

Guidance for Complying with New Sampling and Analysis Provisions of the State's Construction Stormwater General Permit for Sites in Sacramento County

This Sacramento area guidance document provides assistance in complying with the State Water Resources Control Board's April 2001 sampling and analysis modifications (Resolution 2001-046) to the NPDES General Permit for Stormwater Discharges Associated with Construction Activities (General Permit). The modifications and general permit can be accessed at www.swrcb.ca.gov. This guidance is intended to be a supplement to the *Storm Water Sampling Guidance Document (October 2001)* prepared by the California Stormwater Quality Task Force, which is available at www.stormwatertaskforce.org.

The City and County of Sacramento Stormwater Programs developed this document, with input by the Central Valley Regional Water Quality Control Board, several members of the local construction community and sampling experts. It may be updated in the future. If you have any questions about the document, contact the Sacramento County Department of Water Resources at (916) 874-6851 or the City of Sacramento Department of Utilities at (916) 433-6369, and ask to speak to the Stormwater Program construction staff.

Technically, there are two components to the General Permit's sampling and analysis modifications. The first is a requirement to sample and analyze (for sediment and turbidity) discharges from construction sites into receiving waters listed on the Regional Board's 303(d) List of Impaired Water Bodies (see Attachment 3 to General Permit). However, because no water bodies in Sacramento County currently appear on the 303(d) List for sediment impairment, this requirement is not applicable to construction sites within the County at this time. The steps for compliance presented below therefore apply to the second sampling and analysis requirement of the General Permit, which involves sampling and analysis for non-visible pollutants in storm water.

You should be aware that the Regional Board periodically updates the 303(d) list, so water bodies in Sacramento County may be listed as impaired for sediment in the future.

Steps for Complying with the State Board Requirements

Note that you may not have to implement all steps. Use this guidance side-by-side with the Stormwater Quality Task Force Guidance Document; see www.stormwatertaskforce.org.

STEP 1 – Identify Potential Sources of Non-Visible Storm Water Pollution

The General Permit requires the preparation of a site-specific Storm Water Pollution Prevention Plan (SWPPP) that must include a list of potential sources of storm water pollution (General Permit Section A, Page 10). This requirement did not specifically include the consideration of potential sources of non-visible pollutants. If you are involved with a construction site that currently has a SWPPP, take this opportunity to

survey your site and identify potential sources of non-visible storm water pollution. A partial list of these sources is presented in the attached Table 1.

STEP 2 - Select and Implement BMPs

Once you've identified all potential sources of non-visible storm water pollutants, select and implement BMPs that ensure that these pollutants are not discharged along with storm water. ***Your most important and cost effective BMP will be to ensure that potential sources are separated from storm water to the maximum extent practicable.*** This separation can be accomplished by ensuring that containers are sealed, and materials are stored in-doors or at least in a roofed area with no opportunity for storm water run on to contact the materials. Additionally, spills of materials that can dissolve and become non-visible pollutants in runoff should be cleaned up immediately.

The attached Table 1 contains suggested BMPs for common potential sources of non-visible storm water pollutants on a construction site. These BMPs are not meant to be inclusive but to provide a first step in planning for construction site owners and operators. Choose and apply appropriate BMPs to prevent exposure of the pollutants to stormwater and other water used at the site. Remember to inspect and repair/replace BMPs frequently. Educate site personnel about proper care of the BMPs as well as proper storage, handling and disposal techniques for products that could contribute non-visible pollutants to site runoff.

STEP 3 – Amend the SWPPP

For projects in the planning stages, make sure the SWPPP includes information to comply with the sampling and analysis modifications. For projects already in construction, you need to amend the SWPPP ***as soon as possible***. The State Board's deadline for amending SWPPPs was August 1, 2001.

Consider adding a section to your SWPPP entitled "Sampling and Analysis". This will make it easy for State inspectors or others to find the information and verify that your site is in compliance. If your site is in Sacramento County, add a statement to your SWPPP that indicates whether or not your site discharges directly to a water body listed on the State's 303(d) List as impaired for sediment, silt or turbidity.

Next, amend your SWPPP to address the non-visible pollutants requirement:

Include any additional potential sources of non-visible storm water pollutants to your SWPPP's existing list of pollutant sources (as required by General Permit, Section A, page 10).

Describe additional BMPs implemented at your site to control non-visible storm water pollutants.

Describe your contingency plan for sampling and analysis, in the event that visual observations reveal a potential problem with non-visible pollutants (see Step 4).

To assist you with amending your SWPPP, Appendix A of the Task Force's Guidance Document contains an outline of information that should be included in your SWPPP. Also see Attachment 1 at the end of this document for sample language developed by the County of Sacramento. These references will help you develop a non-visible pollutant sampling and analysis plan as part of your SWPPP. If you are able to ensure separation of potential sources of non-visible pollutants from storm water, then this sampling and analysis plan will be a contingency plan to be implemented in the event of a spill, leak or BMP failure that causes a potential release of non-visible pollutants. If you are unable to use BMPs to separate these potential sources, then sampling and analysis for non-visible pollutants will be required for every event when storm water or a non-storm water discharge comes into contact with a potential sources of non-visible pollutants.

STEP 4 – Conduct Sampling

If, despite using BMPs, you have reason to believe that pollutants may have contacted site runoff and may have been discharged to storm drains and/or receiving waters, you should (1) Immediately implement appropriate corrective actions/BMPs to eliminate (or contain) known or likely sources of the suspected pollutant(s) and; (2) use the appropriate field test method (see Table 1) to test for suspected pollutants up gradient (background/reference) and down gradient of the suspected discharge point or area. Field tests are available for the majority a non-visible pollutants, which means that laboratory analysis should not be necessary for most situations. However, if field test methods are not available for the suspected pollutant, then use laboratory analysis as described below.

Collect up gradient and down gradient samples for lab analysis using the sampling procedures described in Section 4 of the Task Force's guidance document. We strongly recommend that collection of samples for lab analysis, coordination with the lab, and interpretation of lab data be done by persons who have the necessary training and experience. There are many details, such as sample handling protocols for preservation and holding times, and the need for quality assurance and control. The most rapid turn-around times should be requested from the lab so that data can be used to determine corrective actions.

STEP 5 – Adjust or Implement Further Corrective Measures/BMPs

If the field test or laboratory analysis results indicate that the pollutant concentrations in the down gradient sample are significantly higher than the background sample, or if your monitoring personnel have reason to believe that the concentration of the down gradient sample would be of concern to local regulators, implement further corrective actions/BMPs as necessary to identify and eliminate (or contain) sources of pollutants. Conduct additional field test monitoring or laboratory analysis during the next runoff event after corrective actions have been implemented to demonstrate and document that the problems have been corrected.

**Table 1. Potential Pollutant Sources and Suggested Best Management Practices
For Common Pollutants Not Visually Detectable in Construction Site Runoff¹**

Category/Activity	Suggested Best Management Practices (BMPs)	Potential Pollutant Source	Field Test Method	Laboratory Analysis
Potable water line flushing	<ul style="list-style-type: none"> • Capture and re-use water on site for dust control. • Capture and direct water to area located well away from storm drain system for infiltration and evaporation. • Capture and treat water (using methods approved by responsible local agency) before discharging to storm drain. • Completely cover all storm drain inlets (rubber mats or similar) during flushing operations where highly chlorinated water can get into street and gutters. Capture ponded water and handle using one of above BMPs. 	Highly chlorinated water	Color comparator, colorimeter or spectrophotometer	Residual chlorine
Portable toilets	<ul style="list-style-type: none"> • Locate portable toilets away from gutters, storm drain inlets and waterways. • Place portable toilets on stable, flat surface pad not prone to flooding or water ponding. • Anchor portable toilets to prevent blowing over during windstorms. 	Bacteria, disinfectants	Field enzyme assay test for total aerobic bacteria; coliform/E-coli presence/absence test (incubation at 95 degrees req'd); biotrace luminometer	Total and Fecal coliform <i>(NOTE: samples must be analyzed by the laboratory within 6 hrs of collection)</i>

¹ Table 1 is a modified version of Appendix B of the October 2001 *Stormwater Sampling Guidance Document* prepared by the California Stormwater Quality Task Force. Table 1 addresses materials and chemicals used on construction sites that are typically not visually detectable in site runoff. Visible pollutants such as sediments, concrete slurry, etc., must also be controlled, but are addressed by other parts of the site-specific Stormwater Pollution Prevention Plan (SWPPP).

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Category/Activity	Suggested Best Management Practices (BMPs)	Potential Pollutant Source	Field Test Method	Laboratory Analysis
Installation and Cleaning of Concrete, Masonry, Stucco and Plaster (alkaline/limestone/chalk products)	<ul style="list-style-type: none"> • Use high pressure water, and avoid use of detergents and acids. • When acids are necessary (to clean discolored concrete, for instance), use one of following: <ul style="list-style-type: none"> ➢ Capture and direct water to area located well away from storm drain system for infiltration and evaporation. ➢ Capture and treat water before discharging to sanitary sewer (need agency approval). • Completely cover all storm drain inlets (rubber mats or similar) during concrete and similar operations where polluted water can get into street and gutters. Capture ponded water and handle using one of above BMPs. 	Acid wash Water will be low in pH. Neutralization may lower pH to acceptable levels, but typically residual salt content too high for storm drain.	PH indicator strips (0-14 pH). Litmus paper not recommended. Use quality pH meter when strips show pH outside range 6.5-8.5.	pH
	<ul style="list-style-type: none"> • Schedule application of concrete and seal coat during predicted dry weather. • See BMPs for stockpiles, end of table. 	Curing compounds and de-foaming agents (high alkalinity)	PH indicator strips (0-14 pH). Litmus paper not recommended. Use quality pH meter when strips show pH outside range 6.5-8.5.	pH, alkalinity, volatile organic compounds (VOCs)

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Installation and Cleaning of Concrete, Masonry, Stucco and Plaster (<i>continued</i>)	<ul style="list-style-type: none"> Conduct tool and equipment rinsing in marked, designated areas of the lot where there is no potential for water to enter storm drains. Establish and properly sign designated concrete wash out areas for use by concrete trucks. Educate concrete subcontractors and consider establishing incentives and/or penalties to ensure compliance. 	Concrete rinse water, runoff from wash areas Rinsing operations can produce alkaline wastewater in excess of pH 11.	PH indicator strips (0-14 pH). Litmus paper not recommended. Use quality pH meter when strips show pH outside range 6.5-8.5.	PH, alkalinity
Asphalt	<ul style="list-style-type: none"> Avoid asphalt paving when storm events are imminent. 	Asphalt paving operations can contribute non-visible pollutants to runoff (need more info)	Total petroleum hydrocarbons	Total petroleum hydrocarbons
Petroleum products	<ul style="list-style-type: none"> Avoid storing these materials on site, if possible; otherwise, store these materials away from storm water. Promptly clean up any spills Properly contain and dispose of motor oil and other lubricants if vehicles are maintained on site. 	On site use of diesel fuel, motor oil, bunker oil, lubricants, and petroleum-based solvents	Total petroleum hydrocarbons (TPH)	Total petroleum hydrocarbons (TPH)
Painting	<ul style="list-style-type: none"> Wash tools and equipment in marked, designated areas of the lot where there is no potential for water to enter storm drains. Wash tools and equipment into sanitary sewer (may require agency approval). Educate painting subcontractors and consider establishing incentives and/or penalties to ensure compliance. 	Resins Solvents and thinners	Not Available Phenol - colorimetric method or colorimeter	Semi-volatile organic compounds (SVOCs) Phenols, VOCs

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Painting (<i>continued</i>)	See above	Adhesives	Phenol - colorimetric method or colorimeter	Phenols, SVOCs
		Sealants	Not Available	SVOCs
		Paint Strippers	Not Available	VOCs
Cleaning	<ul style="list-style-type: none"> • Use high pressure washing with plain water whenever possible. • Use environmentally friendly cleaning products whenever possible. • Conduct cleaning and store cleaning chemicals in segregated areas where pollutants cannot enter the storm drain system. • Educate cleaning subcontractors and consider incentives/penalties to ensure compliance. 	Detergents	Colormetric kit, colorimeter or spectrophotometer	MBAs (surfactants), phosphates
		Bleaches	Colormetric kit, colorimeter or spectrophotometer	Residual chlorine
		Solvents	Phenol - colorimetric method or colorimeter	VOCs
Landscaping	<ul style="list-style-type: none"> • Avoid using pesticides and herbicides. • Avoid on-site storage. If unavoidable, store all chemicals in original packaging material in covered, contained area. • Educate landscape subcontractors and consider establishing incentives and/or penalties to ensure compliance. 	Pesticides/Herbicides	Toxicity screening kit	Identify pesticide's active ingredient and check with Laboratory.

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Landscaping <i>(continued)</i>	<ul style="list-style-type: none"> • Avoid using fertilizers. • If unavoidable, apply fertilizers sparingly, and use only as component of seed mix for hydroseeding/hydraulic mulch operations. • Avoid on-site storage. If unavoidable, store all chemicals in original packaging material in covered, contained area. 	Fertilizers	Not Available	nitrate/nitrite, ammonia, phosphorus
	<ul style="list-style-type: none"> • See BMPs for stockpiles, end of table. 	Lime and gypsum	PH indicator strips (0-14 pH). Litmus paper not recommended. Use quality pH meter when strips show pH outside range 6.5-8.5.	Acidity/alkalinity
	<ul style="list-style-type: none"> • See BMPs for stockpiles, end of table. 	Aluminum sulfate, sulfur	Conductivity (E.C.) meter to test for total dissolved solids (TDS) PH indicator strips (0-14 pH).	TDS, alkalinity
Treated wood	<ul style="list-style-type: none"> • Cover treated wood stored on site as recommended for stockpiles. See end of table. 	Copper, arsenic, selenium	Colormetric method or colorimeter to screen for metals	Metals
		Formaldehyde	Not Available	EPA Method 8315

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Foundation Pesticide Application	<ul style="list-style-type: none"> Do not spray foundations during or before predicted rain events. Restrict spraying to inside footprint of building. 	Pesticides	Toxicity screening kit	Check with laboratory
Soil amendments & dust control	<u>For dust control:</u> <ul style="list-style-type: none"> Consider using clean or recycled site water whenever possible. Protect storm drains and do not allow water to flow from soil areas to storm drains. <u>For soil amendments:</u> <ul style="list-style-type: none"> Do not over-apply the products. Avoid on-site storage. If unavoidable, store all chemicals in original packaging material in covered, contained area. See BMPs for stockpiled materials, end of table. Dispose of leftover unused product properly and quickly after use. 	Lime, gypsum	pH indicator strips (0-14 pH). Litmus paper not recommended. Use quality pH meter when strips show pH outside range 6.5-8.5.	PH, alkalinity
		Plant gums	Not Available	Biochemical oxygen demand (BOD)
	See above; also for all soil stabilizers: <ul style="list-style-type: none"> Check with manufacturer to obtain documentation that shows that proper use of product(s) will not have adverse ecological affects. See above. 	Magnesium chloride, Calcium chloride, Natural brines, Lignosulfonates	Conductivity (E.C.) meter to test for TDS	Alkalinity, TDS
		Fly Ash	Conductivity (E.C.) meter to test for TDS Colorimetric method or colorimeter to screen for metals	Metals

BMPs for Stockpiles (*consistent with Caltrans specifications*):

- Year Round: Locate stockpiled materials away from concentrated flows of stormwater and other water. Surround stockpiles left overnight with a temporary berm (e.g., sandbags) that will not allow water to run into the pile.
- During rainy season (Oct 1 – April 30) or when rain is predicted during dry season: cover all stockpiled materials left overnight (in addition to berms)