SWPPP File Category 20.55.

Form Information:

Title Block (CEM-2056, Page 1)

See Section A.1 for information on completing general project information section.

Turbidity Meter (CEM-2056, Page 1)

Enter meter information. Information may be obtained from the meter instruction manual(s) available in the SWPPP files.

If using different standard solutions than indicated in the form, revise the form with the correct standard solution NTU values. For example, the Hach 2100Q turbidity meter calibration is accomplished with three standards (20 NTU, 100 NTU, and 800 NTU) provided in the meter kit by the manufacturer. In the "Control Number" column, enter the manufacturer lot number for the standard solution. In the "Date" column, enter the manufacturer expiration date for the standard solution.

Turbidity Calibration Date _____ (CEM-2056, Page 1)

Enter the date the meter is calibrated. Complete this section each day the turbidity meter is used.

Enter the standard solution manufacturer expiration date. Enter the time the meter was calibrated. After the meter is calibrated, place each standard solution back into the meter and record the meter reading for each calibration solution.

If the meter does not calibrate correctly or if during the course of the day meter readings indicate re-calibration is necessary, re-calibrate the meter and record the readings.

A drift check is used determine the ability of the meter to retain calibration over extended field use. A drift check would be performed at the end of day by measuring the change in reading to one or more standard solutions. The default acceptable performance is 10 percent.

Record any notes regarding calibration. Any corrective actions to calibrate the meter or maintenance activities must be noted. The person who calibrates the meter must initial the calibration performed for each standard solution.

Review (CEM-2056, Page 2)

The WPC Manager and RE must review, sign, and date the completed form.

A.21 CEM-2057 Stormwater pH Meter Calibration Record

General Information:

This form is used to document calibration of pH meter(s).

Submittal/Filing Requirements:

File a copy of this form in SWPPP File Category 20.55.

Form Information:

Title Block (CEM-2057, Page 1)

See Section A.1 for information on completing general project information section.

pH Meter (CEM-2057, Page 1)

See instructions for form CEM-2056.

pH Meter Calibration Record (CEM-2057, Page 1)

Enter the date the meter was calibrated, the electrode number, the temperature reading at calibration, and the measured slope. See form instructions for calibration requirements for slope.

Check the box for which calibration solutions were used during the calibration. Check the "Re-check pH 7.0" box, if after the calibration is completed, a pH reading for the pH 7.0 calibration solution is measured as a calibration re-check. Check the box if notes are recorded. Any corrective actions to calibrate the meter or maintenance activities must be noted on page 2 of the form. The person who calibrates the meter must initial the calibration performed for each standard solution.

Review (CEM-2057, Page 2)

The WPC Manager and RE must review, sign, and date the completed form.

A.22 CEM-2058 Stormwater Meter Calibration Record

See instructions for CEM-2056.

A.23 CEM-2061 Notice of Discharge Report

General Information:

This form is to be completed when the contractor, Caltrans, State Water Resources Control Board (SWRCB), or RWQCB staff determines that stormwater discharges, authorized non-stormwater discharges, or non-authorized, non-stormwater discharges are causing or contributing to an exceedance of an applicable water quality standard. Water quality standards are contained in the Statewide Water Quality Control Plan or applicable RWQCBs Basin Plan. See Table 10-1 for RWQCB Basin Plans Online Resources.

Submittal/Filing Requirements:

Discharges must be reported to the RE verbally when discovered. Submit the original form to the RE within 24 hours of discovery. File a copy of this form in SWPPP File Category 20.61.

Form Information:

Title Block (CEM-2061, Page 1)

See Section A.1 for information on completing general project information section.

Notice of Discharge General Information (CEM-2061, Page 1)

See form instructions on page 4.

Storm Event Information (CEM-2061, Page 1)

See instructions for form CEM-2030 and CEM-2041.

Notice of Discharge Information (CEM-2061, Pages 1-2)

Complete section as indicated on form.

Sampling and Analysis Results (CEM-2061, Page 2)

See instructions for form CEM-2052 and CEM-2054.

Analysis Information (CEM-2061, Page 2)

See instructions for form CEM-2056.

Sampling and Analysis Results (CEM-2061, Page 3)

See instructions on page 12 of CEM-2049.

Notice of Discharge Report Certification (CEM-2061, Page 3)

The WPC Manager and RE must review, sign, and date the completed form.

A.24 CEM-2062 Numeric Action Level Exceedance Report

General Information:

For Risk Level 2 or 3 projects, complete this form if the daily average of effluent sample analysis results exceeds an applicable NAL. See Section 11.2 for additional information

on NAL reporting. See Table 4-2 for NALs. See Section 4.12.1 for information on calculating daily average.

Submittal/Filing Requirements:

Submit original form to the RE within 48 hours. The RE will electronically sampling results to the SWRCB via Storm Water Multi-Application and Report Tracking System (SMARTS) within 10 after the conclusion of the storm event for Risk Level 2 projects and within five days after the conclusion of the storm event for Risk Level 3 projects. The RE will submit the NAL Exceedance Report if required by the RWQCB upon review of the sampling results.

File a copy of this form in SWPPP File Category 20.62.

Form Information:

Title Block (CEM-2062, Page 1)

See Section A.1 for information on completing general project information section.

Numeric Action Level Exceedance Information (CEM-2062, Page 2)

See instructions for form CEM-2052 and CEM-2054.

Storm Event Information (CEM-2062, Page 2)

See instructions for Form CEM-2030 and CEM-2041.

Analysis Information (CEM-2061, Page 2)

See instructions for form CEM-2056.

Exceedance Location Information (CEM-2062, Page 2)

Complete section as indicated on form.

Additional Information (CEM-2062, Page 2)

See instructions on page 12 of CEM-2049.

Certification and Review (CEM-2049, Page 4)

The WPC Manager and RE must review, sign, and date the completed form.

A.25 CEM-2063 Numeric Effluent Limitation Violation Report

General Information:

For Risk Level 3 projects, complete this form if the daily average of effluent sample analysis results exceeds an applicable NEL. See Section 11.2 for additional information on NEL reporting. See Table 4-2 for NELs. See Section 4.12.1 for information on calculating daily average.

Submittal/Filing Requirements:

If an NEL is exceeded, immediately report the results to the RE verbally. Submit the original NEL Violation Report form to the RE within six hours after a violation is identified. The RE will electronically submit an NEL Violation Report to the SWRCB via SMARTS within 24 hours after the NEL exceedance has been identified. File a copy of this form in SWPPP File Category 20.63.

Form Information:

See instructions for CEM-2062.

A.26 CEM-2065 Notice of Discharge Log

General Information:

This form is used to list all discharges that occur during the project.

Submittal/Filing Requirements:

An updated Notice of Discharge Log is to be submitted to the RE with each Notice of Discharge Report, Numeric Action Level Exceedance Report, or Numeric Effluent Limitation Violation Report. File a copy of this form in SWPPP File Category 20.61.

Form Information:

Title Block (CEM-2065, Page 1)

See Section A.1 for information on completing general project information section.

Notice of Discharge Log (CEM-2065, Page 1)

Complete section as indicated on form.

APPENDIX B

BOTTLE AND EQUIPMENT CLEANING PROTOCOLS

APPENDIX B BOTTLE AND EQUIPMENT CLEANING PROTOCOLS

B.1 Sample Bottles

1. Rinse bottle with warm tap water three times as soon as possible after emptying sample.
2. Soak in a 2% Contrad solution for 48 hours; scrub with clean plastic brush.
3. Rinse three times with tap water.
4. Rinse five times with Milli-Q water, rotating the bottle to ensure contact with the entire inside surface.
5. Rinse three times with hexane, rotating the bottle to ensure contact with the entire inside surface (use 30 milliliter [mL] per rinse).
6. Rinse six times with Milli-Q water.
7. Rinse three times with 2N nitric acid (1 liter per bottle, per rinse) rotating the bottle to ensure contact with the entire inside surface.
8. Rinse six times with Milli-Q water.
9. Cap bottle with Teflon lined lid cleaned as specified below.

B.2 Lids

1. Make up a 2% solution of Micro soap in warm tap water.
2. Rinse tubing three times with the 2% Micro Solution, wash lids.
3. Rinse three times with tap water.
4. Rinse three times with Milli-Q water.
5. Rinse three times with a 2N nitric acid solution.
6. Soak 24 hours in a 2N nitric acid solution.
7. Rinse three times with Milli-Q water.

B.3 Cleaning Solutions

1. 2% Contrad = 200 mL concentrated Contrad per full 10 liter (L) bottle
2. 2% HNO_3 Acid = 80 mL concentrated HNO_3 acid (16N) per gallon of Milli-Q water
3. 2% Micro = 80 mL concentrated Micro per gallon of Milli-Q water

B.4 Equipment and Handling

1. Safety Precautions - All of the appropriate safety equipment must be worn by personnel involved in the cleaning of the bottles due to the corrosive nature of the chemicals being used to clean the bottles and tubing. This safety equipment must include protective gloves, lab coats, chemically resistant aprons, goggles with side shields and respirators. All MSDS must be read and signed off by personnel.
2. A record book must be kept of each sample bottle washed, outlining the day the bottle was cleaned and checked off for passage of the quality control check.
3. Nitrile gloves must be worn while cleaning and handling bottles and equipment.

Care must be taken at all times to avoid introduction of contamination from any source.

APPENDIX C

LINEAR UNDERGROUND/OVERHEAD PROJECT MONITORING REQUIREMENTS

APPENDIX C LINEAR UNDERGROUND/ OVERHEAD PROJECT MONITORING REQUIREMENTS

C.1 Definition of Linear Underground/Overhead Projects

Linear underground/overhead projects (LUPs) include, but are not limited to, any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid (including water and wastewater for domestic municipal services), liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g., telephone, telegraph, radio or television messages); and associated ancillary facilities.

Construction activities associated with LUPs include, but are not limited to, 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, and associated ancillary facilities). Such activities may include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

The utility company, municipality, or other public or private company or agency that owns or operates the linear underground/overhead project is responsible for obtaining coverage under the Construction General Permit (CGP) where the construction of pipelines, utility lines, fiber-optic cables, or other linear underground/overhead projects will occur across several properties unless the LUP construction activities are covered under another construction stormwater permit.

C.2 Monitoring Requirements Overview

Monitoring must be conducted to comply with the CGP. Table C-1 summarizes the requirements, which are detailed in the following subsections.

Table C-1. Summary of LUP Monitoring Requirements

LUP Risk Level	Visual Monitoring (Inspections)				Water Quality Monitoring (Sample Collection/Testing)		
	Daily Site BMP[1]	Pre-Storm[2]	Daily Storm BMP[3]	Post-Storm[4]	Stormwater Discharge (pH and turbidity)[5,6,7]	Non-Visible Pollutants[8]	Receiving Water[9,10]
1	✓					✓	
2	✓	✓	✓	✓	✓	✓	
3	✓	✓	✓	✓	✓	✓	✓

1 Inspections may be discontinued in non-active construction areas where soil-disturbing activities are completed and final soil stabilization is achieved (e.g., paving is completed, substructures are installed, vegetation meets minimum cover requirements for final stabilization, or other stabilization requirements are met). Inspections must continue after active construction until adequate permanent stabilization is established and, in areas where revegetation is chosen, until minimum vegetative coverage is established.

2 Within two business days (48 hours) prior to each event forecasted to be a qualifying rain event.* Because the size of a rain event cannot be predicted, an adequate trigger for a pre-storm event visual inspection would be the same as for a REAP: 50% or greater probability of producing precipitation of 0.1 inch or greater in the project area based on National Weather Service Forecast Office (National Oceanic and Atmospheric Administration). Photographs of the site taken during inspections must be submitted through the SWRCB's SMARTS website once every three rain events.

3 At least once each 24-hour period during any extended rain event. Photographs of the site taken during inspections must be submitted through SWRCB's SMARTS website once every three rain events.

4 Within two business days (48 hours) after each qualifying rain event.* Photographs of the site taken during inspections must be submitted through SWRCB's SMARTS website once every three rain events.

5 Minimum three samples per day during any rain event producing discharge.

6 Submit results to RE within 48 hours after storm event if either of the NAL is exceeded. RE submits results to SWRCB within 10 days after storm event if either of the NALs are exceeded. For Risk Level 3 projects, submit results to RE within 48 hours after storm event. RE submits results to SWRCB within five days after storm event. If either of the NELs are exceeded, submit results to RE within six hours of NEL exceedance being identified. RE submits results to SWRCB within 24 hours after NEL exceedance has been identified.

7 Sampling and testing for pH and turbidity, and for suspended sediment concentration only if turbidity daily average NEL is exceeded in previous effluent samples.

8 If applicable; within first two hours of discharge from any rain event occurring during project working hours.

9 When a NEL is exceeded and the Risk Level 3 site has a direct discharge into receiving waters, sample upstream and downstream of discharge in receiving water.

10 Benthic Macroinvertebrate Bioassessment is required for projects disturbing 30 or more acres with direct discharge runoff to a freshwater wadeable stream that is either: (a) listed by SWRCB or the United States Environmental Protection Agency as impaired due to sediment, and/or (b) tributary to any downstream water body that is listed for sediment; and/or has the beneficial use SPAWN & COLD & MIGRATORY. (Guidance on bioassessment monitoring is not included in this manual).

BMP = best management practices
LUP = linear underground/overhead projects
NAL = numeric action level
NEL = numeric effluent limitation
RE = resident engineer
REAP = Rain Event Action Plan
SMARTS = Storm Water Multi Application and Report Tracking System
SWRCB = State Water Resources Control Board

* A qualifying rain event is any event producing precipitation of 0.5 inch or greater over the duration of the rain event.

C.2.1 Who Should Monitor

See Section 4.1.3 for further information on monitoring requirements.

C.2.2 When Monitoring Should Occur

See Section 4.1.2 for further information on appropriate monitoring conditions (i.e., project working hours and safe conditions only).

Inspections may be discontinued in non-active construction areas where soil-disturbing activities are completed and final soil stabilization is achieved (e.g., paving is completed, substructures are installed, vegetation meets minimum cover requirements for final stabilization, or other stabilization requirements are met).

C.3 Monitoring & Reporting Program

A site-specific Monitoring and Reporting Program (M&RP) must be developed for each construction project prior to the commencement of construction activities. The M&RP must be revised as necessary to reflect project revisions, to ensure protection of water quality at all times throughout the life of the project. The M&RP must be implemented immediately at the start of construction for LUPs. The M&RP must be a part of the SWPPP. Section 700 of the *SWPPP Template* (Caltrans, 2011b) is devoted to the Construction Site Monitoring Program (CSMP) for traditional construction projects, and can be used to prepare a M&RP for LUPs. Section 2 of this guidance manual provides information on necessary elements that must be included in the CSMP. Each M&RP must address the CGP monitoring requirements specified for the risk level designated for the project, as detailed below.

The M&RP must be revised when:

- Site conditions or construction activities change such that a change in monitoring is required to comply with the requirements and intent of the CGP.
- The Regional Water Quality Control Board (RWQCB) requires the discharger to revise its M&RP based upon its review of the document. Revisions must be submitted by the Resident Engineer (RE) via postal mail or e-mail.
- RWQCB requires additional monitoring and reporting program activities, including sampling and analysis of discharges to Clean Water Act § 303(d)-listed water bodies.

C.4 Visual Inspections

Visual monitoring and site inspections must be performed on both a routine basis, and on a storm event basis, as shown in Table C-1. All visual inspections must be conducted during project working hours and in conjunction with other daily activities in areas where active construction is occurring. The routine (non-storm) and storm event-based inspections listed in Table C-1 are each described in detail below.

C.4.1 Daily Site BMP Inspections

For all risk levels, visual inspections and observations must be conducted daily during working hours, and in conjunction with other daily activities in areas where active construction is occurring. Inspections may be discontinued in non-active construction areas where soil-disturbing activities are completed and final soil stabilization is achieved (e.g., paving is completed, substructures are installed, vegetation meets minimum cover requirements for final stabilization, or other stabilization requirements are met). Inspections must continue after active construction until adequate permanent stabilization is established and, in areas where revegetation is chosen, until minimum vegetative coverage is established.

Daily visual inspections must be conducted to verify that:

1. Appropriate Best Management Practices (BMPs) for stormwater and non-stormwater are being implemented in areas where active construction is occurring (including staging areas).

2. Project excavations are closed, spoils are properly protected, and road surfaces are cleaned of excavated material and construction materials, such as chemicals, by either removing or storing the material in protective storage containers at the end of every construction day.

3. Land areas disturbed during construction are returned to preconstruction conditions or an equivalent protection is used at the end of each workday to eliminate or minimize erosion and the possible discharge of sediment or other pollutants during a rain event.

C.4.2 Pre-Storm, Daily Storm, and Post-Storm BMP Inspections

At Risk Level 2 and 3 sites, visual inspections must be conducted prior to anticipated storm events, during extended storm events, and after actual storm events to identify

areas contributing to a discharge of stormwater associated with construction activity. See Section 3.2.3 for inspection requirements.

If possible, install a rain gauge on site at an accessible and secure location with readings made during all rain event inspections. See Section 4.5 for additional information on rain gauges. When on-site readings are unavailable, data from the closest rain gauge with publicly available data may be used. These gauges may be operated by local, regional, state, or national agencies, such as county flood control districts or the National Weather Service.

Photographs of the site taken during inspections before, during, and after rain events must be submitted through the State Water Resources Control Board's (SWRCB) Storm Water Multi-Application and Report Tracking System (SMARTS) website once every three rain events.

C.5 Sample Collection and Testing

Discharge samples must be collected from the project site both during storm events and during non-storm periods, and tested as listed in Table C-1. Each monitoring type is listed in the subsections below. Refer to Section 4 for additional detail on sampling protocols.

C.5.1 Stormwater Discharge (pH and Turbidity)

Samples for stormwater discharge monitoring must be collected as described in Section 7.

C.5.2 Non-Visible Pollutants

For all risk level sites, samples for non-visible pollutant(s) monitoring must be collected as described in Section 5.

C.5.3 Receiving Water Monitoring

Receiving water monitoring is described in detail in Section 10.

C.6 Data Evaluation and Follow-up, Recordkeeping

C.6.1 Data Evaluation – Stormwater Discharges (pH and Turbidity)

See Section 7.6 for information on evaluating stormwater discharge data.

C.6.2 Data Evaluation – Non-Visible Pollutants

See Section 5.5 for information on evaluating non-visible pollutant data.

C.6.3 Recordkeeping

Retain all reports and records (including completed inspection forms) of all visual inspections and of sample testing for a period of at least three years from the time the SWRCB accepts the Notice of Termination or the Notice of Completion of Construction. Records may be retained off site and made available upon request. Complete the following forms and submit to the RE as detailed in Section 11:

Prior to rain event or monitoring:

- CEM-2040 Weather Forecast Monitoring form
- CEM-2041 Weather Monitoring form
- CEM-2048 Storm Event Sampling and Analysis Plan, or
  CEM-2049 Qualifying Rain Event Sampling and Analysis Plan
- CEM-2055 Stormwater Equipment Maintenance Log form
- CEM-2056 Stormwater Turbidity Meter Calibration Record
- CEM-2057 Stormwater pH Meter Calibration Record
- CEM-2058 Stormwater Meter Calibration Record (if required)

During or after monitoring:

- CEM-2050 Sample Information, Identification and Chain-of-Custody Record (if applicable)
- CEM-2051 Stormwater Sampling and Testing Activity Log
- CEM-2052 Stormwater Sample Field Test Report form, and
- CEM-2054 Stormwater Sample Laboratory Test Report form (if applicable)
- CEM-2061 Notice of Discharge Report form (if required)
- CEM-2062 NAL Exceedance Report form (if required)
- CEM-2063 NEL Violation Report form (if required)

See Section 11 for detailed information on reporting and recordkeeping requirements.

APPENDIX D

ACTIVE TREATMENT SYSTEM
CGP MONITORING PROTOCOLS

APPENDIX D ACTIVE TREATMENT SYSTEM CGP MONITORING PROTOCOLS

D.1 Permit Requirements

The use of an Active Treatment System (ATS) may be necessary on construction sites where traditional erosion and sediment controls do not effectively control accelerated erosion, or under circumstances where stormwater discharges leaving the site may cause or contribute to an exceedance of a receiving water quality standard. An ATS is a treatment system that employs chemical coagulation, chemical flocculation, or electrocoagulation to reduce turbidity caused by fine suspended sediment. Additionally, it may be appropriate to use an ATS when site constraints prohibit the construction of a correctly-sized sediment basin, when clay and/or highly erosive soils are present, or when the site has very steep or long slope lengths.

An ATS is operated in one of two modes, either batch or flow-through. In batch treatment, water is held in a basin or tank, and is not discharged until treatment is complete. In flow-through treatment, water is pumped into the ATS directly from the runoff collection system or stormwater holding pond, where it is treated and filtered as it flows through the system, and is then continuously discharged.

The CGP requires visual monitoring, operational and (effluent) compliance monitoring, and, for an ATS operating in batch mode, toxicity monitoring (further described in Section D.3). This appendix presents the CGP requirements for ATS monitoring. Additional, Caltrans-required monitoring for ATS installations is described in Section 9, and is designed to provide quality assurance for the ATS instrumentation, which automatically measures and records effluent water quality data.

D.1.1 Numeric Effluent Limits

The CGP establishes NELs for discharges from construction sites that utilize an ATS:

1. Turbidity of all ATS discharges must be less than 10 NTU for daily flow-weighted average of all samples and 20 NTU for any single sample.

2. pH must be within the range of pH NELs (i.e., above 6.0 and below 9.0).

3. Residual coagulant/flocculant chemical must be less than 10% of Maximum Allowable Threshold Concentration (MATC) for the most sensitive species of the

chemical used. The MATC is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC must be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. The MATC is equal to the geometric mean of the No Observed Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC) Acute and Chronic toxicity results for the most sensitive species determined for the specific coagulant. The most sensitive species test must be used to determine the MATC. The Contractor should contact the chemical vendor or manufacturer to obtain the chemical's MATC.

Exemption: Discharges of stormwater from an ATS must comply with applicable NELs (above) unless the precipitation event causing the discharges is determined after the fact to be equal to or larger than the Compliance Storm Event (expressed in inches of rainfall). The Compliance Storm Event for ATS discharges is the 10-year, 24-hour storm event, as determined using the following maps, available online.

Isopluvials of 10-year, 24-hour precipitation for the northern half of California in tenths of an inch (divide number on map by 10 to get inches) available at:
http://www.wrcc.dri.edu/pcpnfreq/nca10y24.gif

Isopluvials of 10-year, 24-hour precipitation for the southern half of California in tenths of an inch (divide number on map by 10 to get inches) available at:
http://www.wrcc.dri.edu/pcpnfreq/sca10y24.gif

This exemption is dependent on the submission of rain gauge data verifying that the storm event is equal to or larger than the Compliance Storm. A rain gauge must be installed on site as per contract special provisions.

If ATS effluent is authorized to discharge into a sanitary sewer system, the operator must comply with any pre-treatment requirements applicable for that system. Any specific criteria required by the municipality or other sanitary sewage agency must be included in the ATS Plan.

If a qualifying residual chemical/additive test does not exist, the ATS must be operated in batch mode. An ATS operating in a batch treatment mode of operation must perform Whole Effluent Toxicity (WET) testing as described in Section D.3.

The CGP also specifies ATS design and operation requirements; see CGP Attachment F.

D.1.2 Required Plans

The CGP requires the following plans to be developed:

- **ATS Plan.** An ATS Plan must be prepared that combines the site-specific data and treatment system information required to safely and efficiently operate an ATS. The ATS Plan must be electronically submitted to the SWRCB at least 14 days prior to the planned operation of the ATS and a paper copy must be available onsite during ATS operation. At a minimum, the ATS Plan must include:
  - ATS O&M Manual for all equipment.
  - ATS Monitoring, Sampling & Reporting Plan, including QA/QC. If ATS effluent is authorized to discharge into a sanitary sewer system, any pre-treatment requirements applicable for that system must be included in the ATS Plan.
  - ATS Health and Safety Plan.
  - ATS Spill Prevention Plan.
- **O&M Manual.** A site-specific O&M manual must be prepared covering the procedures required to install, operate and maintain the ATS. The manual is typically in a modular format covering generalized procedures for each component that is utilized in a particular system. The O&M manual must only be used in conjunction with appropriate project-specific design specifications that describe the system configuration and operating parameters. The O&M manual must have operating manuals for specific pumps, generators, control systems, and other equipment.
- **QA/QC Plan.** A project-specific Sampling and Reporting QA/QC Plan must be prepared, and must include at a minimum:
  - Calibration – Calibration methods and frequencies for all system and field instruments must be specified. Instrument method detection limit or sensitivity verification, laboratory duplicate procedures, and other pertinent procedures must also be specified.
  - Method Detection Limits (MDLs) – The methods for determining MDLs must be specified for each residual coagulant measurement method. Acceptable minimum MDLs for each method, specific to individual coagulants, must be specified.

- Laboratory Duplicates – Requirements for monthly laboratory duplicates for residual coagulant analysis must be specified.
- Manufacturer's recommendations for installation and maintenance of instrumentation (flow meters, probes, valves, streaming current detectors, controlling computers, etc.).

D.2 Who Should Monitor

Caltrans requires the WPC Manager to perform or supervise the collection and testing of grab samples for pH, turbidity, and residual chemical/additive to verify continuous monitoring measurements.

The ATS must be installed and operated by a qualified person who has either a minimum of five years construction stormwater experience or who is a licensed contractor specifically holding a California Class A Contractors license.

D.2.1 Training

In addition, ATS operators must have training specific to using an ATS and liquid coagulants for stormwater discharges in California. The training must be in the form of a formal class with a certificate and requirements for testing and certificate renewal. Training must include a minimum of 8 hours classroom and 32 hours field training. The course must cover the following topics:

1. Coagulation Basics – Chemistry and physical processes
2. ATS System Design and Operating Principles
3. ATS Control Systems
4. Coagulant Selection – Jar testing, dose determination, etc.
5. Aquatic Safety/Toxicity of Coagulants, proper handling and safety
6. Monitoring, Sampling, and Analysis
7. Reporting and Recordkeeping
8. Emergency Response

D.3 What to Monitor

For any project using an ATS, the following monitoring must be conducted:

1. Visual Monitoring

A qualified ATS operator (per Section D.2) must be on site at all times during treatment operations. Daily on-site visual monitoring of the system for proper performance must be conducted and recorded in the project data log. The log must include the name and phone number of the person responsible for system operation and monitoring. The log must include documentation of the responsible person's training.

2. Operational and Compliance Monitoring

a. Flow must be continuously monitored and recorded at not greater than 15-minute intervals for total volume treated and discharged.

b. Influent and effluent pH must be continuously monitored and recorded at not greater than 15-minute intervals.

c. Influent and effluent turbidity (expressed in NTU) must be continuously monitored and recorded at not greater than 15-minute intervals.

d. The type and amount of chemical used for pH adjustment, if any, must be monitored and recorded.

e. Dose rate of chemical used in the ATS system (expressed in milligrams per liter) must be monitored and reported 15-minutes after startup and every 8 hours of operation.

f. Laboratory duplicates – monthly laboratory duplicates for residual coagulant analysis must be performed and records must be maintained on site.

g. If continuous residual chemical/additive monitoring is possible, residual chemical must be continuously monitored and recorded at not greater than 15-minute intervals. If continuous residual chemical/additive monitoring is not possible, effluent levels of residual chemical/additive must be monitored and recorded within one hour after startup and at least once during every 8 hours of operation thereafter. If a qualifying residual chemical/additive test does not exist, the ATS must be operated in a batch treatment mode of operation and toxicity testing of effluent must be performed as detailed below.

h. If an ATS that discharges directly into receiving waters violates an NEL, the receiving waters must be subsequently monitored for pH, turbidity, and/or SSC (as applicable, based on the NEL that was exceeded), and any additional parameters for which monitoring is required by RWQCB, for the duration of coverage under the CGP. See Section 10 for information on receiving water sampling.

3. Toxicity Monitoring - Batch Mode WET Testing

An ATS operating in a batch treatment mode of operation must perform WET testing. Samples must be collected for acute toxicity testing and the testing must be initiated on effluent samples representing discharge from each batch prior to discharge. Testing results do not need to be obtained prior to discharge. All toxicity testing must be performed by a laboratory certified under the DHS Environmental Laboratory Accreditation Program for WET testing (field testing E113). The toxicity test must follow methods specified for the 96-hour acute test in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, USEPA-821-R-02-012 (http://www.epa.gov/waterscience/methods/wet/disk2/) for fathead minnow (Pimephales promelas), or alternatively for rainbow trout (Oncorhynchus mykiss). All toxicity tests must meet quality assurance criteria and test acceptability criteria in the most recent versions of the EPA test method for WET testing.

All acute toxicity testing must be electronically reported.

D.4 Where to Monitor

Measurements must be made continuously (every 15 minutes or more frequently) for flow rate, pH, and turbidity at influent and effluent points of the ATS.

ATS effluent samples must be collected for residual chemicals from the discharge pipe or another location representative of the nature of the discharge.

Toxicity test samples must be representative of the discharge, and must be collected prior to discharge of the batch treatment system. In practical terms, this means collection of the toxicity test sample near the batch tank outlet.

If an ATS that discharges directly into receiving waters violates an NEL, the receiving waters must be subsequently monitored for the duration of coverage under the CGP, both upstream and downstream from the discharge location. See Section 10 for additional information on receiving water monitoring.

D.5 When to Monitor

Table D-1 summarizes the required timing for visual monitoring, continuous operational monitoring, effluent compliance monitoring, and toxicity test sampling.

Table D-1

ATS Monitoring Frequency

Monitoring/Sampling	Frequency
Flow	At least every 15 minutes.
pH (influent and effluent)	At least every 15 minutes.
Turbidity (influent and effluent)	At least every 15 minutes.
Type and amount of chemical used for pH adjustment	Every time chemical is used.
Chemical dose rate	Within 15 minutes after startup and once during every eight hours of operation thereafter.
Laboratory duplicates	Monthly.
Residual Chemical Testing	At least every 15 minutes, or if continuous residual chemical/additive monitoring is not possible, within one hour after startup and once during every eight hours of operation thereafter.
Toxicity Testing	Samples must be collected prior to discharge from the batch treatment system.
Receiving Water (if required)	Samples must be collected each day that receiving waters receive ATS discharges.

D.6 How to Monitor

D.6.1 ATS Instrumentation

The ATS must be equipped with instrumentation that automatically measures and records effluent water quality data and flow rate. Systems must be equipped with a data recording system, such as a data logger or webserver-based system, which records turbidity, pH, and flow rate measurements at a frequency no less than once every 15 minutes. Cumulative flow volume must be recorded daily. Residual chemical measurements must be tested and recorded at least 15 minutes after startup and every 8 hours of operation. The data recording system must have the capacity to record a minimum of seven days of continuous data. The minimum data recorded must include:

- Influent Turbidity
- Effluent Turbidity

- Influent pH
- Effluent pH
- Effluent Flow rate
- Effluent Flow volume

Instrumentation systems must be interfaced with system control to provide auto shutoff or recirculation in the event that effluent measurements exceed turbidity or pH. The system must also assure that upon system upset, power failure, or other catastrophic event, the ATS will default to a recirculation mode or safe shut down.

Residual treatment chemical also must be monitored, but chemical-specific sensors do not exist for many of these chemicals; therefore, if continuous monitoring is not possible, residual chemical testing must be performed on a discrete (not continuous or automated) basis, as described below.

D.6.2 Effluent Residual Chemical Samples

Samples must be collected from the outlet pipe such that they are representative of the flow and characteristics of the discharge. Sampling techniques are described in detail in Section 4.

Samples must be tested on site according to the following criteria:

- A residual chemical test method must be utilized that has a MDL of 10% or less than the MATC for the specific coagulant in use and for the most sensitive species of the chemical used.
- The residual chemical test method must be capable of producing a result within one hour of sampling.
- A California state-certified laboratory must validate the selected residual chemical test. Specifically the lab must review the test protocol, test parameters, and the detection limit for the specific chemical. This documentation must be electronically submitted as part of the ATS Plan.

If a residual chemical test method cannot be utilized that meets the requirements above, the ATS must be operated in batch treatment mode, and toxicity testing is then required, as described below.

D.6.3 Toxicity Test Samples

Toxicity test samples must be collected prior to discharge of the batch treatment system, and must be representative of the discharge. In practical terms, this means collection of the toxicity test samples near the batch tank outlet. Toxicity testing methods are defined in Section D.3 above.

D.6.4 Receiving Water Samples

See Section 10 for information on receiving water sampling.

D.7 Recordkeeping

Daily on-site visual monitoring of the system for proper performance must be conducted and recorded in the project data log. The log shall include the name and phone number of the person responsible for system operation and monitoring, as well as documentation of the responsible person's training.

The ATS must be equipped with instrumentation that automatically measures and records effluent water quality data and flow rate. These systems must be equipped with a data recording system, such as a data logger or webserver-based system, which records each measurement on a frequency no less than once every 15 minutes. The data recording system must have the capacity to record a minimum of seven days of continuous data.

At a minimum, every 30 days the RE must access the SWRCB's Storm Water Multi-Application and Report Tracking System (SMARTS) and electronically upload field data from the ATS. Records must be kept for three years after the project is completed.

If any monitoring data exceeds any applicable NEL, a NEL Violation Report must be submitted to the RE within six hours after the violation is identified (NEL Violation Report form, CEM-2063) per the contract special provisions. The RE will electronically submit a NEL Violation Report to the SWRCB within 24 hours after the NEL exceedance has been identified. An electronic or paper copy of each NEL Violation Report must be retained for a minimum of three years after the date the annual report is filed. A paper copy of each ATS specification must be maintained on site.

D.8 Data Evaluation and Follow-up, Reporting

D.8.1 Data Evaluation

Results of effluent testing for pH, turbidity, and residual coagulant/flocculant chemical levels (for ATS in flow-through mode) are compared to NELs (see Table D-2) to determine if further action is required.

Discharges of stormwater from an ATS must comply with applicable NELs (above) unless the storm event causing the discharges is determined after the fact to be equal to or larger than the Compliance Storm Event (expressed in inches of rainfall). The Compliance Storm Event for ATS discharges is the 10-year, 24-hour storm event, as determined using these maps found at the following locations:

Isopluvials of 10-year, 24-hour precipitation for the northern half of California in tenths of an inch (divide number on map by 10 to get inches) available at:
http://www.wrcc.dri.edu/pcpnfreq/nca10y24.gif

Isopluvials of 10-year, 24-hour precipitation for the southern half of California in tenths of an inch (divide number on map by 10 to get inches) available at:
http://www.wrcc.dri.edu/pcpnfreq/sca10y24.gif

This exemption is dependent on the submission of rain gauge data verifying the storm event is equal to or larger than the Compliance Storm Event.

D.8.2 Assessing the Need for Corrective Measures

All results of pH, turbidity, and residual chemical additives testing must be compared to the NELs shown in Table D-2. Corrective measures are required for NEL exceedances as detailed below.

D.8.3 Implementing Corrective Measures

Procedures for evaluating appropriate corrective measures for NEL exceedances could include:

1. Evaluate the ATS operating procedures and chemicals to determine appropriate operational changes. For example, evaluate if the residence time should be lengthened. Should a different chemical or chemical dose be used? Was there an accidental discharge of settled floc?

Table D-2

ATS Test Methods, Reporting Limits, Reporting Units and Numeric Effluent Limitations

Parameter	Test Method/ Protocol	Discharge Type	Reporting Limit	Reporting Units	Maximum Holding Time	Numeric Action Level	Numeric Effluent Limitation
pH	Field Test with calibrated instrument	For ATS Discharges	0.2[1]	pH units	15 minutes	N/A	Lower NEL = 6.0 Upper NEL = 9.0
Turbidity	Field test with calibrated instrument	For ATS Discharges	1	NTU	48 hours	N/A	10 NTU for Daily Flow-Weighted Average & 20 NTU for Any Single Sample
Residual coagulant/ flocculant chemical	Discharger selected test method meeting CGP requirements[2]	For ATS Discharges operating in flow-through mode	10% or less than MATC[3] for most sensitive species	Test method specific	Test method specific	N/A	< 10% of MATC[3] for most sensitive species

[1] Measured on a scale of 0-14; must be able to read within +/- 0.2 pH units.

[2] A test method that produces a result within one hour of sampling and is validated by a California state-certified laboratory. Specifically, the lab must review the test protocol, test parameters, and the detection limit of the coagulant.

[3] The MATC is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC must be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. The MATC is equal to the geometric mean of the NOEC and LOEC Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant.

ATS = active treatment system
CGP = Construction General Permit
LOEC = Lowest Observed Effect Concentration
MATC = Maximum Allowable Threshold Concentration
N/A = not applicable
NEL = numeric effluent limitation
NOEC = No Observed Effect Concentration
NTU = nephelometric turbidity unit
< = less than

2. Evaluate if the ATS requires maintenance. For example, evaluate if the differential pressure measurements indicate the filtration unit needs back-flushing or replacement.

3. Evaluate if the ATS requires repairs or redesign.

Corrective actions must be implemented as soon as possible.

D.8.4 Reporting

Procedure for Reporting and Correcting NEL Exceedances

See Section 11 for detailed information on NEL exceedance reporting requirements.

For ATS installations with direct discharge into receiving waters, the following additional provisions apply:

- If stormwater has direct discharge into receiving waters and a NEL is violated, the receiving waters must be subsequently monitored for pH, turbidity, and any additional parameters for which monitoring is required by RWQCB.
- If the turbidity daily average NEL is exceeded, subsequent effluent samples must be analyzed for SSC in addition to pH and turbidity.

Procedure for Reporting Acute Toxicity Test Results

Upon receipt of any toxicity test results indicating acute toxicity to the test organism, the RE must be immediately notified, and the laboratory test results must be submitted to the RE within six hours of receipt. The RE must then submit the results indicating acute toxicity to the RWQCB within 24 hours after receipt of the laboratory test results.

Routine Reporting of Results

All toxicity testing results must be submitted to the RE within 48 hours of receipt of the results from the toxicity testing laboratory. The RE will electronically report the results to the SWRCB within five business days of receipt of laboratory test results.

The Contractor must submit all pH, turbidity, and residual chemical monitoring results to the RE weekly (CEM-2052).

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☒ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Amendments

Amendment Number	Date Prepared	Brief Description of Amendment	Requested by	Accepted Date

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SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require the information on this form to track amendments.
- Attach a completed copy of the form to each accepted SWPPP/WPCP amendment, and include in SWPPP Attachment DD or WPCP Attachment C.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without one, write "N/A" in the field.

WDID Number
For projects with WPCP enter "WPCP" in this field.

When the resident engineer has accepted SWPPP or WPCP amendments, enter:

1. The amendment number.
2. The date the Water Pollution Control Manager signed form CEM-2008.
3. A brief description of the amendment.
4. The name and title of person who requested the amendment.
5. The date the resident engineer accepted form CEM-2008.

ATTACHMENT BB

WATER POLLUTION CONTROL DRAWINGS FOR

DONLON ROAD REALIGNMENT PROJECT

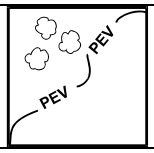
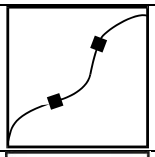
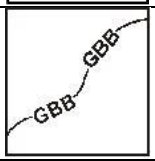
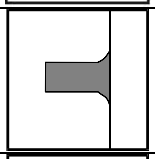
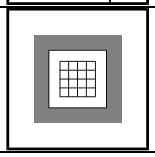
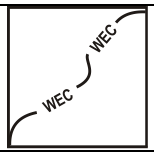
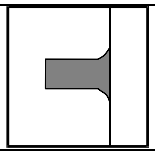
CONTRACT NO.: TO BE DETERMINED
CALTRANS PROJECT IDENTIFIER NUMBER: 713-NRP-2032

WPCM – MR. DE LA LLAVE

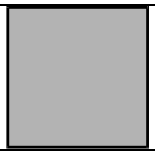
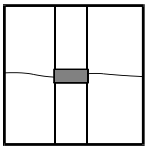
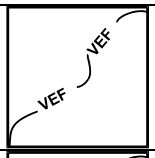
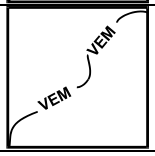
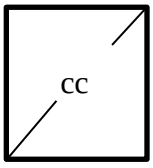
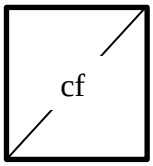
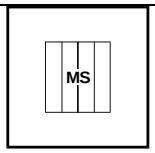
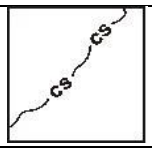
CONTRACTOR – TO BE DETERMINED

SEE FOLLOWING PAGES FOR BMPs SELECTED IN SWPPP

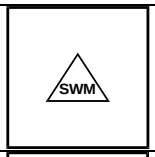
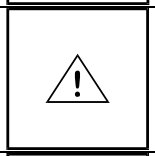
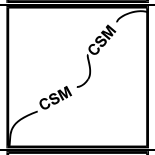
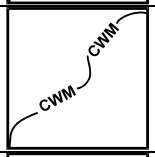
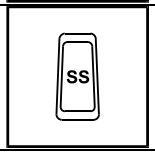
ATTACHMENT BB
LIST OF BMPs SELECTED IN SWPPP

Soil Stabilization	
SS-2: Preservation of Existing Vegetation	
SS-12: Streambank Stabilization	
Sediment Control	
SC-1: Silt Fence	
SC-6: Gravel Bag Berm	
SC-7: Street Sweeping and Vacuuming	
SC-10: Storm Drain Inlet Protection	
Wind Erosion Control	
WE-1: Wind Erosion Control	
Tracking Control	
TC-1: Stabilized Construction Entrance/Exit	
Non-Storm Water Management	
NS-1: Non-Storm Water Management	

ATTACHMENT BB
LIST OF BMPs SELECTED IN SWPPP

NS-3: Paving and Grinding Operations	
NS-4: Temporary Stream Crossing	
NS-9: Vehicle and Equipment Fueling	
NS-10: Vehicle and Equipment Maintenance	
NS-12: Concrete Curing	
NS-14: Concrete Finishing	
Waste Management and Materials Pollution Control	
WM-1: Material Delivery and Storage	
WM-2: Material Use	
WM-3: Stockpile Management	
WM-4: Spill Prevention and Control	

ATTACHMENT BB
LIST OF BMPs SELECTED IN SWPPP

WM-5: Solid Waste Management	
WM-6: Hazardous Waste Management	
WM-7: Contaminated Soil Management	
WM-8: Concrete Waste Management	
WM-9: Sanitary/Septic Waste Management	

ATTACHMENT CC WATER POLLUTION CONTROL BEST MANAMGEMENT PRACTICES LIST

CEM-20CC (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER
CONTRACTOR NAME AND SITE ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3

Water Pollution Control Best Management Practices List (WPCBMPL)

Project Phases included in WPCBMPL	Projected Stages included in WPCBMPL
☐ Preliminary Phase	☐ 1 Stage
☐ Grading Phase	☐ 2 Stages
☐ Highway Construction Phase	☐ 3 Stages
☐ Highway Planting / Erosion Control Phase	☐ 4 Stages

Project Required BMP	Best Management Practice (BMP)	BMP ID	Total Quantity Required
	TEMPORARY SOIL STABILIZATION		
☐	Preservation of Existing Vegetation	SS-02	
☐	Hydraulic Mulch	SS-03	
☐	Hydroseeding	SS-04	
☐	Soil Binders	SS-05	
☐	Straw Mulch	SS-06	
☐	Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets	SS-07	
☐	Wood Mulching	SS-08	
☐	Earth Dikes/Drainage Swales, and Lined Ditches	SS-09	
☐	Outlet Protection/Velocity Dissipation Devices	SS-10	
☐	Slope Drains	SS-11	
☐	Streambank Stabilization	SS-12	
	TEMPORARY SEDIMENT CONTROL		
☐	Silt Fence	SC-01	
☐	Sediment/Distilling Basin	SC-02	
☐	Sediment Trap	SC-03	
☐	Check Dams	SC-04	
☐	Fiber Rolls	SC-05	
☐	Gravel Bad Berm	SC-06	
☐	Sandbag Barrier	SC-07	
☐	Straw Bale Barrier	SC-09	
☐	Storm Drain Inlet Protection	SC-10	

ATTACHMENT CC WATER POLLUTION CONTROL BEST MANAMGEMENT PRACTICES LIST

CEM-20CC (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

Water Pollution Control Best Management Practices List

Project Required BMP	Best Management Practice (BMP)	BMP ID	Total Quantity Required
	WIND EROSION CONTROL		
☐	Wind Erosion Control	WE-01	
	TRACKING CONTROLS		
☐	Stabilized Construction Entrance/Exit	TC-01	
☐	Stabilized Construction Roadway	TC-02	
☐	Entrance/Exit Tire Wash	TC-03	
☐	Street Sweeping	SC-07	
	NON-STORMWATER MANAGEMENT		
☐	Water Conservation Practices	NS-01	
☐	Dewatering Operations	NS-02	
☐	Paving and Grinding Operations	NS-03	
☐	Temporary Stream Crossing	NS-04	
☐	Clear Water Diversion	NS-05	
☐	Illicit Connection/Illegal Discharge Detection and Reporting	NS-06	
☐	Potable Water/Irrigation	NS-07	
☐	Vehicle and Equipment Cleaning	NS-08	
☐	Vehicle and Equipment Fueling	NS-09	
☐	Vehicle and Equipment Maintenance	NS-10	
☐	Pile Driving Operations	NS-11	
☐	Concrete Curing	NS-12	
☐	Material and Equipment Use Over Water	NS-13	
☐	Concrete Finishing	NS-14	
☐	Structure Demolition/Removal Over or Adjacent to Water	NS-15	
	WASTE MANAGEMENT AND POLLUTION CONTROL		
☐	Material Delivery and Storage	WM-01	
☐	Material Use	WM-02	
☐	Stockpile Management	WM-03	
☐	Spill Prevention and Control	WM-04	
☐	Solid Waste Management	WM-05	
☐	Hazardous Waste Management	WM-06	
☐	Contaminated Soil Management	WM-07	
☐	Concrete Waste Management	WM-08	
☐	Sanitary/Septic Waste Management	WM-09	
☐	Liquid Waste Management	WM-10	

ATTACHMENT CC WATER POLLUTION CONTROL BEST MANAMGEMENT PRACTICES LIST

CEM-20CC (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

No. Water Pollution Control Best Management Practices List

1

Location:	Project Phase: Stage:	Location shown on WPCD sheet number:	Disturbed Soil Area: _____ acres
Best Management Practice (BMP)		**BMP ID**	**Quantity Required**
Comments:			

2

Location:	Project Phase: Stage:	Location shown on WPCD sheet number:	Disturbed Soil Area: _____ acres
Best Management Practice (BMP)		**BMP ID**	**Quantity Required**
Comments:			

ATTACHMENT CC WATER POLLUTION CONTROL BEST MANAMGEMENT PRACTICES LIST

CEM-20CC (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

No. Water Pollution Control Best Management Practices List

Location:	Project Phase: Stage:	Location shown on WPCD sheet number:	Disturbed Soil Area: _____ acres

____	Best Management Practice (BMP)	BMP ID	Quantity Required

Comments:

Location:	Project Phase: Stage:	Location shown on WPCD sheet number:	Disturbed Soil Area: _____ acres

____	Best Management Practice (BMP)	BMP ID	Quantity Required

Comments:

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

ATTACHMENT CC WATER POLLUTION CONTROL BEST MANAMGEMENT PRACTICES LIST

CEM-20CC (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

No.	Water Pollution Control Best Management Practices List			
	Location:	Project Phase: Stage:	Location shown on WPCD sheet number:	Disturbed Soil Area: ______ acres
____	**Best Management Practice (BMP)**		**BMP ID**	**Quantity Required**
	Comments:			
	Location:	Project Phase: Stage:	Location shown on WPCD sheet number:	Disturbed Soil Area: ______ acres
____	**Best Management Practice (BMP)**		**BMP ID**	**Quantity Required**
	Comments:			
	Location:	Project Phase: Stage:	Location shown on WPCD sheet number:	Disturbed Soil Area: ______ acres
____	**Best Management Practice (BMP)**		**BMP ID**	**Quantity Required**
	Comments:			

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

Water Pollution Control Schedule

Scope of Work	To Be Determined
Phase 1	
Phase 2	
Phase 3	
Phase 4	
Phase 5	
Phase 6	

Constant BMPs:
To be determined
BMPs will be implemented as/when necessary
To be inserted as necessary:
- Dates of weekly training
- Dates of routine visual inspections
- SWPPP amendment dates

SWPPP ATTACHMENT EE
STORMWATER SAMPLING LOCATIONS

CEM-20EE (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM	PROJECT SITE RISK LEVEL
		☐ Risk Level 1
	PROJECT IDENTIFIER NUMBER	☐ Risk Level 2
		☐ Risk Level 3

STORMWATER SAMPLING LOCATIONS

Project Site Non-Visible Pollutant Sampling Locations

SWPPP Table 700.2.2.3.2.1 & Table 700.2.2.3.2.2

Location No.	Uncontaminated Location No.	Location	Pollutant Source	Pollutant	Water Quality Indicator Constituent

Instruction: Include the following Table for all Risk Levels.

Project Site Drainage Areas

SWPPP Table Table 700.1.1.1

Drainage Area No.	Location	Drainage Area (acres)	Disturbed Soil Area (acres)	Percentage of Drainage Area that is Disturbed Soil Area (%)

SWPPP ATTACHMENT EE
STORMWATER SAMPLING LOCATIONS

CEM-20EE (NEW 9/2012)

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER

STORMWATER SAMPLING LOCATIONS CONTINUED

Instruction: Include the following Table for all Risk Levels when dewatering will be performed on the project site. Delete the Table if there is no dewatering planned for the project site.

Project Site Dewatering Sampling Locations

SWPPP Table 700.2.3.3.2.1

Location No.	Location	Dewatering Permit?	Pollutant From Construction Activity	Water Quality Indicator Constituent
		☐ YES ☐ NO		
		☐ YES ☐ NO		
		☐ YES ☐ NO		

Instruction: Include the following Table for all Risk Levels when there is a potential for impounded stormwater that will have to be discharged from the project site.

Project Site Potential Impounded Stormwater Sampling Locations

(SWPPP Table 700.2.3.3.2.2)

Location No.	Location	Dewatering Permit?	Pollutant From Construction Activity	Water Quality Indicator Constituent
		☐ YES ☐ NO		
		☐ YES ☐ NO		
		☐ YES ☐ NO		

Instruction: Include the following Table for all Risk Levels when there are dewatering activities or a potential for impounded stormwater that will have to be discharged from the project site and there is a high risk receiving water.

Project Site Potential Dewatering/Impounded Stormwater Sampling Locations and Receiving Water Sampling Locations

(SWPPP Table 700.2.3.3.2.3)

Dewatering/ Impounded Stormwater Location No.	Location	Receiving Water Location No.	Location

SWPPP ATTACHMENT EE
STORMWATER SAMPLING LOCATIONS

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER

STORMWATER SAMPLING LOCATIONS CONTINUED

Instruction: Include the following Table for Risk Level 2 and Risk Level 3 projects. Delete the Table for Risk Level 1 projects.

Project Site Discharge Sampling Locations for Turbidity and pH

SWPPP Table 700.2.4.3.2.1

Location No.	Location	Drainage Area (acres)	Disturbed Soil Area (acres)	Percentage of Drainage Area that is Disturbed Soil Area (%)	Are there construction activities that may affect pH of stormwater discharges?
					☐ YES ☐ NO
					☐ YES ☐ NO
					☐ YES ☐ NO
					☐ YES ☐ NO
					☐ YES ☐ NO

Instruction: Include the following Table for Risk Level 2 and Risk Level 3 when project site has discharge locations that discharge directly to a receiving water. Delete the Table for Risk Level 1 projects.

Receiving Water Sampling Locations for Turbidity and pH When Project Site Discharges Directly To The Receiving Water

SWPPP Table 700.2.4.3.2.2

Location No.	Location	Drainage Area (acres)	Disturbed Soil Area (acres)	Percentage of Drainage Area that is Disturbed Soil Area (%)	Are there construction activities that may affect pH of stormwater discharges?
					☐ YES ☐ NO
					☐ YES ☐ NO
					☐ YES ☐ NO
					☐ YES ☐ NO
					☐ YES ☐ NO

SWPPP ATTACHMENT EE
STORMWATER SAMPLING LOCATIONS

CEM-20EE (NEW 9/2012)

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER

STORMWATER SAMPLING LOCATIONS CONTINUED

Instruction: Include the following Table for all Risk Levels. Delete the Table for Risk Level 1 projects if there are no project site run-on locations.

Project Site Run-on Sampling Locations

SWPPP Table 700.2.4.3.2.4

Location No.	Location	Run-on May Affect Water Quality Discharged at Project Site Discharge Location No.	Is there any off-site disturbed soil area that could affect run-on water quality at this location?	Are there any off-site pollutants identified that could affect run-on water quality at this location?	Identified Potential Off-site Pollutants
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	

Instruction: Include the following Table for all Risk Level 3 projects. Delete the Table for Risk Level 1 and Risk Level 2 projects.

Receiving Water Sampling Locations

SWPPP Table 700.2.4.3.2.5

Location No.	Location	Project Site Discharge Location No.	Do discharges from this project site discharge location reach receiving water?
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO

SWPPP ATTACHMENT EE
STORMWATER SAMPLING LOCATIONS

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER

STORMWATER SAMPLING LOCATIONS CONTINUED

Instruction: Include the following Table when the RWQCB has requested specific water quality standard monitoring of project site discharge locations.

Stomwater Discharge Locations Required To Be Monitored By RWQCB

SWPPP Table 700.5.3.2.1

Location No.	Location	Water Quality Standard(s)	Is there potential site run-on that may affect water quality standard(s)?
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO

Instruction: Include the following Table when the RWQCB has requested specific water quality standard monitoring of receiving waters.

Receiving Water Sampling Locations Required To Be Monitored By RWQCB

SWPPP Table 700.2.4.3.2.5

Location No.	Location	Water Quality Standard(s)

Instruction: Include the following Table when the project receives run-on with the potential to combine with stormwater discharges locations or receiving waters that require RWQCB specified water quality monitoring.

Run-on Locations With Potential To Combine With Stormwater Discharges Required To Be Monitored By RWQCB

SWPPP Table 700.2.5.3.2.4

Location No.	Location	Water Quality Standard(s)

SWPPP ATTACHMENT EE
STORMWATER SAMPLING LOCATIONS

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER

STORMWATER SAMPLING LOCATIONS CONTINUED

Instruction: Include the following Table for Risk Level 3 when an active treatment system will be used on the project site. Delete the Table if active treatment system is not planned to be used on the project site.

Active Treatment System (ATS) Sampling Locations

SWPPP Table 700.2.6.3.2

Location No.	Location	Chemical/Additive Used in Active Treatment System	Residual Chemical/Additive Indicator Constituent

Appendices

Appendix A
CEM-2008

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENT CERTIFICATION AND ACCEPTANCE

CEM-2008 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Storm Water Pollution Prevention Plan (SWPPP)/Water Pollution Control Program (WPCP)

Amendment Number _____

CONTRACTOR WATER POLLUTION CONTROL MANAGER SIGNATURE	DATE
CONTRACTOR WATER POLLUTION CONTROL MANAGER NAME	PHONE NUMBER

Contractor Certification of SWPPP or WPCP Amendment

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

CONTRACTOR SIGNATURE	DATE
CONTRACTOR NAME	PHONE NUMBER
TITLE	

Resident Engineer Acceptance of SWPPP or WPCP Amendment

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

RESIDENT ENGINEER SIGNATURE	DATE OF AMENDMENT ACCEPTANCE
RESIDENT ENGINEER NAME	PHONE NUMBER

SWPPP/WPCP AMENDMENT CERTIFICATION AND ACCEPTANCE

CEM-2008 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Required for Private Entity Administered Projects

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

LEGALLY RESPONSIBLE PERSON SIGNATURE	DATE
LEGALLY RESPONSIBLE PERSON NAME	PHONE NUMBER
TITLE	

Required for Local Agency/Private Entity Administered Project

Caltrans Oversight Engineer's Concurrence With SWPPP/WPCP Amendment

I and personnel acting under my direction and supervision have reviewed this SWPPP/ WPCP and find that it meets the requirements set forth in the contract Special Provisions, Caltrans *Standard Specifications,* and the Caltrans SWPPP/WPCP Preparation Manual.

OVERSIGHT ENGINEER SIGNATURE	DATE OF AMENDMENT CONCURRENCE
OVERSIGHT ENGINEER NAME	PHONE NUMBER

Instructions

General Information

- The information on CEM-2008 is required for projects with either a Stormwater Pollution Prevention Plan (SWPPP) or a Water Pollution Control Program (WPCP) to document amendment acceptance and certification.
- SWPPP amendments must be certified by the approved signatory as identified in CEM-2006 or 2006T, "Legally Responsible Person Authorization of Approved Signatory," signed by the legally responsible person (LRP).
  1. For Caltrans, the LRP is the district director. The LRP may authorize the project resident engineer to be approved signatory.
  2. For a local agency, the LRP is either a principal executive officer or a ranking elected official. The local agency LRP may authorize the project resident engineer to be approved signatory.
  3. For a private entity performing work in the state right-of-way under an encroachment permit, the LRP must be one of the following:
     a. For a corporation, a responsible corporate officer.
     b. For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

     The private entity LRP may not authorize an approved signatory.
  4. Attach a completed copy of CEM-2008 to each SWPPP or WPCP amendment, and include it in the SWPPP Attachment DD or the WPCP Attachment C.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number. For projects without one, write "N/A" in the field.

WDID Number
For projects that have a Water Pollution Control Program enter "WPCP" in this field.

Appendix B
CEM-2009

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Amendments

Amendment Number	Date Prepared	Brief Description of Amendment	Requested by	Accepted Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require the information on this form to track amendments.

- Attach a completed copy of the form to each accepted SWPPP/WPCP amendment, and include in SWPPP Attachment DD or WPCP Attachment C.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without one, write "N/A" in the field.

WDID Number
For projects with WPCP enter "WPCP" in this field.

When the resident engineer has accepted SWPPP or WPCP amendments, enter:

1. The amendment number.
2. The date the Water Pollution Control Manager signed form CEM-2008.
3. A brief description of the amendment.
4. The name and title of person who requested the amendment.
5. The date the resident engineer accepted form CEM-2008.

Appendix C

CEM-2070

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP ANNUAL CERTIFICATION OF COMPLIANCE

CEM-2070 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	SWPPP PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Stormwater Pollution Prevention Plan (SWPPP)/Water Pollution Control Program (WPCP)
Annual Certification of Compliance

Water Pollution Control Manager Certification

This certification for the project site is based on an inspection of the project site conducted on (date) _____

I certify based on my inspection of the project site that:

☐ Yes ☐ No Water pollution control measures are being implemented in accordance with the SWPPP or WPCP approved for the project, including approved SWPPP/WPCP amendments.

☐ Yes ☐ No The project site and activities thereon are in compliance with the Caltrans Statewide NPDES Permit No. CAS000003, the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002, or Order No. R6T-2011-0019, NPDES No. CAG-616002, whichever is applicable.

Contractor Water Pollution Control Manager signature	Date
Contractor Water Pollution Control Manager name	Phone number

Contractor Annual Certification of Compliance

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Contractor signature	Date
Contractor name	Phone number
Title	

SWPPP/WPCP ANNUAL CERTIFICATION OF COMPLIANCE

CEM-2070 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Required for Private Entity Administered Projects
Private Entity Legally Responsible Person Annual Certification of Compliance

I certify that the project is in compliance with the project site approved Stormwater Pollution Prevention Plan or Water Pollution Control Program including approved amendments. The project site and activities thereon are in compliance with the Caltrans Statewide NPDES Permit No. CAS000003, the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002, or Order No. R6T-2011-0019, NPDES No. CAG-616002, whichever is applicable.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Legally responsible person signature	Date
Legally responsible person name	Phone number
Title	

SWPPP/WPCP ANNUAL CERTIFICATION OF COMPLIANCE

CEM-2070 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Resident Engineer Approval of Annual Certification of Compliance

An inspection of the project site for annual certification of compliance was conducted on (date) _____	Annual Certification of Compliance project site inspection conducted by

I certify that I, or personnel acting under my direction and supervision, have inspected the project site and find the following:

☐ Yes ☐ No — Water pollution control measures are being implemented in accordance with the SWPPP or WPCP approved for the project, including approved SWPPP/WPCP amendments.

☐ Yes ☐ No — The project site and activities thereon are in compliance with the Caltrans Statewide NPDES Permit No. CAS000003, the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002, or Order No. R6T-2011-0019, NPDES No. CAG-616002, whichever is applicable.

The box above is checked "no" based on the project site annual certification inspection, and the following corrective actions are necessary for the project to be in compliance with SWPPP/WPCP or NPDES Permits

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Resident engineer signature	Date of approval
Resident engineer name	Phone number

Required for Local Agency or Private Entity-Administered Project

Caltrans Oversight Engineer's Concurrence With Annual Certification of Compliance

I, or personnel acting under my direction and supervision, have reviewed this Annual Certification of Compliance and concur that the project is in compliance with SWPPP or WPCP approved for the project, including approved SWPPP/WPCP amendments and applicable NPDES Permits.

Oversight engineer signature	Date of concurrence
Oversight engineer name	Phone number

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require an Annual Certification of Compliance by July 15th of each year.
- Document the project site inspection for annual certification on form CEM-2030, "Stormwater Site Inspection Report."
- A legally responsible person (LRP) or a signatory approved by the LRP must certify the Stormwater Pollution Prevention Plan Annual Certification of Compliance.
  - For Caltrans, the LRP is the district director. The LRP may authorize the project resident engineer to be the approved signatory.
  - For a local agency, the LRP is either a principal executive officer or ranking elected official. The local agency's LRP may authorize the project resident engineer to be the approved signatory. If the local agency's LRP has not approved the local agency's resident engineer to be an approved signatory then the local agency's LRP must sign in the resident engineer signature box of the Annual Certification of Compliance.
  - For a private entity performing work in the state right-of-way under an encroachment permit, the LRP must be one of the following:
    - For a corporation—a responsible corporate officer.
    - For a partnership or sole proprietorship—a general partner or the proprietor, respectively.
    - The private entity's LRP may not authorize an approved signatory.
- File a completed copy of this form in SWPPP/WPCP file category 20.70, Annual Certification of Compliance.
- This form is used for Annual Certification as well as replaces form CEM-2001.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write "N/A' in the field.

WDID Number
For projects that have Water Pollution Control Program, enter "WPCP" in this field.

SWPPP Projects Site Risk Level
Check the box for the appropriate SWPPP risk level, or N/A for projects residing in the Lake Tahoe Hydrologic Unit, or N/A for projects that have Water Pollution Control Program.

Appendix D

Subcontractor/ Material Supplier Notification Letter and Contact Information

To Be Determined

Appendix E

CEM-2023

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TRAINING RECORD

CEM-2023 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project Resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Stormwater Training Record

Training Course Title or Specific Training Objective	Location	Date of Training
Stormwater Topics ☐ Temporary soil stabilization ☐ Temporary sediment control ☐ Tracking controls ☐ Wind erosion control ☐ Non-stormwater management ☐ Stormwater discharge sampling ☐ Waste management and materials pollution control ☐ Pre-storm activities ☐ Spill prevention and control ☐ Permanent soil stabilization ☐ BMPs required for work activities current week ☐ Initial project training ☐ Stormwater pollution prevention plan ☐ Water pollution control program	Instructor Name Instructor Title Instructor Phone Number Course Length (hours)	Training Audience ☐ General ☐ BMPs ☐ SWPPP

Attendee Roster

Name	Phone Number	Initials	Company Name

STORMWATER TRAINING RECORD

CEM-2023 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Attendee Roster (Continued)

Name	Phone Number	Initials	Company Name

Review and Record Keeping

Has training information been entered into the optional Stormwater Training Log (CEM-2024)? ☐ Yes ☐ No

I have reviewed this document and, based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief the information submitted is true, accurate, and complete.

Water Pollution Control Manager (name)	Date

Water Pollution Control Manager (signature)

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require the information on this form to document stormwater training for contractor and subcontractor managers, supervisors, and employees. Include the form and required training documentation in the stormwater annual report for SWPPP projects.
- Use this form to document training for employees responsible for activities associated with Construction General Permit compliance and contract specifications. Use this form to document required weekly stormwater training.
- Provide this training record and an updated copy of CEM-2024 (CEM-2024 is an optional form used at the WPCM's discretion) "Stormwater Training Log," to the resident engineer (RE) within five days of the date of training.
- Attach additional copies of page 2 of this form if necessary to record all individuals attending this training.
- Stormwater training needs to be completed at the frequency stipulated in the project specifications and/or the SWPPP, whichever is more frequent.
- Names may be written or typed. Initials must be original. Originals are filed with RE as stipulated above.
- Attach copy of training material/topic with submittal to RE.

Form

- **Contract Number/Co/Rte/PM**
  For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.
- **Project Identifier Number**
  Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.
- **WDID Number**
  For projects with Water Pollution Control Program, enter “WPCP."
- **Attendee Roster**
  Enter employee name, contractor or subcontractor company name and employee phone number.
- **Training Audience**
  Enter one of the following responses:

  General—Training for individuals responsible for activities associated with compliance with the Construction General Permit.

  BMPs—Training for individuals responsible for BMP installation, inspection, maintenance, and repair.

  SWPPP—Training for individuals responsible for overseeing, revising, and amending the SWPPP.

Appendix F

CEM-2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TRAINING LOG - OPTIONAL

CEM-2024 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

STORMWATER TRAINING LOG

Date of Training	Training Audience	Number of Training Attendees	Stormwater Training Course Title or Topics Covered	Date Training Documentation (CEM-2023) Provided to Resident Engineer
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			

Instructions

General Information

- For projects with either a Stormwater Pollution Prevention Plan (SWPPP) or a Water Pollution Control Program (WPCP) the information shown on this form may be used to document stormwater training for contractor and subcontractor managers, supervisors, and employees. The stormwater annual report for SWPPP projects will include required training documentation and the information on this form, or in another form used at the discretion of the Water Pollution Control Manager (WPCM).
- If this form is used, provide an updated copy of CEM-2024 with attached training documentation to the resident engineer within five days of training, along with CEM-2023 and a copy of training materials and topic(s) covered.
- This form is optional, and provided as a management tool for the WPCM to assist in compiling and organizing information required of the annual report.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.

WDID Number
For projects with Water Pollution Control Program enter “WPCP” in this field.

Training Audience
Check one of the following responses:
General—training for individuals responsible for activities associated with compliance with the General Construction Permit.
BMPs—training for individuals responsible for BMP installation, inspection, maintenance, and repair.
SWPPP—training for individuals responsible for overseeing revising and amending the SWPPP.

Appendix G

CEM-2030

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in The Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-019, NPDES No. CAG616002 ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date
Water Pollution Control Manager name and company name	Phone number Emergency (24/7) phone number

General Information

Inspector's Name	Accompanied by Caltrans staff? ☐ YES ☐ NO If Yes, Name/Initials: _____	Date of Inspection

Weather Condition	Precipitation Condition		Wind Condition
	☐ None		
☐ Clear	☐ Misty	☐ Heavy rain	☐ None
☐ Partly cloudy	☐ Light rain	☐ Hail	☐ Less than 5 mph
☐ Cloudy	☐ Rain	☐ Snow	☐ Greater than 5 mph

Construction Phase	Site Information
☐ Highway construction	Total project area: _____ acres
☐ Plant establishment	Total project disturbed soil area: _____ acres
☐ Suspension of work (inactive site)	Current phase disturbed soil area: _____ acres
	Current phase inactive disturbed soil: _____ acres

Inspection Type *Check appropriate box(es)*	**Storm Information**	
☐ Weekly ☐ Quarterly non-stormwater	Time elapsed since last storm _____ days	Precipitation amount from last storm _____ inches
☐ Pre-storm	Time storm is expected _____ (time) _____ (date)	Expected precipitation amount _____ inches
☐ During storm event	Time elapsed since storm began _____ hours-minutes	Precipitation amount from storm recorded from site rain gauge _____ inches
☐ Post storm	Time elapsed since storm _____ hours-minutes	Precipitation amount from storm recorded from site rain gauge _____ inches

Date	Daily Site Inspection of Best Management Practices (BMP) List Daily inspections for previous calendar week. Do not include weekly inspection.	Daily inspection performed by	Any corrective actions identified as completed or new?		If yes, were the actions added or verified on CEM-2035, as appropriate?		Date shown on corrective action form
			YES	NO	YES	NO	
			☐	☐	☐	☐	
			☐	☐	☐	☐	
			☐	☐	☐	☐	
			☐	☐	☐	☐	
			☐	☐	☐	☐	

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Site Inspection of Best Management Practices

If this form will be completed by hand in the field, click on "Show Entire Form" button at the top of page one to expand the sections, then print the form to take to the field. If the inspection form does not contain enough lines for all locations, use the "Add Item" button so that all BMP locations are inspected and reported.

Preservation of Existing Vegetation ☒ Yes ☐ No	Right location?		Properly installed?		Maintenance or repair necessary?		Photos?	Comments and Required Actions
	Yes	No	Yes	No	Yes	No	Yes	
Location 1								
Location 2								
Location 3								

Disturbed Soil Area (DSA) Management ☒ Yes ☐ No List all potential DSAs by location	Has area been disturbed? If no, stop here.		Date DSA first disturbed?	Is the DSA inactive and listed as a location on both temporary soil stabilization and temporary linear sediment barriers? If yes, stop here.		Is there a storm event forecasted? If yes, stop here and take action.		Are there construction activities currently in progress within the DSA? If yes, stop here.		If no to previous question, what is the last day construction activities were in progress?	How many days has the DSA been active? If more then 14 days, take action.
	Yes	No	Date	Yes	No	Yes	No	Yes	No	Date	Days
Location 1											
Location 2											

Notes:

1. If it has been 14 days since a DSA has had active construction activities, the DSA is inactive and must be reported as a location on temporary soil stabilization and temporary linear sediment barriers.
2. DSAs must have erosion control and have temporary linear sediment barriers installed prior to a storm event.

Location Number	Comments / Corrective Actions	Action No.
1		
2		

Temporary Soil Stabilization ☒ Yes ☐ No	Inactive areas covered?		100% coverage of required areas?		Stabilized areas free from visible erosion?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Site Inspection of Best Management Practices, continued

For project specific BMPs, insert the BMP name and additional inspection requirements below.

Temporary Linear Sediment Barriers ☒ Yes ☐ No	Right location?		Properly installed or cross barriers installed?		Maintenance performed when 1/3 height or repair needed?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Storm Drain Inlet Protection ☒ Yes ☐ No	All inlets protected?		Properly installed?		Maintenance or repair needed?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Stockpile Management ☒ Yes ☐ No	Date stockpile created	Is the stockpile listed as a location on stockpile management inactive stockpiles? If yes, stop here.		Is there a storm event forecasted? If yes, stop here and take action.		Is stockpile being actively used? If yes, stop here.		If no to previous question, what is the last day stockpile was actively used?	How long since stockpile actively used?	Has it been 3 days since the stockpile has been actively used? If yes, take action.	
	Date	Yes	No	Yes	No	Yes	No	Date	Days	Yes	No
Location 1											
Location 2											

Notes:

1. If it has been 3 days (72 hours) since a stockpile has been active then the stockpile is inactive and must be reported as a location on stockpile management inactive stockpiles.
2. Stockpiles must be covered and have perimeter control installed prior to a storm event.

Location Number	Comments / Corrective Actions	Photos? Yes	Action No.
1			
2			

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Inactive Stockpile Management

☒ Yes ☐ No

	Type of Material or Waste	Is the stockpile properly located?		Is the stockpile covered?		Does the stockpile have a perimeter control?		Does the stockpile need maintenance or repair?	
		Yes	No	Yes	No	Yes	No	Yes	No
Location 1									
Location 2									

Location Number	Comments / Corrective Actions	Photos? Yes	Action No.
1			
2			

Sediment and Desilting Basins

☒ Yes ☐ No

	Are basin inlets, outlets, and spillways in working order?		Is water contained in basin?		Is maintenance needed to provide required retention or detention?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Tracking Controls

☒ Yes ☐ No

	Do all entrances and exits have tracking controls?		Is pavement free from visible sediment tracking?		Does sediment need to be removed from rock or ribbed plates?		Is daily sweeping done?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes	No	Yes		
Location 1											
Location 2											
Location 3											

Wind Erosion Control

☒ Yes ☐ No

	Water trucks on-site?		Visible dust?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes		
Location 1							
Location 2							
Location 3							

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Dewatering Operations ☒ Yes ☐ No	Dewatering currently active?		Dewatering conforms with RWQCB permit?		Dewatering discharge within discharge specified limitations?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Temporary Stream Crossing ☒ Yes ☐ No	Constructed as shown on the plan?		Conforms to 404 permit and 1601 agreement requirements?		Maintenance or repair required?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Material Storage ☒ Yes ☐ No	Located away from drainage courses and water courses?		Areas protected from run on and runoff?		Bagged and boxed materials stored on pallets?		Areas reasonably clean and free of spills, leaks, and other material?		Is material inventory up to date?		Liquid materials in secondary containment?		Photos?
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Location 1													
Location 2													
Location 3													

	Comments and Required Actions	Action No.
Location 1		
Location 2		
Location 3		

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Waste Management Sanitation Facilities ☒ Yes ☐ No	Located away from drainage courses and water courses?		Secured to ground or foundation?		Clean and has adequate capacity?		Ground checked for any spills or leaks?		Any spills or leaks found?		Photos?
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Location 1											
Location 2											
Location 3											

Location Number	Comments / Corrective Actions	Action No.
1		
2		
3		

Project-specific BMP ☒ Yes ☐ No	Properly located?		Properly installed?		Maintenance or repair needed?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Project-specific BMP ☒ Yes ☐ No	Properly located?		Properly installed?		Maintenance or repair needed?						Photos?
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Location 1											
Location 2											
Location 3											

	Comments and Required Actions	Action No.
Location 1		
Location 2		
Location 3		

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Site Inspection Report General Comments

Are the BMPs installed as required by the Stormwater Pollution Prevention Plan for the phase of construction?

☐ Yes ☐ No

Does the SWPPP need to be amended?

☐ Yes ☐ No

Does the SWPPP currently reflect the current site conditions and contractor operations?

☐ Yes ☐ No

Is hazardous waste stored on the jobsite?

☐ Yes ☐ No

Are there water pollution control concerns on the project site not addressed by the comments and required actions shown above for BMPs, based on the field review of the jobsite?

☐ Yes ☐ No

If yes, provide details, comments, and required actions below for each location.

Location	Water Pollution Control Concern	Comments and Required Actions	Action No.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Inspection Report Certification

I certify under penalty of law that this Stormwater Inspection Report was performed in accordance with the General Permit. The information contained in this inspection report was gathered from a field site inspection. I am aware that Section 309 (c)(4) of the Clean Water Act provides for significant penalties, including fines and imprisonment for knowingly submitting a false material statement, representation, or certification.

Stormwater Inspector (Name)	Date Report Completed
Stormwater Inspector (Signature)	

I certify under penalty of law that this Stormwater Inspection Report was performed in accordance with the General Permit by me or under my direction or supervision. The information contained in this inspection report was gathered and evaluated by qualified personnel prior to submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that Section 309 (c)(4) of the Clean Water Act provides for significant penalties, including fines and imprisonment for knowingly submitting a false material statement, representation, or certification.

Water Pollution Control Manager (Name)	Date
Water Pollution Control Manager (Signature)	

Stormwater Inspection Report Acceptance

If hazardous waste is stored on the jobsite, the resident engineer should notify the district hazardous waste coordinator.

Was the District Hazardous Waste Coordinator notified?

- ☐ N/A, no hazardous waste stored on the jobsite
- ☐ YES, Date _____ Time _____
- ☐ NO

Accepted by Resident Engineer (Print Name)	Date
Resident Engineer (Signature)	

Instructions

General Information

- Construction General Permit attachments C, D, and E, Section G.5. require the information on this form.
- If the inspection form does not contain enough lines to report all locations on a jobsite, click on the "Add Item" button so that all locations are inspected and reported.
- Obtain forecasted precipitation information from the National Weather Service Forecast Office website, http://www.srh.noaa.gov/forecast.
- Weather information should be the best estimate of the beginning of the storm event, duration of the event, and time elapsed since the last storm.
- Rainfall amounts should be recorded from the project site rain gauge.
- "Daily Site Inspection of Best Management Practices" section is to be filled out by the water pollution control manager.

Storm Visual Inspections

- For non-visible pollutant inspections, report on all locations shown in the Stormwater Pollution Prevention Plan.

Required Actions

- All corrective actions identified in this report must also be recorded on Form CEM-2035, "Stormwater Corrective Actions Summary."
- Locations identified where BMPs are failing or have other shortcomings require implementation of repairs or design changes within 72 hours of identification, and BMP repairs or other changes must be completed as soon as possible.

Appendix H

CEM-2034

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

CEM-2034 (NEW 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. WPCP ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002
Water Pollution Control Manager (print name and sign)	Date
Submitted by contractor (print name and sign)	Date

Provide a monthly list of stored best management practices and materials on site.

Construction Phase	Site Information
☐ Highway construction ☐ Plant establishment ☐ Suspension of work (inactive site)	_____ Total project area (acres) _____ Total project disturbed soil area (acres) _____ Current phase disturbed soil area (acres) _____ Current phase inactive disturbed soil (acres)

Stormwater Best Management Practices and Materials on Site

	Location where stored: _____ BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails
1					

MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

CEM-2034 (NEW 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Best Management Practices and Materials on Site

	Location where stored: _____ / BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails
2					
3	Location where stored: _____ / BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails

MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

CEM-2034 (NEW 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Best Management Practices and Materials on Site

	Location where stored: _____ BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails

	Location where stored: _____ BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails

MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

Instructions

General Information

- The Water Pollution Control Manager must oversee preparation of this form and submit a copy to the resident engineer every month.
- Attach additional copies of page 2 and page 3 of this form to include all required locations.
- Insert consecutive numbers for each location when using page 2 or page 3 of this form

BMP Name	BMP ID
Temporary Soil Stabilization	
Preservation of existing vegetation	SS-02
Hydraulic mulch	SS-03
Hydroseeding	SS-04
Soil binders	SS-05
Straw mulch	SS-06
Geotextiles, mats, plastic covers, and lined ditches	SS-07
Wood mulching	SS-08
Earth dikes, drainage swales and lined ditches	SS-09
Outlet protection and velocity dissipation devices	SS-10
Slope drains	SS-11
Streambank stabilization	SS-12
Temporary Sediment Control	
Silt fence	SC-01
Sediment or distilling basin	SC-02
Sediment trap	SC-03
Checkdams	SC-04
Fiber rolls	SC-05
Gravel bag berm	SC-06
Sandbag barrier	SC-08
Straw bale barrier	SC-09
Storm drain inlet protection	SC-10
Wind Erosion Control	
Wind erosion control	WE-01
Tracking Controls	
Stabilized construction entrance and exit	TC-01
Stabilized construction roadway	TC-02
Entrance and exit tire wash	TC-03
Street sweeping	TC-04

BMP Name	BMP ID
Non-Stormwater Management	
Water conservation practices	NS-01
Dewatering operations	NS-02
Paving and grinding operations	NS-03
Temporary stream crossing	NS-04
Clear water diversion	NS-05
Illegal connection or discharge detection and reporting	NS-06
Potable water and irrigation	NS-07
Vehicle and equipment cleaning	NS-08
Vehicle and equipment fueling	NS-09
Vehicle and equipment maintenance	NS-10
Pile-driving operations	NS-11
Concrete curing	NS-12
Material and equipment use over water	NS-13
Concrete finishing	NS-14
Structure demolition or removal over or adjacent to water	NS-15
Waste Management and Pollution Control	
Material delivery and storage	WM-01
Material use	WM-02
Stockpile management	WM-03
Spill prevention and control	WM-04
Solid waste management	WM-05
Hazardous waste management	WM-06
Contaminated soil management	WM-07
Concrete waste management	WM-08
Sanitary or septic waste management	WM-09
Liquid waste management	WM-10

Appendix I

CEM-2035

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER CORRECTIVE ACTIONS SUMMARY

CEM-2035 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	SWPPP PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Submitted by contractor (print and sign name)	Date

Implement required actions identified in this Stormwater Corrective Actions Summary as soon as possible, but actions must begin within 72 hours of the site inspection, or be completed before the next predicted rain event, whichever is sooner.

Corrective action number	Verification of Stormwater Site Inspection Corrective Actions		Date Corrective Actions Identified:
	BMP Type		Location
	Required Action		Comments
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type		Location
	Required Action		Comments
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type		Location
	Required Action		Comments
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type		Location
	Required Action		Comments
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type		Location
	Required Action		Comments
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type		Location
	Required Action		Comments
	Date Completed	Verified by (print name and title)	Verified by (signature)

STORMWATER CORRECTIVE ACTIONS SUMMARY

CEM-2035 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Site Inspection Report Corrective Action Summary Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the people who manage the system or are directly responsible for gathering the information, the information submitted is true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment of knowing violations.

Water Pollution Control Manager (name)	Date
Water Pollution Control Manager (signature)	

Stormwater Site Inspection Report Corrective Action Summary Acceptance

Resident Engineer (name)	Date
Resident Engineer (signature)	

Instructions

General Information

- If the summary form does not have enough lines to report all required actions, use additional copies of this form's page 1 to report all required corrective actions from an inspection form.
- On page 1 of this form and additional copies of page 1, insert consecutive numbers for each required corrective action.

Required Actions

- Identified locations—where BMPs are failing or have other shortcomings—require repairs or design changes within 72 hours of identification and complete BMP repairs or other changes as soon as possible, or before the next predicted rain event, whichever is sooner, per the Lake Tahoe Hydrologic Unit Permit.
- Daily inspections required for waste containers (covered at end of shift), tracking, and others per project specifications.

Appendix J

CEM-2040

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

WEATHER FORECAST LOG

CEM-2040 (NEW 1/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

WEATHER MONITORING LOG

Week of ___ / ___ / ___ - ___ / ___ / ___

National Weather Forecast Office http//www.srh.noaa.gov/forecast project site forecast based on search using

____

(Address or Latitude and Longitude)

Forecast Date/Time	24-Hour Forecast	48-Hour Forecast	72-Hour Forecast	96-Hour Forecast
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? ______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? ______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? ______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? ______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

WEATHER FORECAST LOG

CEM-2040 (NEW 1/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

WEATHER MONITORING LOG

Forecast Date/Time	24-Hour Forecast	48-Hour Forecast	72-Hour Forecast	96-Hour Forecast
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? _______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? _______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? _______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? _______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
	Date	Date	Date	Date
	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %
	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches
	Chance of Precipitation 50 percent or greater within 48 hours of forecast date? ☐ Yes ☐ No	Chance of Precipitation 50 percent or greater within 72 hours of forecast date? ☐ Yes ☐ No	Forecasted cumulative amount of precipitation for storm event? _______ inches	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No

Instructions

GENERAL INFORMATION

- The information on this form is required to document weather forecasts for project sites with either a Stormwater Pollution Prevention Plan (SWPPP) or a Water Pollution Control Program (WPCP).
- To obtain accurate weather forecast information for a project site on the National Weather Service Forecast Office website, enter the site's nearest city, state, or ZIP code in the "Search for" box. Click on Forecast Weather Table Interface on the bottom right side of the page and search by address, city, state, or project site latitude or longitude.
- Use this form daily to log the weather forecast information for the project site from the National Weather Service Forecast Office. Record in inches the chance of precipitation in the percentage and forecasted amounts listed.
- Complete the weather forecast log each working day. If the project is a calendar-day project (seven-working-day week), attach an additional copy of page 2 to report all seven days. Submit Weekly Weather Forecast Monitoring logs to the resident engineer within 48 hours of the ending date.

FORM

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number. For projects without a project identifier number write N/A in the field.

WDID Number
For projects with Water Pollution Control Program enter "WPCP."

Enter the project site street address, including city and state or latitude and longitude used to obtain National Weather Service forecast.

Weekly Reporting Period
Enter the first and last working day for the reporting period.

Enter weather forecast information from the Forecast Weather Table Interface of the National Weather Service Forecast Office webpage. Record forecasted chance of precipitation and precipitation amounts for each six-hour period for the next 24 hours, 48 hours, 72 hours, and 96 hours. For each day you do a forecast, do not include forecast information for the forecast date.

From the forecast information recorded, determine if the chance for precipitation is 50 percent or greater within 48 hours of the forecast date, and check the appropriate box.

From the forecast information recorded, determine if the chance for precipitation is 50 percent or greater within 72 hours of the forecast date, and check the appropriate box.

Using the forecasted amounts of precipitation for each six-hour period, add the amounts to determine the cumulative amount of precipitation for a storm event, and record the amount on the form. You may need to use information within the 96-hour forecast to determine storm event forecasted cumulative amount of precipitation. Determine if the forecasted cumulative amount of precipitation for the storm event is ½ inch or greater, and check the appropriate box.

WPCP/SPPPP IMPLEMENTATION REQUIREMENTS BASED ON WEATHER FORECAST

- For WPCP projects with the chance for precipitation 50 percent or greater within 48 hours of the forecast date, the water pollution control manager must implement appropriate water pollution control practices.
- For SWPPP projects with the chance for precipitation 50 percent or greater within or 72 hours of the forecast date, the water pollution control manager must implement appropriate water pollution control practices and prepare a Rain Event Action Plan for Risk Level 2 and Risk Level 3 projects.
- For WPCP projects with the forecasted cumulative amount of precipitation for the storm event ½ inch or greater, the water pollution control manager must perform a pre-storm stormwater site inspection within 48 before the storm event.
- For SWPPP projects with the forecasted cumulative amount of precipitation for the storm event ½ inch or greater, the water pollution control manager must perform a visual site-monitoring pre-storm, daily-during-storm, and post-storm inspection. For Risk Level 2 and Risk Level 3, qualifying storm events require daily stormwater discharge sampling and analysis.

Appendix K

CEM-2041

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

WEATHER MONITORING LOG

CEM-2041 (REV. 3/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ Project Resides in The Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-019,NPDES No. CAG616002
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

WEEKLY REPORTING PERIOD

Week of ___ / ___ / ___ - ___ / ___ / ___

Weather Information for ___ / ___ / ___

Weather Condition	Temperature	Precipitation Condition	Wind Condition
☐ Clear	Maximum ____ °F	☐ None ☐ Heavy rain	☐ None
☐ Partly Cloudy	Minimum ____ °F	☐ Misty ☐ Hail	☐ Less than 5 mph
☐ Cloudy		☐ Light rain ☐ Snow	☐ Greater than 5 mph
		☐ Rain	

Storm Precipitation Information

Complete the following when there is any precipitation within the 24-hour period.

Storm Event Information

Storm event began? _____ (time) on _____ (date)

Cumulative amount of precipitation from previous day? _____ inches

Storm event ended? _____ (time) on _____ (date)

☐ Extended duration storm event

Time	Project Site Rain Gauge Reading (inches)	Difference From Previous Reading	Cumulative Amount of Precipitation (inches)

What is the cumulative amount of precipitation for storm event to date? _____ inches

What is the 24-hour cumulative amount of precipitation? _____ inches

Is the cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No

If yes for risk level 2 and 3 projects are stormwater discharges being sampled and analyzed? ☐ Yes ☐ No

Additional Storm Event Information

Compliance Storm Event		ATS Compliance Storm Event *Complete the following when ATS is used on project site*	
The compliance storm event (5-year, 24-hour storm) for this project site is: _____ inches	Has the storm event exceeded the compliance storm event? ☐ Yes ☐ No	The compliance storm event (10-year, 24-hour storm) for this project site is: _____ inches	Has the storm event exceeded the compliance storm event? ☐ Yes ☐ No

If yes to exceedance of the compliance storm event based on project site rain gauge readings, attach printout of precipitation data from nearest National Weather Service weather station as verification of compliance storm exceedance. Verification of project site compliance storm event exceedance from weather station _____ is based on project site address or latitude and longitude. _____

(NWS) Weather Station

Weather information input by (print name and sign)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

WEATHER MONITORING LOG

CEM-2041 (REV. 3/2013)

Weather Information for ___ / ___ / ___

Weather Condition	Temperature	Precipitation Condition	Wind Condition
☐ Clear ☐ Partly Cloudy ☐ Cloudy	Maximum ____ °F Minimum ____ °F	☐ None ☐ Heavy rain ☐ Misty ☐ Hail ☐ Light rain ☐ Snow ☐ Rain	☐ None ☐ Less than 5 mph ☐ Greater than 5 mph

Storm Precipitation Information

Complete the following when there is any precipitation within the 24-hour period.

Storm Event Information

Storm event began?
_____ on _____
(time) *(date)*

Cumulative amount of precipitation from previous day?
_____ inches

Storm event ended?
_____ on _____
(time) *(date)*

☐ Extended duration storm event

Time	Project Site Rain Gauge Reading (inches)	Difference From Previous Reading	Cumulative Amount of Precipitation (inches)

What is the cumulative amount of precipitation for storm event to date?
_____ inches

What is the 24-hour cumulative amount of precipitation?
_____ inches

Is the cumulative amount of precipitation for storm event 1/2 inch or greater?
☐ Yes ☐ No

If yes for risk level 2 and 3 projects are stormwater discharges being sampled and analyzed?
☐ Yes ☐ No

Additional Storm Event Information

Compliance Storm Event		ATS Compliance Storm Event *Complete the following when ATS is used on project site*	
The compliance storm event (5-year, 24-hour storm) for this project site is: _____ inches	Has the storm event exceeded the compliance storm event? ☐ Yes ☐ No	The compliance storm event (10-year, 24-hour storm) for this project site is: _____ inches	Has the storm event exceeded the compliance storm event? ☐ Yes ☐ No

If yes to exceedance of the compliance storm event based on project site rain gauge readings, attach printout of precipitation data from nearest National Weather Service weather station as verification of compliance storm exceedance. Verification of project site compliance storm event exceedance from weather station _____ is based on project site address or latitude and longitude. _____

(NWS) Weather Station

Weather information input by (print name and sign)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

WEATHER MONITORING LOG

CEM-2041 (REV. 3/2013)

Weather Information for ___ / ___ / ___

Weather Condition	Temperature	Precipitation Condition	Wind Condition
☐ Clear ☐ Partly Cloudy ☐ Cloudy	Maximum ____ °F Minimum ____ °F	☐ None ☐ Heavy rain ☐ Misty ☐ Hail ☐ Light rain ☐ Snow ☐ Rain	☐ None ☐ Less than 5 mph ☐ Greater than 5 mph

Storm Precipitation Information

Complete the following when there is any precipitation within the 24-hour period.

Storm Event Information

Storm event began? ____ (time) on ____ (date) Cumulative amount of precipitation from previous day? ____ inches	Time	Project Site Rain Gauge Reading (inches)	Difference From Previous Reading	Cumulative Amount of Precipitation (inches)	What is the cumulative amount of precipitation for storm event to date? ____ inches What is the 24-hour cumulative amount of precipitation? ____ inches
Storm event ended? ____ (time) on ____ (date) ☐ Extended duration storm event					Is the cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No If yes for risk level 2 and 3 projects are stormwater discharges being sampled and analyzed? ☐ Yes ☐ No

Additional Storm Event Information

Compliance Storm Event		ATS Compliance Storm Event *Complete the following when ATS is used on project site*	
The compliance storm event (5-year, 24-hour storm) for this project site is: ____ inches	Has the storm event exceeded the compliance storm event? ☐ Yes ☐ No	The compliance storm event (10-year, 24-hour storm) for this project site is: ____ inches	Has the storm event exceeded the compliance storm event? ☐ Yes ☐ No

If yes to exceedance of the compliance storm event based on project site rain gauge readings, attach printout of precipitation data from nearest National Weather Service weather station as verification of compliance storm exceedance. Verification of project site compliance storm event exceedance from weather station ____ *(NWS) Weather Station* is based on project site address or latitude and longitude. ____

Weather information input by (print name and sign)

WEATHER MONITORING LOG REVIEW

I have reviewed this document and based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true accurate, and complete.

Water pollution control manager name	National Weather Service precipitation data for compliance storm exceedance attached to this log submittal? ☐ Yes ☐ No
Water pollution control manager signature	Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

WEATHER MONITORING LOG

CEM-2041 (REV. 3/2013)

Instructions

GENERAL INFORMATION

- The information shown on this form is required for projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) to document weather forecast for the project site.
- Use this weather monitoring log to record daily weather information for the project site location.
- Complete the weather monitoring log each working day. If the project is a calendar-day project, for example, a seven-working-day week, attach an additional copies of the second page so you can report all seven days.
- Submit Weather Monitoring Logs to the resident engineer within five working days of the ending date shown on the weather monitoring log.
- For verifying exceedance of compliance storm, locate the National Weather Service (NWS) automated weather station nearest the project site. NWS weather station locations are available at: http://www.wrh.noaa.gov/sto/obsmap.php.
- Print out precipitation data for the nearest NWS weather station for any storm event that exceeds the compliance storm event. NWS weather station precipitation data is available at: http://www.cnrfc.noaa.gov/awipsProducts/RNOHYDRSA.php.

FORM

Contract Number/Co/Rte/PM
For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number
For projects without a Project Identification Number, write N/A in the field.

WDID Number
For projects with Water Pollution Control Program (WPCP) enter “WPCP” in this field.

Enter the project site street address including city and state or the latitude and longitude used to obtain NWS forecast.

Weekly Reporting Period
Enter the first and last working day for the reporting period

Enter precipitation information during working hours at least every two hours.
1. Time
2. Rain gauge reading
3. Storm event cumulative precipitation amount

Using the amounts of precipitation for each two-hour period during working hours and the amount of precipitation during non-working hours to determine the cumulative amount of precipitation for a storm event, and record the amount on the form. Determine if the forecasted cumulative amount of precipitation for the storm event is one-half inch or greater, and check the appropriate box.

Compliance Storm Event
Compliance Storm Event for Risk Level 3 project site discharges is determined by using the following maps:
http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif
http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif

ATS Compliance Storm Event
Compliance Storm Event for ATS discharge compliance is determined using the following map:
http://www.wrcc.dri.edu/pcpnfreq/nca10y24.gif
http://www.wrcc.dri.edu/pcpnfreq/sca10y24.gif

If the storm event exceeds the compliance storm event, verification of compliance storm event is required based on nearby governmental rain gauge readings. Enter the project site street address including city and state or the latitude and longitude used to determine the nearest NWS weather station and weather station identification.

Instructions, continued

RAIN GAUGE REQUIREMENTS

- The gauge must be monitored every day when any amount of rain has fallen in the previous 24 hours. The first reading each day should occur at approximately the same time to provide a 24-hour storm amount. Capture precipitation data in the early morning after storm events because accumulated precipitation will quickly evaporate when the weather clears.
- The rain gauge monitoring procedure is as follows:

1. At the specified time of day, read the amount of captured precipitation. The water in the gauge is likely to appear rounded at the surface when observed at eye level—a phenomenon called a *meniscus* caused by water tension. Read the gauge at the center of the meniscus.
2. Record the reading, including units (inches), before removing the gauge from its base. After recording the value, double-check your reading, empty the gauge, and reset it.
3. For additional readings taken during the day, ***do not empty*** the gauge after midday readings. Record the time and the reading on this form. For midday readings, the amount of precipitation entered into the “Project Site Rain Gauge Reading” column is cumulative for the day since the gauge was not emptied during this period.

Appendix L

CEM-2045/ CEM-2046 /CEM-2047

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

RAIN EVENT ACTION PLAN

CEM-2045 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 2 ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date
Water Pollution Control Manager name and company name	Phone number
	Emergency (24/7) phone number
Erosion and sediment control provider or subcontractor name and company	Phone number
	Emergency (24/7) phone number
Stormwater sampling and testing agent or subcontractor name and company	Phone number
	Emergency (24/7) phone number

Storm Information

Attach forecasted precipitation information from the National Weather Service Forecast Office website, **http://www.srh.noaa.gov/forecast.**

Project site ZIP code	Date forecast checked	Time forecast checked
Forecast percentage probability of precipitation in 0 - 24 hours	Expected precipitation amount	Date
Forecast percentage probability of precipitation in 24 - 48 hours	Expected precipitation amount	Date
Forecast percentage probability of precipitation in 48 - 72 hours	Expected precipitation amount	Date
Will predicted weather pattern rain event produce 1/2-inch or more rain? ☐ Yes ☐ No	**Note:** A qualifying rain event happens when a predicted weather pattern will produce 1/2-inch or more of precipitation. A qualifying rain event will require stormwater visual monitoring site inspections and sampling and analysis of stormwater discharges.	

Phase Information

☐ Highway Construction Phase ☐ Plant Establishment Phase ☐ Inactive

Sampling Schedule

Based on the weather forecast, stormwater discharge sampling is required to begin on _____ (date) at approximately _____ (time).
Stormwater discharge sampling is required every 24 hours during an extended storm event based on the predicted duration of the storm event. It is required on the following dates:

_____ _____ _____ _____ _____ _____

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Activities Associated with Highway Construction Projects, Plant Establishment, Inactive Projects

Check ALL boxes below that apply to current project site.

☐ Cleaning and grubbing	☐ Finish grading	☐ Traffic striping and pavement markings
☐ Earthwork	☐ Structure construction	☐ Highway planting
☐ Culvert construction	☐ Soundwall construction	☐ Soil amendments
☐ Rough grading	☐ Curbs, gutters, and sidewalks	☐ Plant establishment
☐ Storm drain installation	☐ Paving operations	☐ Material delivery and storage
☐ Utility installation water-gas-sewer	☐ Finishing roadway	☐ Equipment maintenance and fueling
☐ Structure foundations (including piles)	☐ Metal beam guard rail installation	☐ Erosion and sediment control
☐ Subgrade grading	☐ Sign installation	☐ Other _____
☐ Subbase and base placement	☐ Highway electrical work	☐ Other _____

Subcontractors or Trades Active on Site for Highway Construction, Plant Establishment, Inactive Projects

Check All boxes below that apply to current project site.

☐ Grading (operating engineers)	☐ Curb, gutter and sidewalk (carpenters, laborers and concrete finishers)
☐ Underground storm drain (operating engineers and laborers)	☐ Lighting and signals (operating engineers and electricians)
☐ Underground utilities (operating engineers and laborers)	☐ Metal beam guard rail (operating engineers and laborers)
☐ Underground utilities (public or private utility company)	☐ Signs (operating engineers)
☐ Pile installation (pile butts)	☐ Traffic striping and pavement markings
☐ Concrete foundations (carpenters, laborers, and concrete finishers)	☐ Masonry soundwalls (masons and laborers)
☐ Bar reinforcement placement	☐ Erosion and sediment control
☐ Structure construction (carpenters and laborers)	☐ Highway planting
☐ Concrete placement (operating engineer, laborers and concrete finishers)	☐ Other _____
☐ Hot mix asphalt placement (operating engineers and laborers)	☐ Other _____

Trade (Subcontractor) Information Provided

Check ALL boxes below that apply to current project site.

☐ Project SWPPP Handout	☐ Tailgate Meetings
☐ Contract Specifications	☐ Poster and Signage
☐ Educational Material Handout	☐ Other _____
☐ SWPPP Training Workshop	☐ Other _____

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions

Activity	Actions Required Before Predicted Rain Event
Information and Scheduling	☐ Project superintendent informed of predicted rain at _____(time) on _____(date). ☐ Foreman and subcontractors informed of predicted rain. ☐ Erosion control or sediment control provider notified to provide: ☐ Pre-storm crew with at least _____ people ☐ Pre-storm crew to start implementing storm event actions by _____ (time) on _____ (date) ☐ Sample collection and testing provider alerted if non-visible pollutant sampling and testing required. List of non-visible pollutant sampling locations and parameters: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ ☐ Check that adequate erosion and sediment control materials are on hand for: ☐ Pre-storm required actions ☐ Extended storm event maintenance and repair ☐ Confirm that the BMP site map is updated and provide a copy to erosion and sediment control provider or subcontractor. ☐ Other _____ ☐ Other _____ ☐ Other _____ ☐ Other _____

Additional Actions Required Before a Qualifying Rain Event

☐ Pre-storm stormwater site inspection completed.

☐ Listed corrective actions identified by pre-storm stormwater site inspection that must be corrected before storm event on page 7 of this REAP.

☐ Staff scheduled for inspections during storm.

☐ Erosion control or sediment control provider notified at _____ (time) on _____ (date) to provide crew during the storm event of at least _____.

☐ The attached contingency plan is to be implemented in the event of flooding:

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Construction Site Monitoring Program Actions Required Before a Qualifying Rain Event
Information and Scheduling	☐ Review the discharge location site map for the current phase of the project and include additional non-visible pollutant sampling locations identified during pre-storm stormwater site inspection. ☐ Alert sample collection and testing provider that sampling will be required and provide the following: ☐ Updated discharge location site map ☐ The required number of sampling locations for this phase of the project: ☐ _____ Discharge points ☐ _____ Run-on locations ☐ _____ Receiving waters for Risk Level 3 ☐ _____ Non-visible potential discharge points Run-on Sampling Locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Discharge Sampling Locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Receiving Water Sampling Locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Construction Site Monitoring Program Actions Required Before a Qualifying Rain Event
Information and Scheduling	☐ Identify non-visible pollutant testing locations and parameters on page 3. ☐ Sampling will be needed beginning at approximately _____ (time) on _____ (date). * Note: Sample for constituents (turbidity, pH, etc.) per SWPPP.

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Actions Required Before Predicted Rain Event
Material Storage Areas	☐ Material covered or in sheds (ex treated woods and metals) ☐ Stockpiles covered and perimeter control installed ☐ Other _____ ☐ Other _____ ☐ Other _____
Waste Management Areas	☐ Dumpsters closed ☐ Drain holes plugged ☐ Recycling bins covered ☐ Sanitary stations bermed and protected from tipping ☐ Other _____ ☐ Other _____ ☐ Other _____
Concrete Rinse Out Areas	☐ Wash-out bins covered ☐ Adequate capacity for rain ☐ Other _____ ☐ Other _____
Operations	☐ Operations to shut down for rain event ☐ Grading ☐ Concrete pours ☐ Hot mix asphalt paving ☐ Other _____ ☐ Other _____ ☐ Soil amendments not to be applied within the 24 hours before a rain event ☐ Other _____ ☐ Other _____

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Actions Required Before Predicted Rain Event
Secure Site for Storm Event	☐ Materials and equipment properly stored and covered. ☐ Waste and debris disposed in covered dumpsters or removed from site. ☐ Trenches and excavations protected. ☐ Perimeter controls around disturbed areas. ☐ Other _____ ☐ Other _____
Site Erosion and Sediment Control BMPs	☐ Site perimeter controls are in place. ☐ Catch basin and drop inlet protection are in place. ☐ Sediment basins and traps have adequate capacity. ☐ Deploy temporary perimeter control on inactive areas. ☐ Deploy temporary perimeter control around active disturbed soil areas and active stockpiles. ☐ Sweep access roads. ☐ Other _____ ☐ Other _____ ☐ Other _____
Spills and Drips	☐ Clean up all spills and drips, including paint, fuel, and oil. ☐ Empty drip pans. ☐ Other _____ ☐ Other _____
Pre-storm Inspection Identified Corrective Actions	Corrective Action Number ☐ _____ ___ ☐ _____ ___ ☐ _____ ___ ☐ _____ ___ ☐ _____ ___ ☐ _____ ___ ☐ _____ ___ ☐ _____ ___ ☐ _____ ___

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Certification of Rain Event Action Plan

I certify under penalty of law that this Rain Event Action Plan (REAP) will be implemented in accordance with the Construction General Permit by me or under my direction or supervision. The information contained in this REAP was gathered and evaluated by qualified personnel before submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that Section 309 (c)(4) of the CWA provides for significant penalties, including fines and imprisonment for knowingly submitting false material statement, representation or certification.

Water Pollution Control Manager name	Date
Water Pollution Control Manager signature	

Accepted by resident engineer name	Date
Resident engineer signature	

Instruction

General Information

- This form must be completed for Risk Level 2 and Risk Level 3 projects with the chance for precipitation of 50 percent or greater, within 72 hours of the forecast date. The Rain Event Action Plan (REAP) must be developed 48 hours prior to any likely precipitation rain event (any weather pattern that is forecast to have a 50 percent or greater probability of producing precipitation in the project area).
- The CGP requires a pre-storm inspection within two business days (48 hours) prior to a "qualifying rain event" which is defined as any event producing precipitation of 0.5 inch or more over the duration of the rain event. Because the size of a rain event cannot be accurately predicted, Caltrans requires a pre-storm inspection based on a forecasted storm event, which is defined as any rain event that is forecasted to produce 0.1 inch or more of precipitation within any 24-hour period. The trigger for a pre-storm event visual inspection is the same as for a Rain Event Action Plan: 50 percent or greater probability of producing 0.1 inch or more of precipitation within any 24-hour period in the project area based on the National Weather Service Forecast Office (National Oceanic and Atmospheric Administration).
- Within 24 hours prior to a storm event, the REAP must be submitted to the resident engineer. The REAP must be made available on site and implementation begun no later than 24 hours prior to the likely precipitation event.
- File this form in SWPPP File Category 20.45.

Form

- **Contract Number/Co/Rte/PM**
  For encroachment permit projects, write the local agency or private entity encroachment permit number in the contract number field.
- **Project Identifier Number**
  For projects without a number, write N/A in the field.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

RAIN EVENT ACTION PLAN—PLANT ESTABLISHMENT PHASE

CEM-2046 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2
Submitted by contractor (print and sign name)	Date
Water pollution control manager name and company name	Phone number
	Emergency (24/7) phone number
Erosion and sediment control provider or subcontractor name and company name.	Phone number
	Emergency (24/7) phone number
Storm sampling and testing agent or subcontractor name and company	Phone number
	Emergency (24/7) phone number

Storm Information

Attach forecasted precipitation information from the National Weather Service Forecast Office website, http://www.srh.noaa.gov/forecast.

Project site ZIP code	Date forecast checked	Time forecast checked
Forecast percentage of probability of precipitation in 24 hours	Expected precipitation amount	Date
Forecast percentage of probability of precipitation in 48 hours	Expected precipitation amount	Date
Forecast percentage of probability of precipitation in 72 hours	Expected precipitation amount	Date
Will predicted weather pattern rain event produce one-half inch or more of rain? ☐ Yes ☐ No	Note: A qualifying rain event occurs when a predicted weather pattern will produce one-half inch or more of precipitation. A qualifying rain event requires stormwater visual monitoring, site inspections, and sampling and analysis of stormwater discharges.	

RAIN EVENT ACTION PLAN—PLANT ESTABLISHMENT PHASE

CEM-2046 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Activities Associated with Highway Construction Projects

Check ALL boxes that apply to current project site.

☐ Highway planting	☐ Material delivery and storage	Other _____
☐ Soil amendments	☐ Equipment maintenance and fueling	Other _____
☐ Plant establishment	☐ Erosion and sediment control	Other _____

Subcontractors or Trades Active on Site for Highway Construction

Check ALL boxes that apply to current project site.

☐ Erosion and sediment control	Other _____
☐ Highway planting	Other _____

Trade (Subcontractor) Information Provided

Check ALL boxes that apply to current project site.

☐ Project SWPPP handout	☐ Tailgate meetings
☐ Contract specifications	☐ Posters and signage
☐ Educational material handout	Other _____
☐ SWPPP training workshop	Other _____

RAIN EVENT ACTION PLAN—PLANT ESTABLISHMENT PHASE

CEM-2046 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions

Activity	Actions Required Before Predicated Likely Rain Event
Information and Scheduling	☐ Project superintendent informed of predicted rain at _____(time) on _____(date). ☐ Foreman and subcontractors informed of predicted rain. ☐ Erosion control or sediment control provider notified to provide. ☐ Pre-storm crew with at least _____ people ☐ Pre-storm crew to start implementing storm event actions by _____ (time) on _____ (date) ☐ Sample collection and testing provider alerted if non-visible pollutant sampling and testing required. List of non-visible pollutant sampling locations and parameters: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ ☐ Check for adequate erosion and sediment control materials are on hand for ☐ Pre-storm required actions. ☐ Extended storm event maintenance and repair. ☐ Review that the BMP site map is updated, and provide a copy to erosion and sediment control provider or subcontractor. ☐ Other _____ ☐ Other _____ ☐ Other _____ ☐ Other _____

RAIN EVENT ACTION PLAN—PLANT ESTABLISHMENT PHASE

CEM-2046 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, Continued

Activity	Construction Site Monitoring Program Actions Required Before a Qualified Rain Event
Information and Scheduling	☐ Review the discharge location site map for the current phase of the project. Include additional non-visible pollutant sampling locations identified during pre-storm stormwater site inspection. ☐ Alert sample collection and testing provider that sampling will be required and provide the following: ☐ Updated discharge location site map ☐ The required number of sampling locations for this phase of the project: ☐ _____ Discharge points ☐ _____ Run-on locations ☐ _____ Receiving waters for Risk Level 3 ☐ _____ Non-visible potential discharge points Discharge sampling locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Run-on sampling locations 1. _____ 2. _____ 3. _____ 4. _____ Receiving water sampling locations 1. _____ 2. _____ 3. _____ 4. _____ ☐ Identify non-visible pollutant testing locations and parameters on page 3. ☐ Sampling will need to begin at approximately _____ (time) on _____ (date).

RAIN EVENT ACTION PLAN— PLANT ESTABLISHMENT PHASE

CEM-2046 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Actions Required Before Predicted Likely Rain Event
Material Storage Areas	☐ Material covered or in sheds (for example, treated woods and metals). ☐ Stockpiles covered and perimeter control installed. ☐ Other _____ ☐ Other _____ ☐ Other _____
Waste Management Areas	☐ Dumpsters closed. ☐ Drain holes plugged. ☐ Recycling bins covered. ☐ Sanitary stations bermed and protected from tipping. ☐ Other _____ ☐ Other _____ ☐ Other _____
Operations	☐ Operations to shut down for rain event: ☐ Highway planting ☐ Other _____ ☐ Other _____ ☐ Soil amendments not to be applied within the 24 hours before a rain event. ☐ Other _____ ☐ Other _____
Secure Site for Storm Event	☐ Materials and equipment properly stored and covered. ☐ Waste and debris disposed in covered dumpsters or removed from site. ☐ Trenches and excavations protected. ☐ Perimeter controls placed around disturbed areas. ☐ Other _____ ☐ Other _____
Spills and Drips	☐ Clean up all spills and drips, including paint, fuel, and oil. ☐ Empty drip pans. ☐ Other _____ ☐ Other _____

RAIN EVENT ACTION PLAN— PLANT ESTABLISHMENT PHASE

CEM-2046 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Actions Required Before Predicted Likely Rain Event, continued
Site Erosion and Sediment Control BMPs	☐ Site perimeter controls are in place. ☐ Catch basin and drop inlet protection are in place. ☐ Sediment basins and traps have adequate capacity. ☐ Temporary perimeter control deployed on inactive areas. ☐ Temporary perimeter control deployed around disturbed areas and stockpiles. ☐ Other _____ ☐ Other _____
Pre-Storm Inspection Identified Corrective Actions	Corrective Action Number ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____

Certification of Rain Event Action Plan

I certify under penalty of law that this Rain Event Action Plan (REAP) will be implemented in accordance with the General Construction Permit by me or under my direction or supervision. The information contained in this REAP was gathered and evaluated by qualified personnel before submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that Section 309 (c)(4) of the CWA provides for significant penalties, including fines and imprisonment for knowingly submitting false material statement, representation or certification.

Water pollution control manager name	Date
Water pollution control manager signature	
Accepted by resident engineer name	Date
Resident engineer signature	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

RAIN EVENT ACTION PLAN—INACTIVE PROJECT

CEM-2047 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3

Submitted by contractor (print and sign name)	Date

Water pollution control manager name and company name	Phone number
	Emergency (24/7) phone number
Erosion and sediment control provider or subcontractor name and company	Phone number
	Emergency (24/7) phone number
Stormwater sampling and testing agent or subcontractor name and company	Phone number
	Emergency (24/7) phone number

Storm Information

Attach forecasted precipitation information from the National Weather Service Forecast Office website, **http://www.srh.noaa.gov/forecast.**

Project site ZIP code	Date forecast checked	Time forecast checked
Forecast percentage probability of precipitation in 24 hours	Expected precipitation amount	Date
Forecast percentage probability of precipitation in 48 hours	Expected precipitation amount	Date
Forecast percentage probability of precipitation in 72 hours	Expected precipitation amount	Date
Will predicted weather pattern rain event produce 1/2-inch or more rain? ☐ Yes ☐ No	**Note:** A qualifying rain event occurs when a predicted weather pattern will produce one-half inch or more of precipitation. A qualifying rain event requires stormwater visual monitoring site inspections and sampling and analysis of stormwater discharges.	

RAIN EVENT ACTION PLAN—INACTIVE PROJECT

CEM-2047 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Activities Associated with Highway Construction Projects

Check ALL boxes below that apply to current project site.

☐ Erosion and sediment control	☐ Other _____	☐ Other _____
☐ Material delivery and storage	☐ Other _____	☐ Other _____

Subcontractors or Trades Active on Site for Highway Construction

Check All boxes below that apply to current project site.

☐ Erosion and sediment control	☐ Other _____
	☐ Other _____

Trade (Subcontractor) Information Provided

Check All boxes below that apply to current project site.

☐ Project SWPPP handout	☐ Tailgate meetings
☐ Contract specifications	☐ Posters and signage
☐ Educational material handout	☐ Other _____
☐ SWPPP training workshop	☐ Other _____

RAIN EVENT ACTION PLAN—INACTIVE PROJECT

CEM-2047 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions

Activity	Actions Required Before Predicted Rain Event
Information and Scheduling	☐ Project superintendent informed of predicted rain at _____(time) on _____(date). ☐ Foreman and subcontractors informed of predicted rain. ☐ Erosion control or sediment control provider notified to provide. ☐ Pre-storm crew with at least _____ people ☐ Pre-storm crew to start implementing storm event actions by _____ (time) on _____ (date) If non-visible pollutant sampling and testing are required, alert sample collection and testing provider. List of non-visible pollutant sampling locations and parameters: 1. _____ 2. _____ 3. _____ 4. _____ ☐ Check for adequate erosion and sediment control materials are on hand for: ☐ Pre-storm required actions. ☐ Extended storm event maintenance and repair. ☐ Review the BMP site map updates, and provide a copy to erosion and sediment control provider or subcontractor. ☐ Other _____
	Construction Site Monitoring Program Actions Required Before a Forecasted Qualifying Rain Event
	☐ Pre-storm stormwater site inspection completed. ☐ Listed corrective actions identified by pre-storm stormwater site inspection that must be corrected before storm event on page 6 of this REAP. ☐ Staff scheduled for inspections during storm. ☐ Erosion control or sediment control provider notified at _____ (time) on _____ (date) to provide crew of at least _____ people during the storm event. ☐ The attached contingency plan is to be implemented in the event of flooding.

RAIN EVENT ACTION PLAN—INACTIVE PROJECT

CEM-2047 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Construction Site Monitoring Program Actions Required Before A Forecasted Qualifying Rain Event
Information and Scheduling	☐ Review the discharge location site map for the current phase of the project, and include additional non-visible pollutant sampling locations identified during pre-storm stormwater site inspection. ☐ Alert sample collection and testing provider that sampling will be required and provide the following: ☐ Updated discharge location site map ☐ The required number of sampling locations for this phase of the project ☐ _____ Discharge points ☐ _____ Run-on locations ☐ _____ Receiving waters for Risk Level 3 ☐ _____ Non-visible potential discharge points Discharge sampling locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Run-on sampling locations 1. _____ 2. _____ 3. _____ 4. _____ Receiving water sampling locations 1. _____ 2. _____ 3. _____ 4. _____ ☐ Identify non-visible pollutant testing locations and parameters on page 3. ☐ Sampling will needed beginning at approximately _____ (time) on _____ (date).

RAIN EVENT ACTION PLAN—INACTIVE PROJECT

CEM-2047 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Actions Required Before Predicted Rain Event
Material Storage Areas	☐ Material covered or in sheds (for example, treated woods and metals) ☐ Stockpiles covered and perimeter control installed ☐ Other _____ ☐ Other _____ ☐ Other _____
Waste Management Areas	☐ Dumpsters closed ☐ Drain holes plugged ☐ Recycling bins covered ☐ Sanitary stations bermed and protected from tipping ☐ Other _____ ☐ Other _____ ☐ Other _____
Secure Site for Storm Event	☐ Materials and equipment properly stored and covered ☐ Waste and debris disposed in covered dumpsters or removed from site ☐ Trenches and excavations protected ☐ Perimeter controls around disturbed areas ☐ Other _____ ☐ Other _____
Spills and Drips	☐ Clean up all spills and drips, including paint, fuel, and oil ☐ Empty drip pans ☐ Other _____ ☐ Other _____

RAIN EVENT ACTION PLAN—iNACTIVE PROJECT

CEM-2047 (NEW 9/2010)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, continued

Activity	Actions Required Before Predicted Rain Event
Site Erosion and Sediment Control BMPs	☐ Site perimeter controls are in place. ☐ Catch basin and drop inlet protection is in place. ☐ Sediment basins and traps have adequate capacity. ☐ Temporary perimeter control deployed on inactive areas. ☐ Temporary perimeter control deployed around disturbed areas and stockpiles. ☐ Roads swept.. ☐ Other _____ ☐ Other _____ ☐ Other _____
Pre-storm Inspection Identified Corrective Actions	☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____

Certification of Rain Event Action Plan

I certify under penalty of law that this Rain Event Action Plan (REAP) will be implemented in accordance with the Genera Constructionl Permit by me or under my direction or supervision. The information contained in this REAP was gathered and evaluated by qualified personnel before submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that Section 309 (c)(4) of the CWA provides for significant penalties, including fines and imprisonment for knowingly submitting false material statement, representation or certification.

Water pollution control manager name	Date
Water pollution control manager signature	

Accepted by resident engineer name	Date
Resident engineer signature	

Appendix M

CEM-2061

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NOTICE OF DISCHARGE REPORT

CEM-2061 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. WPCP ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.
Submitted by contractor (print and sign name)	Date

Notice of Discharge General Information

Location	Date discharge discovered	
	Discharge type ☐ Stormwater ☐ Authorized non-stormwater ☐ Non-authorized non-stormwater	Exceedance of applicable water quality standard ☐ Turbidity ☐ pH ☐ _____
Discharge identified by stormwater visual site inspection? ☐ YES ☐ NO	Discharge discovered by contractor during daily work? ☐ YES ☐ NO	Discharge samples taken? ☐ YES ☐ NO
Discharge identified by Regional Water Quality Control Board? ☐ YES ☐ NO	Discharge identified by State Water Resources Control Board? ☐ YES ☐ NO	Date and time water pollution control manager notified of discharge Date and time resident engineer notified of discharge

Storm Event Information

Complete this section for stormwater discharges

Start of storm event	End of storm event	Duration of storm event	Storm event precipitation amount recorded from site rain gauge	Storm event precipitation amount recorded from governmental rain gauge
_____ *Date* _____ *Time*	_____ *Date* _____ *Time*	_____ *Hours : Minutes.*	_____ *inches*	_____ *inches*

Notice of Discharge Information

	Photographs
The nature and cause of the water quality standard exceedance, based on a visual observation of the discharge location	☐ YES ☐ NO
BMPs currently installed at the location of the discharge	☐ YES ☐ NO

Additional BMPs that will be implemented to prevent or reduce pollutants causing or contributing to exceedance of a water quality standard

Implementation schedule for additional BMPs

NOTICE OF DISCHARGE REPORT

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Notice of Discharge Information (continued)

Maintenance or repair of BMPs

Implementation schedule for BMPs maintenance or repair

Other required corrective actions

Implementation schedule for corrective actions

Summary of actions taken to reduce the pollutants causing or contributing to the water quality standard exceedance

Sampling and Analysis Results

Required when discharge samples are taken. Attach CEM-2052 or lab results report

- Are discharge samples taken? ☐ YES ☐ NO
- Is CEM-2052 attached? ☐ YES ☐ NO ☐ N/A
- Is lab results report attached? ☐ YES ☐ NO ☐ RESULTS PENDING
- If applicable, provide lab information: lab name, contract name, date samples sent, attach a copy of chain of custody, etc.

NOTICE OF DISCHARGE REPORT

CEM-2061 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Notice of Discharge Report Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Water Pollution Control Manager (name)	Date
Water Pollution Control Manager (signature)	

For Caltrans Use

Accepted by Resident Engineer (name)	Date
Resident Engineer(signature)	

Discharge reported by telephone or email to the Regional Water Quality Control Board (RWQCB) within 48 hours of discovery?			Date discharge reported to RWQCB	Resident engineer intials
A. Immediately and no later than 24 hours after discovery?	☐ YES	☐ NO		
B. Within 5 working days?	☐ YES	☐ NO		
C. As soon as possible but within 48 hours?	☐ YES	☐ NO		
Notice of Discharge Report submitted to RWQCB within 14 days (3 days for District 7 and District 11)?			Date report submitted to RWQCB	Resident engineer intials
A. Within 24 hours?	☐ YES	☐ NO		
B. Within 14 days (3 days for District 7 and 11)?	☐ YES	☐ NO		
Discharge reported orally to the Lahontan RWQCB within 24 hours of discovery? ☐ YES ☐ NO			Date called Lahontan RWQCB	Resident engineer intials
Electronic submittal of NEL exceedance sample results to Lahontan RWQCB and SMARTS within 5 business days? ☐ YES ☐ NO			Date report submitted	Resident engineer intials

Instructions

General Information

- This form is required for compliance with provisions in Section E-2, "Receiving Water Limitations for Construction," of the National Pollutant Discharge Elimination System (NPDES) Permit Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans), Order No. 99-06-DWQ, NPDES No. CAS000003.
- This form is to be completed when the contractor, Caltrans, State Water Resources Control Board, or Regional Water Quality Control Board staff determines that stormwater discharges, authorized non-stormwater discharges, or non-authorized, non-stormwater discharges are causing or contributing to an exceedance of an applicable water quality standard.
- This form is appropriate when there is evidence of a discharge that occurred outside of business hours where no sampling occurred.
- Water quality standards are contained in the Statewide Water Quality Control Plan or applicable Regional Water Quality Control Boards (RWQCBs) Basin Plan.
- Water quality standards are contained in the Statewide Water Quality Control Plan or applicable Regional Water Quality Control Boards (RWQCBs) Basin Plan.
- Sampling guidance is found in the current edition of the *Construction Site Monitoring Program Guidance Manual.*
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan (SWPPP) files.

Form

- **Project Identifier Number**
  Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without a number, write N/A in the field.
- **Contract Number/Co/Rte/PM**
  For encroachment permit projects, write the local agency or private entity encroachment permit number in the contract number field.
- **Storm Event Information**
  Leave section blank if box is checked for either authorized or non-authorized non-stormwater discharge.
- **Discharge Information**
  Do not leave any subsection blank. Caltrans permit specifically requires Caltrans to submit the information in this section to RWQCBs.
  For non-stormwater discharges, describe the construction operation or activity that caused the discharge.
- **Sampling and Analysis Results**
  Leave this section blank if the no box is checked for discharge samples taken.
- **Analysis Results**
  Analytical results less than the method detection limit shall be reported as "Less than the method detection limit."
- **Analysis Information**
  Leave section blank if the no box is checked for discharge samples taken.
- **Notice of Discharge Report Certification**
  For instruction on reporting timelines, see Section 9.4, Noncompliance Reporting, of Statewide Stormwater Management Plan, May 2003.

Appendix N

CEM-2048

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORM EVENT SAMPLING AND ANALYSIS PLAN

CEM-2048 (NEW 2/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Storm Event Sampling and Analysis Plan

Weather Forecast Information

Weather Forecast at _____ *(time)* _____ *(date)*

24-Hour Forecast	48-Hour Forecast	72-Hour Forecast	24-Hour Forecast
Date	Date	Date	Date
Chance of Precipitation %	Chance of Precipitation %	Chance of Precipitation %	Forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No
Amount of Precipitation Inches	Amount of Precipitation Inches	Amount of Precipitation Inches	

If yes and the project is Risk Level 1, complete this form.
If yes and the project is Risk Level 2 or 3, stop here and use form CEM-2049, "Qualifying Rain Event Sampling and Analysis Plan."
If no, complete this form.

Sampling Schedule

Based on the weather forecast, stormwater discharge sampling is required to begin on _____ (date) at approximately _____ (time)

Stormwater discharge sampling is required every 24 hours during an extended storm event, so based on the predicted duration of the storm event, it is required on the following dates:

_____ _____ _____ _____ _____ _____

The order in which stormwater discharge sample location will be sampled:

☐ Numeric order by location number
☐ Reverse numeric order by location number
☐ The following specified order _____

Reason for specified sampling order

STORM EVENT SAMPLING AND ANALYSIS PLAN

CEM-2048 (NEW 2/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Storm Event Sampling and Analysis Plan

Complete "Storm Event Sampling and Analysis Worksheet" to determine sampling locations.

Non-Visible Pollutant Sampling Locatons

Complete worksheet to determine non-visible pollutant sampling locations.

☐ No sampling locations for non-visible pollutants exist for this storm event.

☐ Table 1 shows sampling locations for non-visible pollutants for this storm event.

Table 1: Storm Event Non-Visible Pollutant Sampling Locations

Location Number	Uncontaminated Location Number	Location	Sample Type	Water Quality Indicator Constituent	Analysis

Table 2: Sampling Locations for Storm Event Listed in Numeric Order

Number	Location Number	QCQA	Number	Location Number	QCQA	Number	Location Number	QCQA	Number	Location Number	QCQA
1			4			7			10		
2			5			8			11		
3			6			9			12		

STORM EVENT SAMPLING AND ANALYSIS PLAN

CEM-2048 (NEW 2/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Storm Event Sampling and Analysis Plan Certification

I certify under penalty of law that this Storm Event Sampling and Analysis Plan was prepared by me or under my direction or supervision. The information contained in the summary was gathered and evaluated by qualified personnel before submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that Section 309 (c)(4) of the Clean Water Act (CWA) provides for significant penalties, including fines and imprisonment, for knowingly submitting false material statement, representation, or certification.

Water pollution control manager name	Date
Water pollution control manager signature	

Storm Event Sampling and Analysis Plan Review

Reviewed by resident engineer (name)	Date
Resident engineer signature	

STORM EVENT SAMPLING AND ANALYSIS PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

STORM EVENT SAMPLING AND ANALYSIS WORKSHEETS

Worksheet for Determining Non-Visible Pollutant Storm Event Sampling and Analysis Plan

Determining Non-Visible Pollutant Sampling Locations

Instructions: Enter potential non-visible pollutant sampling locations from SWPPP Attachment EE. From pre-storm site visual monitoring inspection, determine if pollutant source is present, and check the appropriate box. For each potential non-visible sampling location, determine from the pre-storm site visual monitoring inspection if any criteria for triggering sampling and analysis for non-visible pollutant are met, and check the appropriate box in the "Pre-storm site inspection identified trigger for sampling?" column.

The five triggers for sampling non-visible pollutant sampling locations:

1. Materials or waste containing non-visible pollutants are not stored under watertight conditions.
2. Materials or waste containing non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up before the storm event, or (3) the potential for a discharge of non-visible pollutants exists.
3. A construction activity with potential to contribute non-visible pollutants (1) was occurring within 24 hours before the storm event; (2) applicable BMPs were observed to be breached, malfunctioning, or improperly implemented; and (3) the potential for a discharge of non-visible pollutants exists.
4. Soil amendments have been applied, and the potential for a discharge of non-visible pollutants exists.
5. Stormwater runoff from an area contaminated by historic use of the site has the potential to combine with stormwater runoff from the site, and the potential for a discharge of non-visible pollutants exists.

Non-Visible Pollutant Sampling Required?

☐ No—If no pollutant sources are present, sampling stormwater discharges for non-visible pollutants is not required.

☐ No—If pre-storm site visual monitoring inspection identified no triggers, sampling stormwater discharges for non-visible pollutants is not required.

☐ Yes—If the pollutant source is present and the answer to a trigger question is yes, check the box in the "Storm Event Sample Location" column.

STORM EVENT SAMPLING AND ANALYSIS PLAN

CEM-2048 (NEW 2/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

STORM EVENT SAMPLING AND ANALYSIS WORKSHEETS

Table A: Potential Project Site Non-Visible Pollutant Sampling Locations

Location Number	Uncontaminated Location Number	Location	Pollutant Source	Active Pollutant Source		Pre-storm inspection identified trigger for sampling?		Storm Event Sample Location
				Yes	No	Yes	No	

Enter into Table 1 on CEM-2049, "Storm Event Sampling and Analysis Plan," all locations from Table A that have the box in the "Storm Event Sample Location" column checked. Refer to SWPPP Attachment EE to determine pollutant and water quality indicator constituent and SWPPP Section 700.X.X for information to complete Table 1.

STORM EVENT SAMPLING AND ANALYSIS PLAN

CEM-2048 (NEW 2/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

STORM EVENT SAMPLING AND ANALYSIS WORKSHEETS

Worksheet for determining non-visible pollutant storm event sampling and analysis plan for locations Identified by pre-storm site monitoring inspection not shown on SWPPP Attachment EE

Instructions: List any project site non-visible sampling location identified by pre-storm site visual monitoring in Table B not identified in SWPPP Attachment EE Table "Potential Sampling Locations for Non-visible Pollutants." Determine pollutant source, pollutant and water quality indicator constituent and enter the information into Table B.

Table B: Non-Visible Pollutant Sampling Locations Identified by Pre-Storm Site Inspection

Location Number	Uncontaminated Location Number	Location	Pollutant Source	Pollutant	Water Quality Indicator Constituent

Enter the information from Table B into Table 1 on CEM-2049, “Qualifying Rain Event Sampling and Analysis Plan.”

GENERAL INFORMATION

FORM

Contract Number/Co/Rte/PM
For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without a PID, write N/A in the field.

WDID Number
For projects with Water Pollution Control Program, enter “WPCP” in this field.

Appendix O

CEM-2049

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

CEM-2049 (NEW 4/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Qualifying Rain Event Sampling and Analysis Plan

Weather Forecast Information

Weather Forecast at _____ *(time)* _____ *(date)*

24-Hour Forecast	48-Hour Forecast	72-Hour Forecast
Date:	Date:	Date:
Chance of Precipitation (%):	Chance of Precipitation (%):	Chance of Precipitation (%):
Amount of Precipitation (Inches):	Amount of Precipitation (Inches):	Amount of Precipitation (Inches):

Forecasted Amount of Precipitation

What is the forecasted cumulative amount of precipitation for storm event? _____ inches	If yes and the project is Risk Level 2 or Risk Level 3, complete this form. If yes and the project is Risk Level 1, stop here and use form CEM-2048, "Storm Event Sampling and Analysis Plan."
Is the forecasted cumulative amount of precipitation for storm event 1/2 inch or greater? ☐ Yes ☐ No	If no, stop here and use CEM-2048, "Storm Event Sampling and Analysis Plan."

Sampling Schedule

Based on the weather forecast, stormwater discharge sampling is required to begin on _____ (date) at approximately _____ (time).

Stormwater discharge sampling is required every 24 hours during an extended storm event. Based on the predicted duration of the storm event, storm water discharge sampling is required on the following dates:

_____, _____, _____, _____, _____, _____

The order in which stormwater discharge sample location will be sampled:

☐ Numeric order by location number

☐ Reverse numeric order by location number

☐ The following specified order _____

Reason for specified sampling order

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

CEM-2049 (NEW 4/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan

Complete "Qualifying Rain Event Sampling and Analysis Worksheet" to determine sampling locations for storm event.

Non-Visible Pollutant Sampling Locations

Complete worksheet to determine non-visible pollutant sampling locations.

☐ No sampling locations for non-visible pollutants exist for this storm event.

☐ Table 1 shows sampling locations for non-visible pollutants for this storm event.

Table 1: Rain Event Non-Visible Pollutant Sampling Locations

Location Number	Uncontaminated Location Number	Location	Sample Type	Water Quality Indicator Constituent	Analysis

Stormwater Discharge Sampling Locations

☐ No sampling locations for turbidity and pH exist for this storm event.

☐ Table 2 shows sampling locations for required turbidity and pH analysis, optional SSC analysis, and other analysis for this storm event.

Table 2: Storm Event Sampling Locations for Turbidity and pH

Location Number	Location	Required Analysis	Optional Analysis
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other

☐ Other Analyses Required _____

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Project Site Run-on Sampling Locations

☐ No project site run-on locations to be sampled exist for this storm event.

☐ Table 3 shows sampling locations for project site run-on for this storm event.

Table 3: Run-on Sampling Locations

Location Number	Location	Required Analyis	Optional Analysis
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other

☐ Other Analyses Required _____

Project Site Receiving Water Sampling Locations

☐ No receiving water locations to be sampled exist for this this storm event.

☐ Table 4 shows receiving water sampling locations for this storm event.

Table 4: Receiving Water Sampling Locations

Location Number	Location	Required Analyis	Optional Analysis
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other
		☐ Turbidity ☐ pH	☐ SSC ☐ Other

☐ Other Analyses Required _____

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Table 5: Sampling Locations for Rain Event Listed in Numeric Order

Number	Location Number	QCQA	Number	Location Number	QCQA	Number	Location Number	QCQA	Number	Location Number	QCQA
1			11			21			31		
2			12			22			32		
3			13			23			33		
4			14			24			34		
5			15			25			35		
6			16			26			36		
7			17			27			37		
8			18			28			38		
9			19			29			39		
10			20			30			40		

Qualifying Rain Event Sampling and Analysis Plan Certification

I certify under penalty of law that this Qualifying Rain Event Sampling and Analysis Plan was prepared by me or under my direction or supervision. The information contained in the summary was gathered and evaluated by qualified personnel before submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that Section 309 (c)(4) of the Clean Water Act (CWA) provides for significant penalties, including fines and imprisonment, for knowingly submitting false material statement, representation, or certification.

Water pollution control manager name	Date
Water pollution control manager signature	

Qualifying Rain Event Sampling and Analysis Plan Review

Reviewed by resident engineer (name)	Date
Resident engineer signature	

Instructions

FORM

Contract Number/Co/Rte/PM
For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without a PID, write N/A in the field.

WDID Number
For projects with Water Pollution Control Program, enter “WPCP” in this field.

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM
WATER POLLUTION CONTROL MANAGER NAME	PROJECT IDENTIFIER NUMBER
WATER POLLUTION CONTROL MANGER SIGNATURE	WDID NUMBER
	DATE

Qualifying Rain Event Sampling and Analysis Plan Worksheets

Determining Non-visible Pollutant Sampling Locations

Instructions: Enter the potential non-visible pollutant sampling locations from SWPPP Attachment EE. From pre-storm site visual monitoring inspection, determine if the pollutant source is present and check the appropriate box. For each potential non-visible sampling location, determine from the pre-storm site visual monitoring inspection if any of the five criteria for triggering sampling and analysis for non-visible pollutant are met and check the appropriate box in "Pre-storm site inspection identified trigger for sampling?" column.

The five triggers for sampling non-visible pollutant sampling locations are:

1. Materials or waste containing non-visible pollutants are not stored under watertight conditions.
2. Materials or waste containing non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up before the storm event, and (3) a potential exists for discharge of non-visible pollutants.
3. A construction activity with potential to contribute non-visible pollutants (1) was occurring within 24 hours before the storm event; (2) applicable BMPs were observed to be breached, malfunctioning, or improperly implemented; and (3) a potential exists for discharge of non-visible pollutants.
4. Soil amendments have been applied and the potential exist for a discharge of non-visible pollutants.
5. Stormwater runoff from an area contaminated by historic site use has the potential to combine with stormwater runoff from the site and potential exists for a discharge of non-visible pollutants.

Non-visible Pollutant Sampling Required?

☐ No—If no pollutant sources are present, sampling stormwater discharges for non-visible pollutants is not required.

☐ No—If pre-storm site visual monitoring inspection identified no triggers that require sampling for non-visible pollutants, sampling stormwater discharges for non-visible pollutants is not required.

☐ Yes—If the pollutant source is present and the answer to any trigger question above is "yes," check the box in the "Storm Event Sample Locations" column.

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM
WATER POLLUTION CONTROL MANAGER NAME	PROJECT IDENTIFIER NUMBER
DATE	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Table A: Potential Project Site Non-Visible Pollutant Sampling Locations

Location Number	Uncontaminated Location Number	Location	Pollutant Source	Active Pollutant Source?		Pre-storm inspection identified trigger for sampling?		Storm Event Sample Location
				Yes	No	Yes	No	

Enter into Table 1 on CEM-2049, "Qualifying Rain Event Sampling and Analysis Plan," all locations checked in the "Storm Event Sample Location" column of the Table A worksheet. Refer to SWPPP Attachment EE to determine pollutant and water quality indicator constituent and SWPPP Section 700.2.2 for information to complete Table 1.

Worksheet for Determining Non-Visible Rain Event Sampling and Analysis Plan for Locations Identified by Pre-Storm Site Monitoring Inspections Not Shown on SWPPP Attachment EE

Instructions: List in Table B any project site non-visible sampling location identified by pre-storm site visual monitoring not identified in SWPPP Attachment EE Table, "Potential Sampling Locations for Non-visible Pollutants." Determine pollutant source, pollutant, and water quality indicator constituent and enter the information into Table B.

Table B: Non-Visible Pollutant Sampling Locations Identified by Pre-Storm Site Inspection

Location Number	Uncontaminated Location Number	Location	Pollutant Source	Pollutant	Water Quality Indicator Constituent

Enter the information from worksheet Table B into Table 1 on CEM-2049, "Qualifying Rain Event Sampling and Analysis Plan."

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM
WATER POLLUTION CONTROL MANAGER NAME	PROJECT IDENTIFIER NUMBER
DATE	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Worksheet for Determining Rain Event Sampling Locations for Turbidity and pH for Risk Level 2 and Risk Level 3 Projects for Qualifying Rain Events

Determining Sampling Locations Based on Turbidity

Instructions: List on Table C all project stormwater discharge sampling locations shown in SWPPP Attachment EE Table, "Project Site Discharge Sampling Locations for Turbidity and pH." Basing your decision on pre-storm site visual monitoring inspection, determine if any disturbed soil areas exist at each location and check the appropriate box in Table C. Enter the drainage area in acres for each location from SWPPP Attachment EE. During the pre-storm site monitoring inspection, for locations with disturbed soil area, determine the current disturbed soil area in acres and enter the information into Table C. Calculate and enter the percentage of drainage area that is disturbed soil area in Table C.

Verify with your RWQCB that this is acceptable.

Determine the Number of Sampling Locations for Representative Sampling Based on Turbidity

Check the appropriate following box used to determine representative sampling locations.

- ☐ If fewer than five discharge locations have disturbed soil area, sample them all. Check the box in the "Storm event sample location" column on Table C for all locations with disturbed soil area.
- ☐ If the project has 25 or fewer stormwater discharge sampling locations and if more than five discharge locations have disturbed soil area, select the five locations with the highest percentage of disturbed soil area to determine the storm event sampling locations. Check the box in the "Storm event sample location" column in Table C for all five locations.
- ☐ If more than 25 stormwater discharge sampling locations exist, determine the number of locations that must be sampled based on 20 percent of the total stormwater discharge sampling locations.

  _____ (stormwater discharge locations) x .20 = _____ (number of sampling locations)

  To determine the storm event sampling locations, select the required number of sampling locations with the highest percentage of drainage area that has disturbed soil area. Check the "Storm event sample location" column on Table C for each sampling location selected.
- ☐ If a previous storm event had a numeric effluent limitation exceedance, check the "Storm event sample location" column for all locations with disturbed soil area.

Determining Sampling Locations Based on pH

Project sites may have construction activities that affect the pH of stormwate discharges.

To ensure that selection of discharge locations with construction activities that may affect pH are included in project site representative sampling, follow this selection process:

Instructions: Based on pre-storm site visual monitoring inspection, determine if construction activity within each drainage area could affect the pH of stormwater discharges, and check the appropriate box in the column of Table C for each discharge location. Check the box in Table C Column A if both questions in the previous two columns have been answered "yes."

Basis for the Number of Sampling Locations for Representative Sampling

Check the appropriate box used to determine representative sampling location for pH.

- ☐ If fewer than five discharge locations have disturbed soil area and additional discharge locations have construction activities that could affect pH, base storm event representative sampling on locations selected using turbidity. Check the "Storm event sample location column" in Table C for all locations with disturbed soil area.
- ☐ If fewer than five discharge locations have disturbed soil area and no additional discharge locations have construction activities that could affect pH, sample all discharge locations with disturbed soil area and select the two additional locations with the highest potential for pH discharges, based on current construction activities that may affect the pH of stormwater discharges. Check the "Location selected for sampling based on pH?" box for each selected location, based on the highest potential for pH discharges. For locations with the box checked in the "Location selected for sampling base on disturbed soil area?" column or locations with the box checked in the "Location selected for sampling based on pH" column, check the "Storm event sample location" column in Table C.
- ☐ If five or more discharge locations have disturbed soil area and at least two boxes in Column A are checked, base your storm event representative sampling on sampling locations you selected based on disturbed soil area. In Table C, check t the "Storm event sample location" column for sampling locations with the box checked in "Location selected for sampling based on pH?" column.
- ☐ If five or more discharge locations have disturbed soil area and one or no box is checked in Column A, base additional sampling locations on pH. For discharge locations with no disturbed soil area but with construction activities that could affect pH, base all storm event sample locations on turbidity, and select two locations with the highest potential for pH discharges based on current construction activities. Check Table C in the "Storm event sample location" column for locations with the box checked in "Location selected for sampling based on disturbed soil area?" column or locations with the box checked in "Location selected for sampling base on pH" column.

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

CEM-2049 (NEW 4/2012)

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Table C: Project Site Discharge Sampling Locations Based on Turbidity and pH

Location Number	Location	Any disturbed soil area? Yes	Any disturbed soil area? No	Drainage area in acres	Current disturbed soil area in acres	Percentage of drainage area that is disturbed soil area	Location selected for sampling based on disturbed soil area? Yes	Location selected for sampling based on disturbed soil area? No	Construction activities that may affect the pH of stormwater discharges? Yes	Construction activities that may affect the pH of stormwater discharges? No	Check if the answer is yes to both questions. (Column A)	Location was selected for sampling based on pH	Storm event sample location

Enter locations from worksheet Table C with the box in the "Storm Event Sample Location" column checked into Table 2 on CEM-2049, "Qualifying Rain Event Sampling and Analysis Plan."

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM
WATER POLLUTION CONTROL MANAGER NAME	PROJECT IDENTIFIER NUMBER
DATE	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Worksheet for determining additional storm event sampling locations based on previous storm event test results near numeric action levels

Has the daily average for any discharge location exceeded the NTU daily average of 200 NTU, or was pH daily average outside the 6.5 to 8.5 range for any storm event?

☐ Yes—Complete the worksheet.

☐ No—Stop. No additional sampling locations are necessary for this storm event.

Instructions: If stormwater sample test results have exceeded limitations set for representative sampling, select additional sampling locations to sample and analyze 50 percent of the project site's stormwater discharge locations.

Determine the number of locations that must be sampled base on 50 percent of the total stormwater discharge sampling locations. (Section 700.2.4.3.3, SWPPP/WPCP preparation Manual, Jan 2012)

_____ (stormwater discharge locations) x .50 = _____ (number of sampling locations)

Check the box below used to determine representative sampling locations.

☐ If the number of sampling locations is five or fewer, no additional sampling locations need to be selected.

☐ If the number of sampling locations is determined to be more than 5, complete Table D. Copy the information from Table C for the first six columns of Table D. Use the information in the last column of Table C, "Storm event sample location," for column 7. If the NTU limit was exceeded, select additional sampling locations to meet the required number of representative sampling locations based on additional locations with the highest percentage of drainage area that is disturbed soil area. If pH range was exceeded, select additional sampling locations to meet the required number of representative sampling locations based on discharge locations with construction activities that could affect pH. Check the box in the "Additional Location selected for sampling based on disturbed soil area?" column for each additional discharge location selected for sampling.

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

CEM-2049 (NEW 4/2012)

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Table D: Additional Storm Event Sampling Locations for Turbidity and pH based on exceedance of 200 NTU or pH outside the 6.5 to 8.5 range

Location Number	Location	Disturbed soil area? Yes	Disturbed soil area? No	Drainage area in acres	Current disturbed soil area in acres	Percentage of drainage area that is disturbed soil area	Stom event sample location? Yes	Stom event sample location? No	Additional location selected for sampling based on disturbed soil area? (✓)	Storm event sample Location? Yes	Storm event sample Location? No	Location was selected for sampling based on pH? (✓)

Enter locations from worksheet Table D with the box checked in the "Additional location selected for sampling based on disturbed soil area?" column or the box checked in "Additional location selected for sampling based on pH?" column into Table 2 on CEM-2049, "Qualifying Rain Event Sampling and Analysis Plan."

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM
WATER POLLUTION CONTROL MANAGER NAME	PROJECT IDENTIFIER NUMBER
DATE	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Worksheet for Determining Rain Event Run-on Sampling Locations

Instructions: List in Table E discharge locations selected as storm event sample locations shown in Table C and additional storm water sample locations shown in Table D. Determine if stormwater run-on locations associated with the selected storm event sample locations exist. In the SWPPP, Attachment EE "Project Site Run-on Locations," shows stormwater run-on locations.

Storm event run-on sampling basis

Check the appropriate box below used to determine run-on sampling.

- ☐ No stormwater run-on locations exist for the selected discharge locations.
- ☐ If run-on locations exist, sample the run-on locations for the first three storm events that occur on a project to determine the run-on baseline.
- ☐ If the run-on baseline, determined from at least three storm events, is less than 50 NTU or inside the range of 7.0 to 8.0 for pH, run-on samples are not required for this storm event. Do not check the box without data for a least three storm events.
- ☐ Run-on sampling is required if a previous storm event at a discharge location exceeded a numeric action level or numeric effluent limitation.

Table E: Potential Rain Event Run-on Sampling Locations

Storm event Sample Location Number	Location	Does project site run-on combine with discharges at this location? Yes	No	If yes to run-on, what is its location number?	Is baseline for turbidity less than 50 NTU for run-on? Yes	No	Is baseline for pH between 7.0 and 8.0 for run-on? Yes	No	Storm event run-on sample location

Enter into Table 3 of this form locations from worksheet Table E that have the "Storm event run-on sample location" column box checked.

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM
WATER POLLUTION CONTROL MANAGER NAME	PROJECT IDENTIFIER NUMBER
DATE	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Worksheet for Determining Storm Event Receiving Water Sampling Locations

1. Does the project site have any locations that discharge directly into a receiving water?

   ☐ Yes—Complete worksheet F1.

   ☐ No—Go to queston 2.

2. Has there been a numeric effluent limitation (NEL) exceedance on this project?

   ☐ Yes—Complete worksheet F2.

   ☐ No—Stop, no receiving water sampling locations are necessary for this storm event.

Worksheet F1 for Determining Storm Event Receiving Water Sampling Locations

Instructions: List project stormwater discharge sampling locations shown in SWPPP Attachment EE Table, "Receiving Water Sampling Locations for Turbidity and pH When Project Site Discharges Directly to the Receiving Water." Based on pre-storm site visual monitoring inspection, determine if disturbed soil area exists at each location and check the appropriate box in the table for each location. Based on pre-storm site visual monitoring inspection, determine if any current construction activity may affect the pH of stormwater discharge at each location and check the appropriate box for each location. For each location, if either disturbed soil area or current construction activity may affect the pH of stormwater discharge, check the box for storm event sample location.

Table F1: Receiving Water Sampling Locations for Turbidity and pH When Project Site Discharges Directly to the Receiving Water

Location Number	Location	Disturbed soil area?		Current construction activity that may affect pH of stormwater discharges?		Storm event sample location
		Yes	No	Yes	No	

Enter locations from worksheet Table F1 with the box checked in the "Storm Event Sample Location" column into Table 4 on CEM-2049, "Storm Event Sampling and Analysis Plan." Duplicate entries are not required in Table 4 for the same receiving water location number and receiving water location based on different discharge locations.

QUALIFYING RAIN EVENT SAMPLING AND ANALYSIS PLAN

PROJECT NAME	CONTRACT NUMBER/CO/RTE/PM
WATER POLLUTION CONTROL MANAGER NAME	PROJECT IDENTIFIER NUMBER
DATE	WDID NUMBER

Qualifying Rain Event Sampling and Analysis Plan Worksheets, continued

Worksheet F2 Determining Storm Event Receiving Water Sampling Locations

Instructions: For discharge locations shown on Table C with the box checked in the "Storm event sample location" column, enter the receiving water location number and location. Check the appropriate box for each discharge location if an NEL exceedance existed for a previous storm event. Check the appropriate box for each location if discharges from the location can reach receiving water. If the answer to "Discharge from this project site discharge location reach receiving water?" is "yes," determine the receiving water sampling location number and receiving water location description. Refer to SWPPP Attachment EE for determining the receiving water sampling location associated with each discharge location number. If stormwater discharge from a discharge location cannot reach receiving water, leave the Receiving water location number and Receiving Water Location blank.

Check the appropriate following box to indicate the basis used to determine receiving waste sampling locations.

☐ No stormwater run-on locations exist for the selected discharge locations.

☐ If run-on locations exist, sample the run-on locations for the first three storm events that occur on a project to determine the run-on baseline.

Table F2: Receiving Water Sampling Locations for Turbidity and pH When Project Site Discharges Directly to the Receiving Water

Discharge location number	NEL exceedance at discharge location?		Discharge from this project site discharge location reach receiving water?		Receiving water location number	Receiving Water Location	Storm event sample location
	Yes	No	Yes	No			

Enter locations from worksheet Table F2 with the box checked in the "Storm event sample location" column into Table 4. Duplicate entries for receiving water sampling location are not required in Table 4 if the same receiving water sampling location is selected based on different discharge locations.

Appendix P

CEM-2055

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER EQUIPMENT MAINTENANCE LOG

CEM-2055 (NEW 4/2011)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Meter

Maintenance Log

Meter Manufacturer	Meter Model Number	Meter Serial Number

Date Repaired	Repair or Parts Replaced	Repaired By	Notes

Instructions

GENERAL INFORMATION

- The information shown on this form is required to document maintenance on stormwater field analyses equipment, such as turbidity meters and pH meters.
- Completed forms must be filled in project file category 20.55, Field Testing Equipment Maintenance and Calibration Records.

FORM

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number Field

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number, for projects without a project identifier number write "N/A" in the field.

WDID
For projects with Water Pollution Control Program enter "WPCP" in this field.

Projects Site Risk Level
Check the box for the appropriate SWPPP risk level.

Meter
Enter the meter manufacturer, model number, and serial number. Use a separate form for each field meter used on a project site.

Appendix Q

CEM-2056

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TURBIDITY METER CALIBRATION RECORD

CEM-2056 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Turbidity Meter

Meter manufacturer	Meter model number	Meter serial number

Standard Solution (NTU) (Nephelometric Turbidity Unit)	Control Number	Date
0.02		
10.0		
1000		

Turbidity Calibration Date _____

Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time:		Time:		Time:			
		Cal	Read	Cal	Read	Read	Acceptable performance		
0.02									
10.0									
1,000									

Turbidity Calibration Date _____

Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time:		Time:		Time:			
		Cal	Read	Cal	Read	Read	Acceptable performance		
0.02									
10.0									
1,000									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TURBIDITY METER CALIBRATION RECORD

CEM-2056 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Turbidity Calibration Date _______________

Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time:		Time:		Time:			
		Cal	Read	Cal	Read	Read	Acceptable performance		
0.02									
10.0									
1,000									

Turbidity Calibration Date _______________

Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time:		Time:		Time:			
		Cal	Read	Cal	Read	Read	Acceptable performance		
0.02									
10.0									
1,000									

Turbidity Calibration Date _______________

Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time:		Time:		Time:			
		Cal	Read	Cal	Read	Read	Acceptable performance		
0.02									
10.0									
1,000									

Turbidity Calibration Date _______________

Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time:		Time:		Time:			
		Cal	Read	Cal	Read	Read	Acceptable performance		
0.02									
10.0									
1,000									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TURBIDITY METER CALIBRATION RECORD

CEM-2056 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Turbidity Calibration Date _____

Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time:		Time:		Time:			
		Cal	Read	Cal	Read	Read	Acceptable performance		
0.02									
10.0									
1,000									

Date	Notes

Review

I have reviewed this document and, based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Water pollution control manager name	Date

Water pollution control manager signature

Appendix R

CEM-2057

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER pH METER CALIBRATION RECORD

CEM-2057 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

pH Meter

Meter Manufacturer	Meter Model Number	Meter Serial Number

Standard Buffer	Control Number	Expiration Date	Date Opened
pH Buffer 4.0			
pH Buffer 7.0			
pH Buffer 10.0			

pH Meter Calibration Record

Date	Electrode Number	Temperature at Calibration	Slope (%)	Buffers Used for Calibration			Re-check pH 7.0	Notes	Initials
				pH 4.0	pH 7.0	pH 10.0			

STORMWATER pH METER CALIBRATION RECORD

CEM-2057 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

pH Meter Calibration Record Continued

Date	Electrode Number	Temperature at Calibration	Slope (%)	Buffers Used for Calibration			Re-check pH 7.0	Notes	Initials
				pH 4.0	pH 7.0	pH 10.0			

Date	Calibration Notes

Review

I have reviewed this document and, based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Water Pollution Control Manager	Date
Water Pollution Control Manager Signature	

STORMWATER pH METER CALIBRATION RECORD

CEM-2057 (REV. 2/2012)

Instructions

GENERAL INFORMATION

- Projects with Construction Site Monitoring Program require the information on this form as part of the Stormwater Pollution Prevention Plan for stormwater analysis meter calibration.
- Completed forms must be filed in project file category 20.55, Field Testing Equipment Maintenance and Calibration Records.

FORM

Contract Number/Co/Rte/PM

For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number

Caltrans projects starting July 1, 2010, will have a Project Identifier Number. For Projects without a PID, write "N/A" in the field.

ELECTRODE MAINTENANCE

- To pass calibration, the pH meter must display a slope between 95 percent and 105 percent. If the pH meter does not display such a slope, take the following corrective action:
  1. Change the standard pH and buffers and recalibrate.
  2. Change the 3M KCl fill in the electrode, or binding up the volume and recalibrate.
  3. Clean the electrode with the pH Electrode Cleaning Solution (follow manufacturer's instructions), and recalibrate.
  4. If the meter does not recalibrate using the three steps above, consult the manufacturer's technical manual, and discontinue use of the meter until it functions properly.
- Corrective actions to calibrate the pH meter must be recorded in the calibration notes section on form CEM-2056, "Stormwater pH Meter Calibration Record.
- Any pH meter maintenance activities must be recorded under the calibration notes section on form CEM-2056, "Stormwater pH Meter Calibration Record.

Appendix S

CEM-2058

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER METER CALIBRATION RECORD - SPECIALTY METERS

CEM-2058 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. WPCP ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Meter

Multi-meter: ☐ YES ☐ NO

Meter Manufacturer	Meter Model Number	Meter Serial Number

Conductivity Meter Calibration Date _____

Standard Solution (uS/cm)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

Meter Manufacturer	Meter Model Number	Meter Serial Number

Dissolved Oxygen Meter Calibration Date _____

Standard	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

STORMWATER METER CALIBRATION RECORD - SPECIALTY METERS

CEM-2058 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Meter Manufacturer	Meter Model Number	Meter Serial Number

Meter Calibration Date _____

Standard	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

Meter Manufacturer	Meter Model Number	Meter Serial Number

Meter Calibration Date _____

Standard	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

Date	Notes

Review

I have reviewed this document and, based on my inquiry of the person or persons who manage the system of those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Water Pollution Control Manager	Date

Water Pollution Control Manager Signature

STORMWATER METER CALIBRATION RECORD - SPECIALTY METERS

Instructions

General Information

- Projects with a Construction Site Monitoring Program require the information on this form as part of the Stormwater Pollution Prevention Plan for specialty stormwater analysis meter calibration if a specialty meter was used. This form is not intended to be used with a turbidity or pH meter.
- Completed forms shall be filed in project file category 20.55, Field Testing Equipment Maintenance and Calibration Records.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write "N/A" in the field.

Acceptable performance for conductivity drift is ±10 percent, and acceptable performance for dissolved oxygen is ±10 percent.

Appendix T

CEM-2050

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE INFORMATION, IDENTIFICATION, AND CHAIN-OF-CUSTODY RECORD

CEM-2050 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.
Submitted by contractor (print and sign name)	Date

Daily Sample Record

Location	Date of sampling
Sample location identification number	Sampled collected for ☐ Storm event ☐ Discharge of stored stormwater ☐ Dewatering discharge ☐ Other _____
Sampled by (signature)	
Sampled by (print name)	Samples to be analyzed for parameters ☐ Turbidity ☐ pH ☐ Other _____ ☐ Other _____
Company	

Sample Information

Sample Identification	Sample Collection Time	Storm Event Precipitation Amount at Sample Time	Sample Preservative	Comments	Photos

Preservative Key
0 - None
1 - Stored at 4 Celsius
2 - Other _____

SAMPLE INFORMATION, IDENTIFICATION, AND CHAIN-OF-CUSTODY RECORD

CEM-2050 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Sampling Exception

Sampling exception?	Sampling was not conducted because of the following conditions:
☐ Yes ☐ No	

Chain of Custody

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Print name	Print name	Print name	Print name
Company	Company	Company	Company
Date and time	Date and time	Date and time	Date and time

Review and Record Keeping

I have reviewed this document and based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Has sampling information been entered into CEM-2051, "Stormwater Sampling and Testing Log"?

☐ Yes

☐ No

Water pollution control manager (name)	Date
Water pollution control manager (signature)	
Accepted by resident engineer (name)	Date
Resident engineer's (signature)	

Instructions

General Information

- This form is required for compliance with provisions in Section I of Attachments C, D, and E of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002., as well as the Lake Tahoe Permit Order No. R6t-2011-0019, NPDES No. CAG616002.
- Sampling guidance is in the current edition of the *Construction Site Monitoring Program Guidance Manual.*
- Conduct sampling and sample preservation according to the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association).
- Collect, maintain, and ship samples according to the Surface Ambient Monitoring Program's 2008 Quality Assurance Program Plan.
- Complete a separate Sample Information, Identification, and Chain-of-Custody Record for each sampling location daily.
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan files.

Form

- **Project Identifier Number**
  Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without a project identifier number, write N/A in the field.
- **Contract Number/Co/Rte/PM**
  For local agency encroachment permit projects, write the encroachment permit number in the contract number field.
- **Sample Identification**
  Establish sample identification code as shown below.

  SSSSSYYMMDDHHmmTT

  Where

SSSSS	=	sampling point number (for example, CCUP1, CCDN2)
YY	=	last two digits of the year (for example, 09)
MM	=	month (01-12)
DD	=	day (01-31)
HH	=	hour sample collected (00-23)
mm	=	minute sample collected (00-59)
TT	=	type or QAQC Identifier, if applicable
G	=	grab
FS	=	field duplicate

  For example, the sample number for a grab sample collected at Station CCUP1 collected at 4:15 p.m. on December 8, 2009, would be ***CCUP10912081615G***

Appendix U

CEM-2051

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLING AND ANALYSIS LOG - OPTIONAL

CEM-2051 (REV 1/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.

SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

STORMWATER SAMPLING AND ANALYSIS LOG REVIEW

I have reviewed this document and based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Are laboratory test results attached to this stormwater sampling and analysis log submittal?

☐ YES ☐ NO

Water Pollution Control Manager Signature	Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLING AND ANALYSIS LOG - OPTIONAL

CEM-2051 (REV 1/2014)

CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER	WDID NUMBER	DATE

STORMWATER SAMPLING AND ANALYSIS LOG

Log Number	Date of Sampling	Sampling Location	Time Sample Taken	Amount of Precipitation	Sample Identification	Analysis	Analysis Result	Daily Average Analysis Result	Lab Report Attached
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ ______			☐ Yes ☐ No

STORMWATER SAMPLING AND ANALYSIS LOG - OPTIONAL

Instructions

General Information

- The information shown on this form is required for projects with a Stormwater Pollution Prevention Plan (SWPPP) to document stormwater sampling and analysis. The information on this form is required for the stormwater annual report for SWPPP projects.
- Complete this form after every storm event that requires sampling and analysis.
- Complete this form weekly for logging non-stormwater sampling and analysis, and indicate in the sampling location column the reason for non-stormwater samples, such as sample from dewatering operation.
- This form is provided as an optional management tool, to be used at the discretion of the water pollution control manager.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.

Log No.
Log numbering should be consecutive starting from the first storm event to the last storm event for a project.

Amount of Precipitation
Enter the cumulative amount of precipitation from the storm event at the time each sample is taken.

Analysis Result
For turbidity and pH, a minimum of three samples is required to determine the daily average. If more than three daily samples are taken, use two rows to report all samples, and report the daily average in the second row.

Appendix V

CEM-2052

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLE FIELD TEST REPORT

CEM-2052 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date

Stormwater Samples Analysis

Date of sampling	
Sample location identification number	Date of Analysis
Sample Analyzed By (signature)	Samples to be analyzed for parameters ☐ Turbidity ☐ pH ☐ Other _____ ☐ Other _____
Sampled Analyzed By (print name)	
Analyzer Phone Number ( )	
Company	

Turbidity Analysis Information

Meter Manufacturer	Model Number	Serial Number	Calibration Date
Analytical Method	Method Reporting Unit	Method Detection Limit	

pH Analysis Information

pH Meter Manufacturer	Model Number	Serial Number	Calibration Date
Analytical Method	Method Reporting Unit	Method Detection Limit	

STORMWATER SAMPLE FIELD TEST REPORT

CEM-2052 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Turbidity Calibration Record

Date	Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration Time:		Re-Calibration Time:		Drift Check Time:		Notes	Initials
			Cal	Read	Cal	Read	Read	Acceptable Performance		

pH Calibration Record

Buffer Solution Expiration Date: pH4.0 Date _____ pH7.0 Date _____ pH10.0 Date _____

Date	Electrode Number	Temperature at Calibration	Buffers Used for Calibration. Check those that apply.			Slope %	Re-check pH 7.0	Notes	Initials
			pH 4.0	pH 7.0	pH 10.0				

Stormwater Sample Analysis Results - Discharge Points

Sample Identification	Exception See Instructions	pH	NTU	Parameter Analysis * Time Sample Collected	Time Sample Read	Sample Value and Units
Qualifying Rain Event Daily Average Analysis Result						

Stormwater Sample Analysis Results - Run-On Points

Sample Identification	Exception See Instructions	pH	NTU	Parameter Analysis * Time Sample Collected	Time Sample Read	Sample Value and Units
Qualifying Rain Event Daily Average Analysis Result						

* Complete and attach CEM-2058 to document calibration of instruments used to analyze these parameters.

STORMWATER SAMPLE FIELD TEST REPORT

CEM-2052 (REV 12/2013)

Stormwater Sample Analysis Results - Receiving Water

Sample Identification	Exception See Instructions	pH	NTU	Parameter Analysis *		
				Time Sample Collected	Time Sample Read	Sample Value and Units
Qualifying Rain Event Daily Average Analysis Result						

Review and Record Keeping

Test results entered into sampling and testing activity log?	Numeric action level exceedance?	Receiving water monitoring triggers exceeded?
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

* Complete and attach CEM-2058 to document calibration of instruments used to analyze these parameters.

Instructions

General Information

- This form is required for compliance with provisions in Section I of Attachments C, D, and E of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002 and provisions of General Waste Discharge Requirements and National Pollutant Discharge Elimination System Permit for Lake Tahoe Hydrologic Unit Order No. R6T-2011-0019 NPDES No. CAG616002.
- The Caltrans, *Construction Site Monitoring Program Guidance Manual*, latest edition, contains sampling guidance.
- Complete form CEM-2058 if other parameters are tested.
- Sampling and sample preservation must be in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association).
- Collect, maintain, and ship samples according to the State Water Resources Control Board's (SWRCB), Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Program Plan (QAPrP), latest edition.
- Complete a separate stormwater sample field analysis report daily for each sampling location.
- Include a copy of the completed form in the project Stormwater Pollution Prevention Plan files.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Analysis Result
Analytical results less than the method detection limit must be reported as "less than the method detection limit".

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, enter N/A in the field.

Qualifying Rain Event Daily Average Analysis Result
A minimum of three daily samples are required to calculate the daily average for a qualifying rain event.

Sample pH Analysis
Sample pH reading must be done within 15 minutes of sample collection.

Numeric Action Level Exceedance
In the event that any daily average effluent samples analysis results exceeds an applicable Numeric Action Level (NAL), complete form CEM-2062 "Numeric Action Level Exceedance Report," and submit all storm event sampling results to the State Water Resources Control Board (SWRCB) no later than ten days after the conclusion of the storm event.

Receiving Water Monitoring Trigger (RWMT) Exceedance
In the event that any daily average RWMT is exceeded, complete form CEM-2062, "Numeric Action Level Exceedance Report / Receiving Water Monitoring Trigger Report" and submit all storm event sampling results to the resident engineer within six hours.

Add Exceptions Reasons:

N - No Run-off at time of inspection

O - Outside of normal business hours

U - Unsafe conditions/unsafe access

Appendix W

CEM-2054

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLE LABORATORY TEST REPORT

CEM-2054 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Stormwater Samples Laboratory Analysis

If this form is completed by water pollution control manager attach laboratory report.

Location	Date of sampling
	Date sample received by laboratory
Sample location identification number	Date of sample analysis
Sample chain of custody? ☐ Yes ☐ No	Adequate sample preservation? ☐ Yes ☐ No
Sample analyzed by (signature)	Sampled collected for ☐ Storm event ☐ Discharge of stored stormwater ☐ Dewatering discharge ☐ Other _____
Sample analyzed by (print name)	Samples analyzed for parameters ☐ _____ ☐ _____ ☐ _____
Location	

Sample Identification	_____ Analysis (_____)	_____ Analysis (_____)	_____ Analysis (_____)	_____ Analysis (_____)

STORMWATER SAMPLE LABORATORY TEST REPORT

CEM-2054 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Analysis Information

Equipment manufacturer	Model number	Serial number	Calibration date
Analytical method	Method reporting unit	Method detection limit	

Analysis Information

Equipment manufacturer	Model number	Serial number	Calibration date
Analytical method	Method reporting unit	Method detection limit	

Analysis Information

Equipment manufacturer	Model number	Serial number	Calibration date
Analytical method	Method reporting unit	Method detection limit	

Comments

Review and Record Keeping

Test results entered into the Sampling and Testing Activity Log?

☐ Yes

☐ No

I have reviewed this document and, based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Water pollution control manager name	Date
Water pollution control manager signature	
Accepted by resident engineer name	Date
Resident engineer signature	

Instructions

General Information

- This form is required for compliance with provisions in Section I of Attachments C, D, and E of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002, as well as the Lake Tahoe Hydrologic Unit Permit. Order No. R6T-2011-0019, NPDES No. CAG-616002
- The *Construction Site Monitoring Program Guidance Manual* dated July 2010 contains sampling guidance.
- All sampling and sample preservation must be in accordance with the current American Public Health Association edition of "Standard Methods for the Examination of Water and Wastewater."
- Collect, maintain, and ship samples in accordance with the Surface Ambient Monitoring Program's 2008 Quality Assurance Program Plan.
- Complete a separate Stormwater Sample Laboratory Analysis Report for each sampling location daily.
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan files.

Form Instructions

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number. For projects without a PID write N/A in the field.

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Sample Analyzed By Signature
If form is completed by the WPCM, write "See attached laboratory report" in the field "sample analyzed by (signature)" and attach laboratory report.

Analysis Results
Report analytical results less than the method detection limit as "less than the method detection limit."

Appendix X

CEM-2062

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NUMERIC ACTION LEVEL EXCEEDANCE REPORT / RECEIVING WATER MONITORING TRIGGER REPORT

CEM-2062 (NEW 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 2 ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date

Numeric Action Level Exceedance Information: Attach CEM-2052

Receiving Water Monitoring Trigger

Sample Identification	Sample Collection Time	Sample Analysis Time	NTU	pH	SSC

Storm Event Information

Start of storm event	End of storm event	Duration of storm event	Storm event precipitation amount recorded from site rain gauge	Storm event precipitation amount recorded from governmental rain gauge
_____ *Date* _____ *Time*	_____ *Date* _____ *Time*	_____ *Hours : Minutes*	_____ *inches*	_____ *inches*

NUMERIC ACTION LEVEL EXCEEDANCE REPORT / RECEIVING WATER MONITORING TRIGGER REPORT

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Exceedance Location Information

	Photographs
Visual observation of location	☐ YES ☐ NO
The nature and cause of the water quality standard exceedance, based on a visual observation of the discharge location	☐ YES ☐ NO
BMPs currently installed at the location of the discharge	☐ YES ☐ NO
Additional BMPs that will be implemented to prevent or reduce pollutants causing or contributing to exceedance of a water quality standard Implementation schedule for additional BMPs	☐ YES ☐ NO
Maintenance or repair of BMPs Implementation schedule for BMPs maintenance or repair	☐ YES ☐ NO
Other required corrective actions Implementation schedule for corrective actions	☐ YES ☐ NO

NUMERIC ACTION LEVEL EXCEEDANCE REPORT / RECEIVING WATER MONITORING TRIGGER REPORT

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Numeric Action Level Exceedance Report Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those person directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Water Pollution Control Manager name	Date
Water Pollution Control Manager signature	

For Caltrans Use

Resident engineer name	Date
Resident engineer signature	

Numeric Action Level Exceedance Report submitted to State Board SMARTS database within 24 hours after NAL exceedance was identified? ☐ Yes ☐ No	Date input	Resident engineer initials
All storm event sampling results submitted to State Water Board SMARTS database within 10 days after the conclusion of the storm event? ☐ Yes ☐ No	Date input	Resident engineer initials

Notice of Discharge Reporting

Discharge reported by telephone or email to the Regional Water Quality Control Board (RWQCB) within 48 hours of discovery? ☐ YES ☐ NO	Date discharge reported to RWQCB	Resident engineer intials
Notice of Discharge Report submitted to RWQCB within 14 days (3 days for District 7 and District 11)? ☐ YES ☐ NO	Date report submitted to RWQCB	Resident engineer intials

Instructions

General Information

- This form is required for compliance with provisions for Numeric Action Level (NAL) Exceedance Report in Section I of Attachment D or E of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002.
- Sampling guidance is found in the Caltrans, *Construction Site Monitoring Program Guidance Manual*, latest edition.
- In the event that any daily average effluent sample analysis result exceeds an applicable NAL, submit all storm event sampling results to the State Regional Water Quality Control Board (RWQCB) no later than 10 days after the conclusion of the storm event.
- RWQCBs have the authority to require the submittal of an NAL Exceedance Report. .
- You may submit an NAL Exceedance Report to RWQCB instead of a Notice of Discharge Report.
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan (SWPP) files.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.

Storm Event Precipitation Amount at Sample Time
At time of sample collection, record amount of precipitation from onsite rain gauge.

Analysis Results
Analytical results that are less than the method detection limit shall be reported as "Less than the method detection limit."

Qualifying Rain Event Daily Average Analysis Result
A minimum of three daily samples is required to calculate the daily average for a qualifying rain event.

Appendix Y

CEM-2063

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NUMERIC EFFLUENT LIMITATION VIOLATION REPORT - ATS DISCHARGES

CEM-2063 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Numeric Effluent Limitation Violation Information

Attach form CEM-2052 or lab results

Storm Event Information

Attach a copy of the governmental rain gauge information.

Start of storm event	End of storm event	Duration of storm event	Storm event precipitation amount recorded from site rain gauge	Storm event precipitation amount recorded from governmental rain gauge
_____ *Date* _____ *Time*	_____ *Date* _____ *Time*	_____ *Hours : Minutes*	_____ *inches*	_____ *inches*

Storm event 24-hour maximum precipitation amount recorded from onsite rain gauge	Storm event 24-hour maximum precipitation amount from governmental rain gauge	ATS Compliance storm (10-year, 24-hour storm)	ATS Compliance storm exception (10-year, 24-hour storm)
_____ *inches*	_____ *inches*	_____ *inches*	☐ Yes ☐ No

Additional Information

Run-on samples taken?	Receiving water samples taken?
☐ Yes ☐ No	☐ Yes ☐ No
Run-on sample identification	Receiving water sample identification

NUMERIC EFFLUENT LIMITATION VIOLATION REPORT - ATS DISCHARGES

CEM-2063 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Numeric Effluent Limitation Violation Report Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those person directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Water Pollution Control Manager Name	Date
Water Pollution Control Manager Signature	

For Caltrans Use

Resident engineer name	Date
Resident engineer signature	

Numeric Effluent Limitation Violation Report submitted to State Board SMARTS database within 24 hours after NEL exceedance was identified?	Date input	Resident engineer initials
☐ Yes ☐ No		
All storm event sampling results submitted to State Water Board SMARTS database within 5 days after the conclusion of the storm event?	Date input	Resident engineer initials
☐ Yes ☐ No		

Notice of Discharge Reporting

Discharge reported by telephone or email to the Regional Water Quality Control Board (RWQCB) within 48 hours of discovery?	Date discharge reported to RWQCB	Resident engineer intials
☐ YES ☐ NO		
Notice of Discharge Report submitted to RWQCB within 14 days (3 days for District 7 and District 11)?	Date report submitted to RWQCB	Resident engineer intials
☐ YES ☐ NO		

Instructions

General Information

- This form is required for compliance with provisions for Numeric Effluent Limitation (NEL) Violation Report in Attachment F of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-2006-DWQ NPDES No. CAS000002.
- Sampling guidance is found in the Caltrans, *Construction Site Monitoring Program Guidance Manual*, latest edition.
- When the daily average of effluent samples analysis results exceeds an applicable NEL, submit the NEL Violation Report to the State Water Resources Control Board (SWRCB), Storm Water Multi Application and Report Tracking System (SMARTS) within 24 hours after a NEL Exceedance has been identified.
- When the daily average of effluent samples analysis results exceeds an applicable NEL, submit all storm event sampling results to the SWRCB SMARTS within 5 days after the conclusion of the storm event.
- Regional Water Quality Control Boards have the authority to require the submittal of a NEL Violation Report.
- You may submit a NEL Violation Report to RWQCB instead of a Notice of Discharge Report.
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan (SWPPP) files.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.

Storm Event Precipitation Amount
Record amount of precipitation from onsite and government rain gauges.

Analysis Results
Analytical results that are less than the method detection limit shall be reported as "Less than the method detection limit."

Compliance Storm Event
The 10-year, 24-hour storm (expressed in tenths of an inch of rainfall), as determined by using the maps.
http://www.wrcc.dri.edu/pcpnfreq/nca10y24.gif
http://www.wrcc.dri.edu/pcpnfreq/sca10y24.gif

Compliance storm verification must be done by reporting the onsite rain gauge readings as well as nearby governmental rain gauge readings. Attach a copy of the governmental rain gauge readings to this report.

Appendix Z

CEM-2065

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NOTICE OF DISCHARGE LOG INSTRUCTIONS

CEM-2065 (REV. 2/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

NOTICE OF DISCHARGE LOG

Date	Discharge Location	Cause of Discharge	Description of Material(s) Discharged	Estimated Quality of Discharge	Date RWQCB Notified

Instructions

GENERAL INFORMATION

- The information shown on this form is required for projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) to document discharges.

- Use this CEM-2065 to log discharges including Stormwater, authorized non-stormwater, and non-authorized non-stormwater discharges with an exceedance of an Applicable Water Quality Standard

- Log all discharge incidents reported on forms:
  - CEM-2061, Notice of Discharge Report
  - CEM-2062, Numeric Action Level Exceedance Report
  - CEM-2063, Numeric Effluent Limitation Violation Report

- The resident engineer will notify the Regional Water Quality Control Board and record the date notified.

FORM

Contract Number/Co/Rte/PM
For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number. For projects without a project identifier number write N/A in the field.

WDID Number
For projects with Water Pollution Control Program enter "WPCP" in this field.

- Enter information about discharge incidents from forms:
  - CEM-2061, Notice of Discharge Report
  - CEM-2062, Numeric Action Level Exceedance Report
  - CEM-2063, Numeric Effluent Limitation Violation Report
  - CEM-2062T, Numeric Action Level Exceedance Report—Lake Tahoe Hydrologic Unit
  - CEM-2063T, Numeric Effluent Limitation Violation Report—Lake Tahoe Hydrologic Unit

- The resident engineer will notify the Regional Water Quality Control Board and record the date notified.