

**PRODUCTION INITIATIVE-NELP
SWEEPERS AND SCRUBBERS (PIER CLEANING)
SAMPLING PLAN**

SITE: NS SAN DIEGO

1.0 BACKGROUND

The San Diego Regional Water Quality Control Board (RWQCB) is proposing to adopt provisions that will require a permit for stormwater discharges from all Navy bases in the San Diego area. This permit could contain stormwater discharge toxicity standards that might be difficult to achieve. The permit could also prohibit discharging the first flush of stormwater (i.e., runoff resulting from the first ¼ inch of precipitation) from high-risk areas. In general, a high-risk area is defined as an area that poses a higher risk than most other areas at Naval Station (NS) San Diego to San Diego Bay because of the potential for site pollutants to commingle with stormwater runoff and be discharged to the bay. To reduce the size and number of areas that might be considered high risk and to decrease stormwater toxicity, NS San Diego is implementing a strict Storm Water Pollution Prevention Plan (SWPPP). This SWPPP employs effective Best Management Practices (BMPs) to minimize pollutant loading in stormwater discharges. An effective BMP that may allow NS San Diego to manage piers and other industrial sites as non-high risk areas is the use of mechanical sweepers and scrubbers. The sweepers and scrubbers have been proposed to minimize the pollutants—such as oil, grease, heavy metals, sediment, abrasive blast material, and bird droppings—in stormwater runoff at NS San Diego. Two Tennant Model No. 830 sweepers and one Tennant Model No. 550 scrubber will be used during this evaluation period.

2.0 OBJECTIVE

This sampling plan describes the procedures for collecting and analyzing water samples taken from controlled industrial areas at NS San Diego. The analytical results from this sampling plan will be used to evaluate the effectiveness of the mechanical sweepers and scrubber as a BMP for reducing the level of pollutants in stormwater runoff. Results from this plan also may be used to aid in the modification of sweeping/scrubbing practices (if necessary) and the implementation and/or revision of NS San Diego's SWPPP.

3.0 REQUIREMENTS

This site-specific sampling plan describes the procedures for collecting and analyzing water samples at potentially contaminated locations on the piers at NS San Diego. Site selection, site preparation, sampling, and analysis of the water samples must be performed in exact accordance with this plan.

4.0 TEST SITE SELECTION

Based on the types and frequency of industrial activity on it, Pier 13 has been selected for the test locations. Aside from the operation of the mechanical sweepers and scrubber during the test event, Pier 13 will not be cleaned during the sampling period. Two locations on the pier will be designated as test areas. The selection of the designated test areas on the pier is critical, and facility personnel conducting the sampling are required to select test areas based on pier pollutants and location characteristics. The selected test areas will contain contaminants that are representative of the quantity/type of pollutants present on the pier (i.e., oil, grease, heavy metals, sediment, abrasive blast material, paint, bird droppings, etc.). The selected test areas also will be located in a high traffic area that represents typical pier activity. Since access during sampling is necessary, the selected test areas will not be in a location typically used for heavy equipment storage. To gauge how effectively the mechanical sweepers and scrubbers remove bird droppings, one additional location near the trash area on Pier 6 will be designated as a test area. Each test area will be assigned a descriptive name.

5.0 SITE PREPARATION

Once representative test areas have been selected, each area will be divided into two adjacent 10-foot x 10-foot square sections (see Figure 1). The borders of the two test sections will be outlined with paint, and each square section will be lettered A or B.

Note: During the test period, sweeper/scrubber operators and pier personnel will be informed not to clean the test areas between sample collections. The test areas are to be subjected to normal operations and allowed to accumulate pollutants.

6.0 SAMPLING PROCEDURE

6.1 Frequency

Facility personnel will conduct sampling every two weeks during the evaluation period. The evaluation period will last six weeks, during which three sample sets will be collected from each test area. Sampling will not be conducted within three days after it rains.

6.2 Visual Observations

Personnel conducting the sampling will document the presence of all visible pollutants (including any foreign material, oil and grease, chemicals, discoloration, odor, etc.) in each test section (see Data Sheet 1). Documentation will include: the name of the observer, date, description of pollutants (e.g., 1-foot diameter heavy oil stain, small quantity of paint chips, large 3-foot diameter spill of paint thinner, etc.), the possible source of the pollutants, and any other comments that sampling personnel deem relevant (e.g., if the contaminants are not evenly distributed across the test area). Note: The

contaminants in the sweeper/scrubber section will be observed **before** and **after** the section has been cleaned with the sweeper and scrubber.

6.3 Test Area Preparation

Each test area will be divided into two adjacent square sections (see Figure 1) that represent two possible conditions at the pier. The “Sweeper/Scrubber” section (A) represents conditions when the sweeper and scrubbers are used. The “No Clean” section (B) represents conditions if the pier is not cleaned.

Before samples are collected, the sweeper and the scrubber will be used to clean the entire Sweeper/Scrubber section. The sweeper and the scrubber will be used in accordance with standard operating procedures for the equipment (e.g., in areas of heavy soil, the water used to clean the section will be permitted to soak briefly before being vacuumed up). The No Clean section will not be cleaned.

6.4 Berming

Before the simulated stormwater is applied, the two test squares will be separated by placing temporary berms (e.g., sandbags, rubber dams, etc.) along the perimeter of each section. These berms will be capable of retaining water and preventing seepage of water into adjacent test squares.

6.5 Sample Collection

Simulated stormwater will be applied to each test section (see Section 6.5.1). The entire test section will be wetted. The simulated stormwater will then be transferred to a carboy via a peristaltic pump. The water will be homogenized while contained within the carboy (see Section 6.5.2). In accordance with the methods described in Section 6.5.3, the samples will be collected from an area where a sufficient quantity of water has accumulated.

6.5.1 *Simulated Stormwater Application*

To simulate a first flush of stormwater (runoff resulting from the first ¼ inch of precipitation), each area must be flushed with deionized water. After the test areas have been prepared and bermed, 15 ½ gallons of deionized water will be poured into one of the two 10' x 10' test squares. Care will be taken to ensure that the entire test area is wetted. Once samples have been drawn from the first test square, the remaining test square will be wetted and a sample collected using the same procedures. **Note:** *If the application of more water or an increase in the application rate is necessary to collect an adequate sample, the same quantity/application rate will be applied to the other test section and the quantity/application rate noted on the data sheet.*

6.5.2 Homogeneity of Sample

It is vitally important that the water collected in the sample accurately represents the condition of all of the water in each test. Therefore, the water in each test section will be mixed before the sample is collected. This mixing will be accomplished using a polyethylene carboy as a transfer container. Immediately before sampling commences, the new carboy will be rinsed with deionized water to remove any residual contamination. As much as possible of the water from each test section will then be transferred into the carboy by a peristaltic pump. The carboy will be shaken to homogenize the water. The samples will be collected directly from the carboy using the peristaltic pump. The tubing used to collect water from the test section will also be used to collect the sample from the carboy. The peristaltic tubing will be changed between collecting samples from different sections of each test area. A new carboy will be used for each test section.

6.5.3 Sample Collection Method

All sample fractions will be collected using a peristaltic pump immediately after the simulated stormwater is homogenized. Samples will be placed in the provided sample bottles. The equipment blank will be collected first, followed by the sample from the Sweeper/Scrubber section and the sample from the No Clean section.

6.5.4 Equipment Blank Collection

A sample of deionized water will be collected for use as an equipment blank before the test section samples are collected. Deionized water will be poured from the watering can that will be used to apply the deionized water to the test sections into the carboy to be used to collect the sample from the Sweeper/Scrubber section. The carboy will then be shaken. The peristaltic pump with clean tubing will be used to collect the equipment blank sample.

6.5.5 Sample Identification (ID) Number

An identification (ID) number will be assigned to each collected sample. The sample ID number is derived by combining the name of the test area with the letter (i.e., A or B) of the test section and the date the sample was collected. The sample ID number will be written on the sample bottles, which will then be sent to the analytical laboratory. This unique sample ID number will allow the analytical results to be traced to the appropriate Sweeper/Scrubber or No Clean sections on a specific date. For example, sample ID number "NE CORNER OF PIER-A053100" would represent a sample taken from the test area named "NE CORNER OF PIER", in Sweeper/Scrubber section A, on May 31, 2000. The equipment blank sample will be identified as "EQUIPMENT BLANK," followed by the sampling date.

6.5.6 Sample Preservation

All samples will be preserved in accordance with the method described in the current edition of *Standard Methods for the Examination of Water and Wastewater* (American Public Health Association).

6.5.7 Additional Test Area

To maintain consistency with the sample collected on 8 June 2000, one additional sample set will be collected from the test area sampled on that date. The test area will be divided in the same manner as before (i.e., the test sections representing Sweeper/Scrubber, Manual Sweeping, and No Clean will be maintained). Samples will be collected using the method described above.

7.0 ANALYTICAL TESTING REQUIREMENTS

All laboratory analysis will be conducted at a laboratory certified for such analyses by the California State Department of Health Services. Facility personnel may conduct their own sample analyses if the facility has sufficient capability (qualified employees, laboratory equipment, etc.) to adequately perform the test procedures. All laboratory analyses will be conducted according to test procedures under 40 CFR 136.

Stormwater samples will be analyzed for:

- Total suspended solids
- pH
- Specific conductance
- Oil and grease
- Acute toxicity
- Total and fecal coliforms
- Total metals - As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn, Fe, Al
- Base/neutral - Acid organic compounds.

Copies of the laboratory analytical results will be submitted to: Brian Gordon, Director of Water Programs, Code N4512, Fax - 619-524-6349.

8.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The following QA/QC documentation is required:

- Chain-of-custody forms
- Laboratory name and address
- Nonconformance summary
- Laboratory certification statement
- Laboratory chronicles and date of the report
- Laboratory batch spikes and duplicates.

Note: This water sampling plan is an alternative monitoring procedure intended solely to evaluate the performance of the sweepers/scrubber as a BMP; it has not been reviewed or approved by any outside regulatory agency.

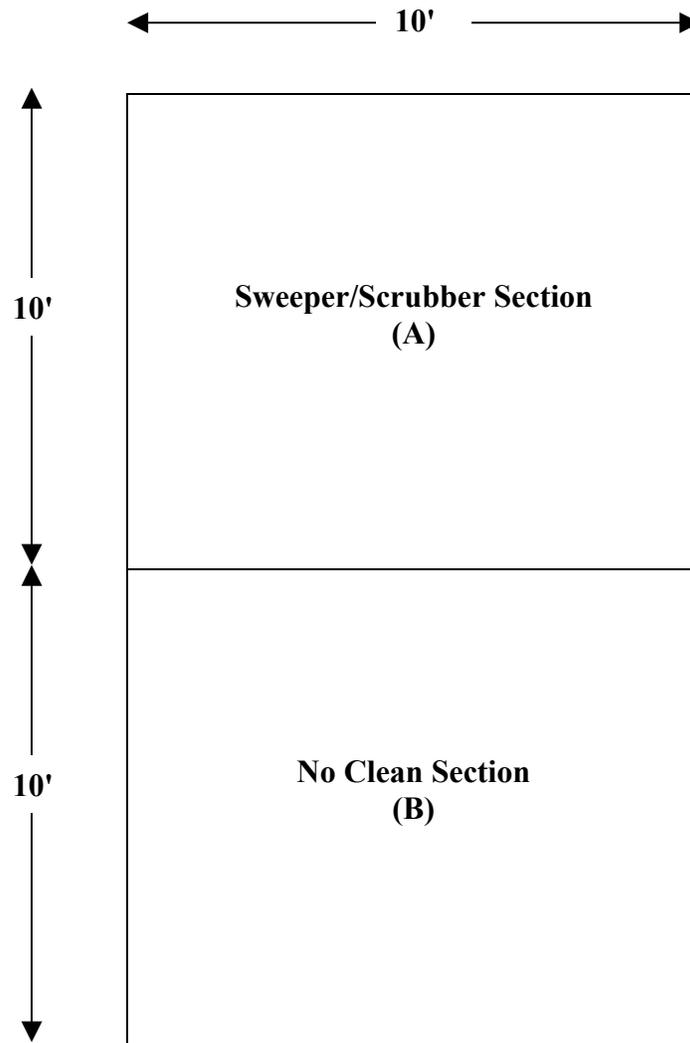


Figure 1. Representative Test Area

DATA SHEET 1
VISIBLE OBSERVATIONS AT TEST SITE

Date of sample collection: _____

Name of sample collector: _____

Phone number of sample collector: _____

Sweeper/Scrubber Test Section A

Description/estimated quantity of pollutants in test section *before* cleaning: _____

Description/estimated quantity of pollutants in test section *after* cleaning: _____

Possible source of pollutants in test section: _____

Brief description of procedures used to operate sweeper and scrubber (e.g., identify sweeper attachments used, length of time scrubber water was permitted to soak, etc.): _____

No Clean Test Section B

Description/estimated quantity of pollutants in test section: _____

Possible source of pollutants in test section: _____

Other Comments
