

## SECTION 8

# Monitoring and Reporting Program / Construction Site Monitoring Program

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The CSMP has been developed and implemented to address the following objectives:

- To demonstrate that the site is in compliance with the Discharge Prohibitions
- To determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives
- To determine whether immediate corrective actions, additional BMP implementation, or DESC/P/SWPPP revisions are necessary to reduce pollutants in stormwater discharges and authorized non-stormwater discharges
- To determine whether BMPs included in the DESC/P/SWPPP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges

### 8.1.1 Applicability of Permit Requirements

The CSMP identifies monitoring requirements for Risk Level 1, applicable to the Project site.

### 8.1.2 Visual Monitoring for Forecasted Rain Events

Within 2 business days (48 hours) prior to each forecasted rain event, the following will be inspected:

1. All stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources. If needed, appropriate corrective actions will be implemented.
  - a. The inspector will look for the presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.
2. Any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.
  - a. The inspector will look for the presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.
3. All BMPs to identify whether they have been properly implemented in accordance with the DESC/P/SWPPP. If needed, appropriate corrective actions will be implemented.

### 8.1.3 Visual Monitoring for Qualifying Rain Events

The General Permit identifies a qualifying storm event for stormwater-related observations as an event that produces 0.5 inch or more precipitation within a 48-hour or greater period

between rain events. A rain gauge will be installed and maintained on-site to allow for measuring and recording of precipitation totals.

1. Within 2 business days (48 hours) after each qualifying rain event, an inspection will be conducted to:
  - a. Identify whether BMPs were adequately designed, implemented, and effective
  - b. Identify additional BMPs and revise the DESCP/SWPPP accordingly
2. 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 more at the time of discharge will be inspected. Stored or contained stormwater that will likely discharge after operating hours due to anticipated precipitation will be observed prior to the discharge during operating hours.

The time, date, and rain gauge reading of all qualifying rain events will be recorded on the Site Inspection Form included in Attachment L. Names of personnel performing the observations, observation dates, weather conditions, locations observed, and corrective actions taken in response to the observations also will be recorded.

**Visual Monitoring Exemptions.** Inspections do not need to be conducted under the following conditions:

1. During dangerous weather conditions such as flooding and electrical storms
2. Outside scheduled site business hours

If no inspections were conducted due to these exceptions, an explanation will be included in the DESCP/SWPPP and in the Annual Report documenting why the inspections were not conducted.

**Monitoring Locations.** The entire Project area will be observed as part of the inspections.

#### **8.1.4 Visual Monitoring for Non-stormwater Discharges.**

One inspection will be conducted quarterly in each of the following periods: January to March, April to June, July to September, and October to December.

- The inspector will observe each drainage area for the presence of (or indications of prior) unauthorized and authorized non-stormwater discharges and their sources.
- The inspector will document the presence or evidence of any non-stormwater discharge (authorized or unauthorized), pollutant characteristics (for example, floating and suspended material, sheen, discoloration, turbidity, or odor), and source.

Names of personnel performing the observations, the dates and approximate time each drainage area and non-stormwater discharge was observed, and the response taken to eliminate unauthorized non-stormwater discharges and to reduce or prevent pollutants from contacting non-stormwater discharges will be documented; records will be maintained in Attachment L.

Inspections are only required during daylight hours (sunrise to sunset) and safe weather conditions.

## 8.2 Sampling and Analysis Plan for Non-visible Pollutants

This section describes the sampling and analysis strategy and schedule for monitoring non-visible pollutants in stormwater discharges from the Project site and off site activities directly related to the Project.

### 8.2.1 Scope of Monitoring Activities

The following construction materials, wastes, or activities are potential sources of non-visible pollutants to stormwater discharges from a project. The list will be reviewed by the construction contractor, once selected, and will be revised as necessary when the final construction materials inventory for the site has been developed.

- Vehicle batteries
- Concrete curing
- Sealants
- Adhesives
- Cleaning products
- Solvents; thinners
- Herbicides
- Dust palliatives
- Soil binders
- Painting products
- Line flushing products
- Masonry products

No soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil are anticipated to be used on the Project site.

Stormwater run-on to this site is not anticipated to have the potential to contribute non-visible pollutants to stormwater discharges from the Project.

Sampling for non-visible pollutants will be conducted when: (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

### 8.2.2 Monitoring Strategy

#### 8.2.2.1 Sampling Schedule

Samples for the applicable non-visible pollutant(s) and a sufficiently large uncontaminated background sample will be collected during the first 2 hours of discharge from rain events that result in a sufficient discharge for sample collection. Samples will be collected during daylight hours (sunrise to sunset) and will be collected regardless of the time of year, status of the construction site, or day of the week.

In conformance with the EPA definition, a minimum of 72 hours of dry weather will be used to distinguish between separate rain events.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during inspections conducted before or during rain events:

- 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) storage protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.
- 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 rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.
- An operational activity with the potential to contribute non-visible pollutants: (1) was occurring during or within 24 hours prior to the rain event, (2) applicable BMPs were observed to be breached, malfunctioned, or be improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters.
- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters.
- Stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.

#### 8.2.2.2 Sampling Locations

Sampling locations will be based on proximity to planned non-visible pollutant storage, occurrence, or use; accessibility for sampling; personnel safety; and other factors in accordance with the applicable requirements in the General Permit. At this time, no sampling locations have been identified for the collection of samples of runoff that drain areas where there will be application of soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil. The construction contractor will identify sampling locations for soil amendments, as needed.

A location will be identified by the construction contractor 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 will be selected such that the sample will not have come in contact with: (1) operational or storage areas; (2) potential non-visible pollutants due to historical use of the site; (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.

#### 8.2.3 Monitoring Preparation

Samples on the Project site will be collected by the following construction contractor sampling personnel:

Name/Telephone Number: TBD

An adequate stock of monitoring supplies and equipment for monitoring non-visible pollutants will be available on the Project site prior to a sampling event. Monitoring supplies and equipment will be stored in a cool-temperature environment that will not contact rain or direct sunlight. Sampling personnel will be available to collect samples in accordance with the sampling schedule.

Supplies maintained at the Project site will include surgical gloves, sample collection equipment, coolers, an appropriate number and volume of sample bottles, identification labels, resealable storage bags, paper towels, personal rain gear, ice, Sampling Activity Log (Attachment P) forms, and COC forms. The construction contractor will obtain and maintain the field-testing instruments for analyzing samples in the field (as needed) by sampling personnel.

Safety practices for sample collection will be in accordance with the construction contractor's Health and Safety Plan.

The QSP will contact sampling personnel 24 hours prior to a forecasted rain event and if one of the triggering conditions is identified during an inspection before, during, or after a storm event. This will ensure that adequate sample collection personnel, supplies, and field test equipment for monitoring non-visible pollutants are available and mobilized to collect samples on the Project site in accordance with the sampling schedule.

## 8.2.4 Analytical Constituents

### 8.2.4.1 Identification of Non-visible Pollutants

Table 4 lists specific sources and types of potential non-visible pollutants anticipated to be on the Project site and the applicable water quality indicator constituent(s) for that pollutant.

TABLE 4  
Potential Non-visible Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Batteries	Acid, lead	pH, lead, sulfuric acid
Cleaners	Acid, phosphate, solvents	pH, phosphate, VOC, SVOC
Painting products	Paint strippers, solvents, thinners	COD, VOC, SVOC
Thinners	VOC, COD	COD, VOC
Sealant	Sealants	COD
AC and PCC	Curing compounds	pH, alkalinity, VOC, SVOC
Adhesives	Adhesives	COD, phenols, SVOC

Notes:

AC = asphalt concrete

COD = chemical oxygen demand

SVOC = semi-volatile organic compound

VOC = volatile organic compound

## 8.2.5 Sample Collection and Handling

### 8.2.5.1 Sample Collection Procedures

Samples of discharge will be collected at the designated sampling locations for observed breaches, malfunctions, leakages, spills, operational areas, soil amendment application areas, and/or historical site usage areas that triggered the sampling event.

Grab samples will be collected and preserved in accordance with the methods identified in Table 5. Only personnel trained in proper water quality sampling will collect samples.

Samples will be collected by placing a separate lab-provided sample container directly into a stream of water downgradient and close to the potential non-visible pollutant discharge location. This separate lab-provided sample container will be used to collect water, which will be transferred to sample bottles for laboratory analysis. The upgradient and uncontaminated background samples will be collected prior to collecting the downgradient sample to minimize cross-contamination. Sampling personnel will collect the water upgradient of where they are standing. Once the separate lab-provided sample container is filled, the water sample will be poured directly into sample bottles provided by the laboratory for the analyte(s) being monitored.

TABLE 5  
Sample Collection, Preservation, and Analysis for Monitoring Non-visible Pollutants

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time
VOCs-solvents	EPA 8260B	3 × 40 mL	VOA-glass	Store at 4°C, HCl to pH < 2	1 µg/L	14 days
SVOCs	EPA 8270C	1 × 1 L	Glass-amber	Store at 4°C	10 µg/L	7 days
Pesticides	EPA 8081A	1 × 1 L	Glass-amber	Store at 4°C	0.1 µg/L	7 days
Herbicides	EPA 8151A	1 × 1 L	Glass-amber	Store at 4°C	Check lab	7 days
COD	EPA 410.4	1 × 250 mL	Glass-amber	Store at 4°C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	5 mg/L	28 days
TDS	EPA 160.1 (TDS)	1 × 100 mL	Polypropylene	None	ppm	Immediate
pH	EPA 150.1	1 × 100 mL	Polypropylene	None	Unitless	Immediate
Alkalinity	SM 2320B	1 × 250 mL	Polypropylene	Store at 4°C	1 mg/L	14 days
Nitrate	EPA 353.2	1 × 125 mL	Polypropylene	Store at 4°C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	Check lab	28 days
Phosphate	EPA 365.3	1 × 125 mL	Polypropylene	Store at 4°C	Check lab	28 days
Organic nitrogen	TKN – NH <sub>3</sub>	1 × 1 L	Glass-amber	Store at 4°C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	Check lab	28 days
TOC	EPA 415.1	1 × 250 mL	Glass	Store at 4°C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	Check lab	28 days
Potassium	EPA 200.7	1 × 250 mL	Polypropylene	Store at 4°C, HNO <sub>3</sub> to pH < 2	0.1 mg/L	6 months

TABLE 5  
Sample Collection, Preservation, and Analysis for Monitoring Non-visible Pollutants

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time
Phenols	EPA 8270C	1 × 1 L	Glass-amber	Store at 4°C	Check lab	7 days
Metals (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Na, Th, Va, Zn)	EPA 6010B/7470A	1 × 250 mL	Polypropylene	Store at 4°C, HNO <sub>3</sub> to pH < 2	0.1 mg/L	6 months
Metals (chromium VI)	EPA 7199	1 × 500 mL	Polypropylene	Store at 4°C	1 µg/L	24 hours

## Notes:

&lt; = less than

°C = degree(s) Celsius

µg/L = microgram(s) per Liter

COD = chemical oxygen demand

DO = dissolved oxygen

EPA = U.S. Environmental Protection Agency

HCl = hydrogen chloride

H<sub>2</sub>SO<sub>4</sub> = hydrogen sulfideHNO<sub>3</sub> = nitric acid

L = liter

µg/L = microgram(s) per liter

mg/L = milligram(s) per liter

mL = milliliter(s)

ppm = parts per million

PCB = polychlorinated biphenyl

TDS = total dissolved solids

TOC = total organic carbon

VOA = volatile organic analysis

To maintain sample integrity and prevent cross-contamination, sampling collection personnel will:

- Wear a clean pair of surgical gloves prior to the collection and handling of each sample at each location
- Prevent the inside of the sample bottle from contacting any material other than the water sample
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection
- Prevent the cooler lid from remaining open for an extended period of time once samples are placed inside
- Avoid sampling near a running vehicle where exhaust fumes may affect the sample
- Avoid touching the exposed end of a sampling tube, if applicable
- Prevent rainwater from rain gear or other surfaces from dripping into sample bottles
- Avoid eating, smoking, or drinking during sample collection
- Avoid sneezing or coughing 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 to take place

- Decontaminate sampling equipment prior to sample collection using a trisodium phosphate-soapy water wash, distilled water rinse, and final rinse with distilled water
- Dispose of decontamination water/soaps appropriately, such as avoiding discharge to the receiving water

#### 8.2.5.2 Sample Handling Procedures

Immediately following collection, sample bottles for laboratory analytical testing will be capped, labeled, and documented on a COC form provided by the analytical laboratory; sealed in a resealable storage bag; placed in an ice-chilled cooler, as close to 4°C as practicable; and delivered within 24 hours to the California-certified laboratory:

Laboratory Name: TBD

Address: TBD

Telephone Number: TBD

Immediately following collection, samples for field analysis will be tested in accordance with the field instrument manufacturer's instructions, and results will be recorded on the Sampling Activity Log (Attachment P).

#### 8.2.5.3 Sample Documentation Procedures

Original data documented on sample bottle identification labels, COC 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 will not be obliterated. Corrections will be initialed and dated.

Sampling and field analysis activities will be documented using the following:

- **Sample Bottle Identification Labels:** Sampling personnel will attach an identification label to each sample bottle. At a minimum, the following information will be recorded on the label:
  - Project name
  - Project number
  - Unique sample identification number and location:
    - [Project Number]-[Six digit sample collection date]-[Location]
    - (*Example:* 0G5304-081801-Inlet472)
  - Quality assurance/quality control (QA/QC) samples will be identified similarly using a unique sample number or designation (*Example:* 0G5304-081801-DUP1)
  - Collection date and time (no time applied to QA/QC samples)
  - Analysis constituent

- **Sampling Activity Logs:** A log of sampling events will identify:
  - Sampling date
  - Separate times for collected samples and QA/QC samples recorded to the nearest minute
  - Unique sample identification number and location
  - Analysis constituent
  - Names of sampling personnel
  - Weather conditions (including precipitation amount)
  - Field analysis results
  - Other pertinent data
- **COC Forms:** Samples to be analyzed by a laboratory will be accompanied by a COC form provided by the laboratory. Only the sample collectors will sign the COC form over to the lab. COC procedures will be strictly adhered to for QA/QC purposes.
- **Stormwater Quality Construction Inspection Checklists:** When applicable, the construction contractor's stormwater inspector will document, on the checklist, that samples for non-visible pollutants were taken during a rain event.

### 8.2.6 Sample Analysis

Samples will be analyzed for the applicable constituents using the analytical methods identified in Table 5. For samples collected for field analysis, collection, analysis, and equipment calibration will be in accordance with the field instrument manufacturer's specifications.

## 8.3 Quality Assurance / Quality Control

For an initial verification of laboratory or field analysis, duplicate samples will be collected at a rate of 10 percent or one duplicate per sampling event. The duplicate sample will be collected, handled, and analyzed using the same protocols as primary samples. A duplicate sample will be collected at each location immediately after the primary sample has been collected. Duplicates will be collected where contamination is likely, not on the background sample. Duplicate samples will not influence evaluations or conclusions; however, they will be used as a check on laboratory quality assurance.

## 8.4 Data Management and Reporting

A copy of water quality analytical results and QA/QC data will be submitted by the construction contractor to the Project owner within 5 days of sampling (for field analyses) and within 30 days (for laboratory analyses).

Lab reports and COC will be reviewed for consistency between lab methods, sample identifications, dates, and times for both primary samples and QA/QC samples. Data, including COC forms and Sampling Activity Logs, will be kept with the DESC/SWPPP.

## 8.5 Data Evaluation

An evaluation of the water quality sample analytical results, including figures with sample locations, the water quality analytical results, and the QA/QC data, will be included in the on-site DESC/P/SWPPP.

Should the runoff/downgradient sample show an increased level of the tested analyte relative to the background sample, the BMPs, site conditions, and surrounding influences will be assessed to determine the probable cause for the increase. As determined by the site and data evaluation, appropriate BMPs will be repaired or modified to mitigate discharges of non-visual pollutant concentrations. Any revisions to the BMPs will be recorded as an amendment to the DESC/P/SWPPP.

## 8.6 Change of Conditions

Whenever DESC/P/SWPPP monitoring indicates a change in site conditions that might affect the appropriateness of sampling locations or introduce additional non-visible pollutants of concern, testing protocols will be revised accordingly. All such revisions will be recorded as amendments to the DESC/P/SWPPP.

## 8.7 Record Keeping and Reports

Records of all stormwater monitoring information and copies of all reports (including Annual Reports) will be retained for a period of at least 3 years from date of submittal or longer if required by the RWQCB. All records will be maintained on-site while construction is ongoing.

These records include:

- The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation
- The individual(s) who performed the facility inspections, sampling, visual observation (inspections), and or measurements
- The date and approximate time of analyses
- The individual(s) who performed the analyses
- A summary of all analytical results from the last 3 years, the method detection limits and reporting units, the analytical techniques or methods used, and the COC forms
- Rain gauge readings from site inspections
- QA/QC records and results
- Non-stormwater discharge inspections and visual observation (inspections) and stormwater discharge visual observation records
- The records of any corrective actions and follow-up activities that resulted from analytical results or inspections

- Visual observation and sample collection exception records

