

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

**MONITORING AND REPORTING PROGRAM NO. R9-2003-0005
NPDES PERMIT NO. CA0109134**

**FOR
NATIONAL STEEL AND SHIPBUILDING COMPANY
SAN DIEGO COUNTY**

A. PURPOSE

This monitoring program is intended to:

- Document short-term and long-term effects of the discharge on receiving waters, sediments, biota and beneficial uses of the receiving water.
- Determine compliance with NPDES permit terms and conditions.
- Determine compliance with water quality objectives.
- Determine effectiveness of Best Management Practices.

B. MONITORING PROVISIONS

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified in this Monitoring and Reporting Program (MRP) and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to, and the approval of, this Regional Board. Samples shall be representative of conditions when highest concentrations of pollutants are expected, with respect to compliance with requirements of Order No. R9-2003-0005.
2. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved under Title 40 of the Code of Federal Regulations Part 136 (40 CFR 136), Guidelines Establishing Test Procedures for the Analysis of Pollutants, unless other test procedures have been specified in Order No. R9-2003-0005 and/or in this Monitoring and Reporting Program and/or by this Regional Board.
3. If the discharger monitors any pollutants more frequently than required by Order No. R9-2003-0005 or by this MRP, using test procedures approved under 40 CFR 136, or as

specified in Order No. R9-2003-0005 or this Monitoring and Reporting Program, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharger's monitoring report. The increased frequency of monitoring shall also be reported.

4. The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by Order No. R9-2003-0005 and this Monitoring and Reporting Program, and records of all data used to complete the application for Order No. R9-2003-0005. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended by request of this Regional Board or by the USEPA at any time.
5. Records of monitoring information and monitoring reports shall include:
 - a. The date, exact location, and time of sampling or measurements;
 - b. The name(s) of individual(s) who performed the sampling or measurements;
 - c. The date(s) analyses were performed;
 - d. The laboratory and individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses.
6. Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in Order No. R9-2003-0005 or this Monitoring and Reporting Program.
7. All analyses shall be performed in a laboratory that is certified by the California Department of Health Services to perform such analyses or a laboratory approved by this Regional Board.
8. The discharger shall report in a cover letter all instances of noncompliance not reported under *Reporting Requirement F.5* of Order No. R9-2003-0005 at the time monitoring reports are submitted. The reports shall contain the information listed in *Reporting Requirement F.5*.
9. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.
10. Monitoring results must be reported on forms reviewed by and subject to the approval of

this Regional Board. Duplicate copies of the monitoring reports signed and certified as required by *Reporting Requirement F.9* of Order No. R9-2003-0005 must be submitted to the USEPA and this Regional Board at the addresses listed in *Reporting Requirement F.11* of Order No. R9-2003-0005.

11. Monitoring results shall be reported at intervals and in a manner specified in Order No. R9-2003-0005 or in this Monitoring and Reporting Program.
12. This Monitoring and Reporting Program may be modified by this Regional Board, as appropriate.
13. A grab sample is defined as an individual sample of at least 100 milliliters collected over a period not exceeding 15 minutes. Grab samples shall be collected over a shorter period, if necessary, to ensure that the constituent/parameter concentration in the sample accurately represents conditions at the sampling location during the time that the sample is collected.

C. MONITORING AND REPORTING SCHEDULE AND FREQUENCY

Monitoring reports shall be submitted to this Regional Board according to **Table 1. Monitoring Report Schedule.**

Table 1. Monitoring Report Schedule.

Monitoring Frequency	Reporting Period	Report Due
<p>DAILY, MONTHLY</p> <p>Compliance Certification, Monthly Effluent Monitoring Reports.</p>	<p>all</p>	<p>By the first day of the second month after the month of sampling.</p>
<p>QUARTERLY</p> <p>Quarterly Effluent Monitoring Reports, Spill/Illicit Discharge Log, Floating Drydock Submergence/ Emergence Water, Graving Dock Flood Water, Shipbuilding Ways Flood Water & Ship Launch Grease/Wax Monitoring Reports.</p>	<p>January - March April - June July - September October - December</p>	<p>May 1 August 1 November 1 February 1</p>

Monitoring Frequency	Reporting Period	Report Due
<p>SEMIANNUALLY</p> <p>Semiannual Effluent Monitoring Reports & Waste Hauling Log</p>	<p>January - June July - December</p>	<p>August 1 February 1</p>
<p>ANNUALLY</p> <p>Annual Report Summary, Annual Effluent Monitoring Reports, Floating Drydock Ballast Tank Water Report (copy of U.S. Navy & ASTM report), Storm Water Annual Report, Chemical Utilization Audit, Sediment Monitoring Reports (tables, graphs, maps), Sediment Trend Curves & Statistical Analyses, and Paint Chip Analysis Floating Boom Cleaning</p>	<p>July - June</p>	<p>September 1</p>

D. EFFLUENT MONITORING

1. Point Source Discharges:

The discharger shall monitor the discharges of Fire Protection Water and Hydrostatic Relief Water as identified in **Table 2. Monitoring Requirements for Fire Protection Water, Hydrostatic Relief Water, and Ways and Graving Dock Flood Water.** The sampling stations for each flow of water shall be located at all applicable discharge points, and where samples representative of the flow of water discharge can be obtained. Monitoring stations shall be specified in the Best Management Practices (BMP) Program Manual and shall not be changed without prior review by this Regional Board. A map shall be submitted to this Regional Board showing all monitoring stations.

TABLE 2. Monitoring Requirements for Fire Protection Water, Hydrostatic Relief Water, and Ways and Graving Dock Flood Water.

PARAMETER	UNIT	TYPE OF SAMPLE	MINIMUM FREQUENCY ^d
Flow	gallons per day	Estimate	Monthly
Copper	µg/L lb/day	Grab	Monthly**
Nickel	µg/L; lb/day	Grab	Monthly**
Zinc	µg/L; lb/day	Grab	Monthly**
Total Petroleum Hydrocarbons (TPH)	mg/L	Grab	Annually
Oil & Grease	mg/L	Grab	Annually
Settleable Solids	MI/L	Grab	Annually
Turbidity	NTU	Grab	Annually
PH	pH Units	Grab	Annually
Temperature	°F	Measurement	Annually
TSS	mg/L	Grab	Annually
Arsenic	µg/L	Grab	Annually
Cadmium	µg/L	Grab	Annually
Chromium	µg/L	Grab	Annually
Lead	µg/L	Grab	Annually
Mercury	µg/L	Grab	Annually
Silver	µg/L	Grab	Annually
TBT	µg/L	Grab	Annually
Acute Toxicity ^a	% survival	Grab	Annually
Chronic Toxicity ^b	TUc	Grab	Annually
PAH ^c	µg/L	Grab	Annually
Total Residual Chlorine	mg/L	Grab	Annually

Units: mg/L = milligrams per liter µg/L = micrograms per liter
 TUc = Chronic Toxicity Units, lb/day = pounds per day.

**Monthly monitoring for these chemicals are required for a reasonable potential analyses (RPA) for the Implementation Policy. The monthly monitoring shall not exceed 24 months. After sufficient data has been collected for the RPA, the chemicals shall be monitored annually.

2. Floating Drydock Submergence/Emergence Water Discharge, Shipbuilding Ways Flood

Water Discharge, and Graving Dock Flood Water Discharge

The discharger shall provide written notification to this Regional Board 48 hours prior to flooding of its floating drydock, shipbuilding ways, and graving dock. If a facility has to be flooded on a short notice and the 48 hour notification time can not be met, the discharger shall notify the Regional Board as early as possible and include information on why the notification time could not be met.

The discharger shall document the condition of its facilities prior to each flooding. The conditions can be documented either by VHS videotape or by digital photographs that show date and time on each picture. VHS tapes or digital photographs shall document conditions at the initial flooding of the facilities. If flooding is to occur at night, VHS tapes or digital photographs shall be taken during daylight hours as close to the flooding event as possible.

The discharger shall submit documentation on the facility conditions quarterly to the Regional Board in accordance with **Table 1. Monitoring Report Schedule** of this MRP.

If the floating drydock was not flooded during the quarter, the discharger shall document in the quarterly effluent monitoring report that no flooding occurred during that period.

3. Floating Drydock Ballast Tank Monitoring

The discharger shall submit U.S. Navy and ASTM reports certifying the integrity of its floating drydock ballast tank water annually.

4. Floating Boom Cleaning

Annually, the discharger shall submit a log of floating boom cleaning activity including the duration of cleaning activity, the personnel-in-charge of the cleaning, the quantity of the discharge, the date, a summary of any potential impacts to receiving water quality, and a summary regarding the description and location of any boom removed from the Bay to be cleaned because of oil or other pollutant .

5. Storm Water Monitoring

- a. Non-Storm Water Discharge Visual Observations
 - i. The discharger shall visually observe all drainage areas within its facility for the presence of unauthorized non-storm water discharges.
 - ii. Visual observations shall document the presence of any discoloration, stains, odors, floating materials, etc., as well as the source of any discharge (if known). Records shall be maintained of the visual observation dates, locations observed, observations,

and response taken to eliminate unauthorized non-storm water discharges and to reduce or prevent pollutants from contacting non-storm water discharges. The BMP Program Manual shall be revised, as necessary, and implemented in accordance with Order No. R9-2003-0005.

iii. The visual observations required above shall be conducted as follows:

For High Risk Areas (defined in Attachment E of Order No. R9-2003-0005), the discharger shall conduct monthly visual observations, during daylight scheduled facility operating hours¹, on days with no discharges of storm water runoff associated with industrial activities.

For all other areas, the discharger shall conduct quarterly visual observations in during daylight scheduled facility operating hours, on days with no discharges of storm water runoff associated with industrial activities. Quarterly visual observations shall be conducted in each of the following periods: January-March, April-June, July-September, and October-December. The discharger shall conduct quarterly visual observations within 6-18 weeks of each other.

b. Storm Water Discharge Visual Observations

i. Visual observations are required of all discharges of storm water associated with industrial activity occurring during daylight hours that are preceded by at least seven days without a storm water discharge.

ii. Visual observations of storm water runoff associated with industrial activity shall document the presence of any floating and suspended material, oil and grease, discoloration, turbidity, odor, and source of any pollutants. Records shall be maintained of observation dates, locations, observations, and response taken to reduce or prevent pollutants in discharges. The BMP Program Manual shall be revised, as necessary, and implemented in accordance with Order No. R9-2003-0005.

iii. Storm water discharge visual observations shall be conducted as follows:

For high risk areas, the discharger shall conduct visual observations of discharges of storm water runoff associated with industrial activity from high risk areas, during each storm event. These visual observations shall occur during the first hour of discharge and at all discharge locations. Visual observations of stored or contained storm water shall occur at the time of release.

For all other areas, the discharger shall conduct visual observations of discharges of storm water runoff associated with industrial activity from all other areas during one

¹ "Scheduled facility operating hours" are the time periods when the facility is staffed to conduct any function related to industrial activity, but excluding time periods where only routine maintenance, emergency response, security, and/or janitorial services are performed.

storm event per month during the wet season (October 1-May 30). These visual observations shall occur during the first hour of discharge and at all discharge locations. Visual observations of stored or contained storm water shall occur at the time of release.

c. Sampling and Analysis

i. The discharger shall collect storm water samples during the first hour of discharge from

- (1) the first storm event of the wet season that produces discharges, and
- (2) at least one other storm event in the wet season that produces discharges.

All storm water discharge locations shall be sampled. Sampling of stored or contained storm water shall occur at the time the stored or contained storm water is released. If a sample is not collected from the first storm of the wet season that produces discharges, the discharger is still required to collect samples from two other storms of the wet season that produce discharges. The discharger shall explain in the Storm Water Annual Report why the first storm that produces discharges was not sampled. If a sample cannot be taken during the first hour of a discharge, the discharger shall explain why the samples could not be taken during this period of time.

ii. Samples shall be collected from discharges of storm water that are preceded by at least seven days without storm water discharge.

iii. The samples shall be analyzed according to **Table 3. Monitoring Requirements for Industrial Storm Water Discharge.**

TABLE 3. Monitoring Requirements for Industrial Storm Water Discharges.

PARAMETER	UNIT ¹	TYPE OF SAMPLE	MINIMUM FREQUENCY
Discharge Volume	gallons	estimate ²	2 storms per year
Total Petroleum Hydrocarbons (TPH)	mg/L	Grab	2 storms per year
TSS	mg/L	Grab	2 storms per year
Settleable Solids	ml/L	Grab	2 storms per year
PH	pH Units	Grab	2 storms per year
Arsenic	µg/L	Grab	2 storms per year
Cadmium	µg/L	Grab	2 storms per year
Chromium	µg/L	Grab	2 storms per year
Copper	µg/L	Grab	2 storms per year

PARAMETER	UNIT ¹	TYPE OF SAMPLE	MINIMUM FREQUENCY
Lead	µg/L	Grab	2 storms per year
Mercury	µg/L	Grab	2 storms per year
Nickel	µg/L	Grab	2 storms per year
Silver	µg/L	Grab	2 storms per year
Zinc	µg/L	Grab	2 storms per year
Chemical Oxygen Demand (COD)	mg/L	Grab	2 storms per year
TBT	µg/L	Grab	2 storms per year
Acute Toxicity ³	% survival	Grab	1 storm per year
Oil & Grease	mg/L	Grab	2 storms per year
Total Organic Carbon (TOC)	mg/L	Grab	2 storms per year
Specific Conductance	µmho/cm	Measurement	2 storms per year

¹Unit: mg/L = milligrams per liter ml/L = milliliters per liter
 µg/L = micrograms per liter ng/L = nanograms per liter
 µmho = micromhos per centimeter.

² The volume of storm water discharge can be estimated by multiplying: amount of rainfall in feet × square feet of surface area × impervious factor. There are 7.5 gallons per cubic foot.

³ The presence of acute toxicity in the storm water shall be determined as specified in *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms* (EPA 600/4-90-027F, August 1993 or subsequent editions). Dischargers shall conduct an annual acute toxicity test on a sample of storm water. Dischargers shall conduct a 96-hour static-renewal test with the vertebrate *Menidia beryllina*, or the invertebrate *Mysidopsis bahia*. The acute toxicity testing shall be a 96-hour static renewal test conducted on a sample of 100% storm water and a laboratory control. Use of two laboratory controls, a receiving water control, and a synthetic laboratory seawater control, is highly recommended. The salinity of the sample should be adjusted to the salinity level typical of the receiving water using dry sea salt. The adjusted salinity level shall be reported. The storm water tests shall be conducted with concurrent reference toxicant tests. Both the reference toxicant and the storm water test shall meet all test acceptability criteria as specified in the above named manual. If the test acceptability criteria are not achieved, the discharger shall re-sample and re-test by the next storm.

d. Storm Water Discharge Sample Locations

- i. The discharger shall visually observe and collect samples of storm water discharges from all drainage areas that represent the quality and quantity of the facility's storm water discharges from the storm event. Monitoring stations shall be established at each point of discharge from areas where industrial activities occur or have occurred during the previous year. Monitoring stations shall be positioned at points where the storm water flow has not commingled with any flow of water from a non-industrial area, and where samples representative of the discharge of storm water runoff

associated with industrial activity in the drainage area can be obtained.

Monitoring locations shall be identified in the BMP Program Manual, depicted on a site map, and shall not be changed without notice to and the approval of this Regional Board. The installation of automatic or mechanical storm water samplers at the monitoring station is recommended.

- ii. With the exception of high risk areas, dischargers that determine that the industrial activities and BMPs within two or more drainage areas are substantially identical may either: (a) collect samples from a reduced number of substantially identical drainage areas, or (b) collect samples from each substantially identical drainage area and analyze a combined sample from each substantially identical drainage area. The discharger must document such a determination in the annual report.

e. Visual Observation and Sample Collection Exceptions

The discharger is required to be prepared to collect samples and conduct visual observations at the beginning of the wet season (October 1) and throughout the wet season until the minimum requirements of *Sections D.5.b* and *D.5.c.* are completed with the following exception:

- i. The discharger is not required to collect a sample (in accordance with *Section D.5.c*) and conduct visual observations (in accordance with *Section D.5.b*) due to dangerous weather conditions, such as flooding, electrical storm, etc. Non-storm water visual observations are only required during daylight scheduled facility operating hours. Storm water visual observation are only required during daylight hours. Dischargers that do not collect the required samples or visual observations during a wet season due to this exception shall include an explanation in the Storm Water Annual Report why the sampling or visual observations could not be conducted.

f. Monitoring Methods

- i. All sampling and sample preservation shall be in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All monitoring instruments and equipment (including a facility operator's own field instruments for measuring pH and conductivity) shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. All laboratory analyses must be conducted according to test procedures outlined in 40 CFR Part 136, unless other test procedures have been specified in this Order or by the Regional Board. All metals shall be reported as total metals.
- ii. Influent and effluent samples shall be analyzed for copper according to method 1638 or 1640. The commonly used methods 6010B (Inorganics by ICP-Atomic Emission

Spectroscopy) and 200.7 (Trace Elements-ICP) have been found to give inaccurate copper readings in saline-matrix samples due to interference with the sodium-argon complex, which has a molecular weight similar to copper. Method 1638 (ICP/MS) or 1640 (On-Line Chelation) will eliminate the sodium-argon complex before the sample is tested for copper. No inaccurate readings for other metals in a saline-matrix sample analyzed by methods 6010B or 200.7 are known.

g. Records

Records of all storm water monitoring information and copies of all reports (including the Annual Report) required under Order No. R9-2003-0005 or this Monitoring and Reporting Program shall be retained for a period of at least five years. These records shall include:

- i. The date, place, and time of site inspections, sampling, visual observations, and/or measurements;
- ii. The individual(s) who performed the site inspections, sampling, visual observations, and/or measurements;
- iii. Flow estimates;
- iv. The date and approximate time of analyses;
- v. The individual(s) who performed the analyses;
- vi. Analytical results, method detection limits, and the analytical techniques or methods used;
- vii. Quality assurance/quality control records and results;
- viii. Non-storm water discharge visual observations and storm water discharge visual observation records (see *Sections D.5.a* and *b*);
- ix. Visual observation and sample collection exception records (see *Section D.5.e*);
- x. All calibration and maintenance records of on-site instruments used; and
- xi. The records of any corrective actions and follow-up activities that resulted from the visual observations.

h. Storm Water Annual Report

The discharger shall submit a Storm Water Annual Report by September 1 of each year to this Regional Board. The report shall include the following:

1. summary of visual observations and sampling and analysis results;
2. evaluation of the visual observation and sampling and analysis results;
3. laboratory reports;
4. Annual Comprehensive Site Compliance Evaluation Report required by Order No. R9-2003-0005;
5. explanation of why the facility did not implement any activities required by Order No. R9-2003-0005 (if not included in the Evaluation Report); and
6. records specified in *Section D*.

The method detection limit of each analytical parameter shall be included. Analytical results that are less than the method detection limit shall be reported as "less than the method detection limit." The Annual Report shall be signed and certified in accordance with *Reporting Requirement F.9* of Order No. R9-2003-0005. The discharger shall prepare and submit the Storm Water Annual Report using the annual report forms provided by the State Board or Regional Board or shall submit their information on a form that contains equivalent information.

i. Additional Monitoring

Based on a review of the BMP Program Manual and the annual report, this Regional Board may direct the discharger to monitor at different and/or additional storm water discharge points.

E. RECEIVING WATER MONITORING

The discharger is required to monitor the receiving water for the following discharges:

1. Fire Protection Water

At the intake for the fire protection water, the discharger shall monitor the Bay for total copper ($\mu\text{g/L}$), total nickel ($\mu\text{g/l}$), and total zinc ($\mu\text{g/l}$) on a monthly basis. The sampling point shall be representative of the Bay water entering the Fire Water Protection System at the time the discharge from the Fire Protection System discharge is also sampled.

2. Hydrostatic Relief Water

At a representative location not affected by the discharge of Hydrostatic Water, the discharger shall monitor the Bay for total copper ($\mu\text{g/L}$), total nickel ($\mu\text{g/l}$), and total zinc ($\mu\text{g/l}$) on a monthly basis. The sampling point shall be representative of the Bay water outside of the mixing zone created by the discharge of Hydrostatic Relief water. The sample may be taken at the discharge point when the discharge is not occurring and any influence from the discharges is expected to have ceased

or not yet occurred.

3. Ways and Graving Dock Flood Water

At a representative location not affected by the discharge of Flood Water, the discharger shall monitor the Bay for total copper ($\mu\text{g/L}$), total nickel ($\mu\text{g/l}$), and total zinc ($\mu\text{g/l}$) on a monthly basis. The sampling point shall be representative of the Bay water outside of the mixing zone created by the discharge of Flood water. The sample may be taken at the discharge point when the discharge is not occurring and any influence from the discharges is not occurring.

F. CALIFORNIA TOXICS RULE MONITORING

Prior to October 1, 2003, the discharger shall monitor fire protection water, and hydrostatic relief water for the presence of the 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) congeners (17 congeners) during dry weather. Effluent data for the wet weather monitoring for the 2,3,7,8-TCDD congeners was received on April 15, 2002.

G. COMPLIANCE CERTIFICATION

The discharger shall submit a report certifying either compliance or noncompliance with all requirements and conditions of Order No. R9-2003-0005. The certification shall be signed by an authorized person as required in *Reporting Requirement F.9* of Order No. R9-2003-0005, and shall be submitted monthly to this Regional Board in accordance with **Table 1** of this Monitoring and Reporting Program.

H. SPILL / ILLICIT DISCHARGE LOG

The discharger shall log and report all spills and illicit discharges within and from NASSCO each month, including spills and illicit discharges from vessels that are in the yard for service. The spill / illicit discharge reports shall identify:

- the time and date of the spill or illicit discharge;
- the cause of the spill or illicit discharge;
- the materials or wastes involved in the spill or illicit discharge,
- the estimated volume of the spill or illicit discharge;
- the specific location where the spill or illicit discharge originated;
- the fate of the spill or illicit discharge (e.g., San Diego Bay, floating drydock, etc.);
- the physical extent or size of the area(s) affected by the spill;
- whether the spill or illicit discharge contained pollutants;
- the public agencies notified;
- the corrective actions taken; and
- the means to prevent or minimize future spills or illicit discharges.

The reports shall be signed by an authorized person as required in *Section F.9* of Order No. R9-2003-0005, and shall be submitted quarterly to the Regional Board in accordance with **Table 1** of this Monitoring and Reporting Program.

The discharger shall include in its annual effluent report, a summary of the spills and illicit discharges that occurred in or on its leasehold. The spill/illicit discharge summary report shall indicate the total number of spills and illicit discharges for the year, categorize the spills and illicit discharges, and provide the percentages of each type of spill or illicit discharge in a graphical representation. The summary report shall also indicate the efforts the discharger used in the year to prevent or minimize spills.

I. CHEMICAL UTILIZATION AUDIT

The discharger shall submit a complete Chemical Utilization Audit form to summarize the use of hazardous materials and wastes generated. The form shall be signed by an authorized person as required in *Section F.9* of Order No. R9-2003-0005, and shall be submitted annually to the Regional Board in accordance with **Table 1** of this Monitoring and Reporting Program.

J. WASTE HAULING LOG

The discharger shall submit a log showing the volume, type, disposition, and date of disposal for all wastes originating from NASSCO during each month. The log shall be signed by an authorized person as required in *Reporting Requirement F.8* of Order No. R9-2003-0005, and shall be submitted semi-annually to the Regional Board in accordance with **Table 1** of this Monitoring and Reporting Program.

K. SEDIMENT CHEMISTRY MONITORING

Elevated concentrations of metals, such as copper and zinc, in the San Diego Bay bottom sediment adjacent to the SWM and NASSCO facilities caused the Regional Board to issue Resolution No. 2001-03. The Resolution, adopted February 21, 2001, directed the Executive Officer to issue a Water Code Section 13267 letter to SWM and NASSCO requiring each shipyard to submit the results of a site-specific study to develop sediment cleanup levels and identify sediment cleanup alternatives by June 21, 2001. NASSCO is currently conducting Phase 2 of the sampling plan to develop sediment cleanup levels. The cleanup is expected to start in spring of 2003.

Sediment monitoring, as specified in this Monitoring and Reporting Program, will not be required until the sediment cleanup at NASSCO is successfully completed. The sediment cleanup analysis results will be used in lieu of this sediment monitoring. The first set of samples from the NASSCO sampling stations and reference stations, outlined in MRP No. R9-2003-0005, are required to be taken concurrently with the last post cleanup sediment

sampling. This will establish a baseline set of data after cleanup that can be used to compare the annual sediment monitoring data submitted thereafter to establish if or how concentrations in the sediment change over time.

1. Sample Collection

- i. The sediment sampling program shall consist entirely of surficial sediment samples, and shall be conducted by the discharger at the stations within its leasehold, as specified in *Sampling Station and Analysis, K.2* of this Monitoring and Reporting Program.
- ii. A minimum of one sample shall be collected and analyzed from each designated station on an annual basis. The samples shall not be discarded after analysis. All samples shall be frozen and retained for a period of not less than 45 days from the date on which the Regional Board received the corresponding analytical results. The Regional Board shall notify the discharger when the samples can be discarded.
- iii. If more than one sample is collected from a sampling station, each sample shall be analyzed separately and shall not be composited.
- iv. Samples shall be collected in accordance with the current *Sample Collection Plan* that was submitted and approved under the General Shipyard Permit by the Regional Board. The *Plan* addresses all collection protocol including station positioning method, sampling equipment, containers, preservation, transportation, etc.

Any proposed future changes to the *Sample Collection Plan* shall be submitted to this Regional Board for review at least 60 days prior to when the changes are proposed to take effect.

If NASSCO proposes a new Sample Collection Plan, the following items have to be included in the plan:

- (a) Narrative Descriptions: A detailed narrative description of each station location, including distances from permanent key landmarks, shall be developed and confirmed in the field.
- (b) Photographs: Each station shall be marked (if feasible) and photographed. A minimum of two photos shall be taken to show the location of each station relative to the key landmarks that will be used to relocate it (e.g., storm drain outlet, corner of dry dock, etc).
- (c) Station Coordinates: The discharger shall convert the station coordinates from the Lambert coordinate grid system (i.e., Easting

and Northing) into Latitude and Longitude coordinates. All station coordinates shall be confirmed in the field and corrected if necessary.

- (d) Facility and Reference Station Maps: Accurate facility and reference station maps shall be developed and confirmed in the field. All maps shall be drawn to a scale of 1"=50' or 1"=100' overlain on a Latitude/Longitude coordinate grid system. In addition to the monitoring stations, the maps shall show only pertinent details such as structures, storm drains, and work areas. A mylar master is recommended, photocopies may be submitted.

The final Sample Collection Plan shall remain unchanged from station to station and year to year.

- v. If over the course of the monitoring program conditions at a particular station are encountered which render collection of samples by grab dangerous or impractical, the discharger may use in its place another of the approved methods/samplers (e.g. Ekman or diver). If possible, substitutions should be approved in advance by the Regional Board.

When substitutions are necessary, the corresponding Discharge Monitoring Reports shall specify the station(s) involved and the substitute method/sampler employed.

2. Sampling Stations and Analysis

The guidelines listed in **Table 4. Station Location General Guidelines** regarding station location/sample collection shall apply, unless otherwise specified in this Monitoring and Reporting Program.

TABLE 4. Station Location General Guidelines.

STATIONS ADJACENT TO:	SAMPLE COLLECTION
PIERS/ FLOATS/ DOCKS/ DRYDOCKS/ QUAY WALLS	<p>Samples shall be taken immediately below the edge of a pier float, dock, dry dock, or quay wall and shall be collected by 0.1 m² modified van Veen dredge deployed from a boat or the side of the pier float, dock, dry dock, or quay wall.</p> <p>When a float and quay wall or pier are present side-by-side, samples should be taken below the outside (or bay-side) edge of the float (rather</p>

STATIONS ADJACENT TO:	SAMPLE COLLECTION
	than between the float and quay wall or under the float).
RIP RAP	Samples should be collected 5 feet further from shore than where the rip rap first meets the soft bottom sediment. (In some cases, 10 feet may be specified.)
STORM DRAINS	Storm drain samples of bay sediment should be collected at a point approximately 10 feet from the mouth of the drain and in line with the centerline of the drain unless otherwise specified in this Monitoring and Reporting Program.
BEACH	The narrative descriptions will indicate the distance that a station is located relative to a stationary landmark, such as a pier or other nearby structure.
DOCK/RIP RAP INTERSECTION	Follow guidelines for rip rap station.
DOCK/BEACH INTERSECTION	Follow guidelines for beach station.

- ii. The three remote reference stations identified in this Monitoring and Reporting Program are common to reference stations for other shipyards discharging to San Diego Bay. The discharger may fulfill its sampling requirements for the remote reference stations by submitting results from samples collected at these stations by other entities during the sampling/reporting period. Reference station locations are specified in *Sediment Monitoring Station Locations*, of this Monitoring and Reporting Program.

It is the discharger's responsibility to request and obtain permission from the appropriate party or parties prior to sample collection at each of the three reference stations.

3. Analysis Parameters and Detection Limits

Sample analyses shall be conducted using approved laboratory methods capable of meeting the detection limits shown in **Table 5. *Sediment Chemistry Methods and Detection Limits.*** Surficial sediment samples shall be analyzed for the parameters and to the detection limits indicated in **Table 5.**

TABLE 5. Sediment Chemistry Methods and Detection Limits.

PARAMETER	METHOD NUMBER	DETECTION LIMIT (dry weight)
Grain size	--	NA
Cadmium, Chromium, Copper, Nickel, Silver ¹	6010	0.5 mg/kg
Mercury ¹	7471	0.1 mg/kg
Arsenic ¹	7060 or 7061	0.5 mg/kg
Lead ¹	7421	0.5 mg/kg
Zinc ¹	6010	2.0 mg/kg
Tributyltin (TBT) ²	See Footnote 2	1.0 µg/kg
Total Petroleum Hydrocarbons (TPH) ³	Modified 8015 or DHS	500. µg/kg
Polychlorinated biphenyls/ Polychlorinated terphenyls (PCBs/PCTs) ⁴	8080	20.0 µg/kg
PAH ⁵	8270	100. µg/kg

¹ Metals

Trace metal analysis shall include the individual concentrations of arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc. Method 3050 shall be used in preparation for all metal analyses except mercury. Preparation procedures for mercury are included in method 7471.

² Tributyltin (TBT)

Concentrations of Tributyltin shall be analyzed using protocol approved by the Regional Board or as described in:

Stephenson, M.D., and D.R. Smith. 1988. Determination of Tributyltin in Tissues and Sediments by Graphite Furnace Atomic Absorption Spectrometry. *Analytical Chemistry*, Vol.60, No. 7. pp 696-698; or

Stallard M.O., and S.Y. Cola. 1989. Optimization of Butyltin Measurements for Seawater, Tissue, and Marine Sediment Samples. *Applied Organometallic Chemistry* 3:105-114; or

Unger, M.A. et al. 1986. GC Determination of Butyltin in Natural Waters by Flame Photometric Detection of Hexyl Derivatives with Mass Spectrometric Confirmation. *Chemosphere*, Volume 15, Number 4. p 461.

³ Total Petroleum Hydrocarbons, nC₁₂ - nC₃₂

Using gas chromatography, analyze for the medium molecular weight hydrocarbons, boiling point range nC₁₂- nC₃₂. Separate the two resulting fractions, specifying the concentrations of (1) saturated aliphatic hydrocarbons; (2) unsaturated aromatic hydrocarbons; and their sum, the Total Petroleum Hydrocarbons. The concentrations of the remaining monitored contaminants, PCBs, PCTs, and PAHs, can be determined by further analysis of these two fractions.

TOTAL PETROLEUM HYDROCARBONS

Aliphatic
PCBs/PCTs

Aromatic
PAHs

⁴ PCBs/PCTs

Analyze the saturated aliphatic fraction for PCBs and PCTs, both of which can be measured in a single procedure. Run the PCB analysis as usual but include one additional standard for Aroclor 5460. At approximately 40 minutes, increase the temperature to 285 degrees celsius. PCTs elute later than PCBs and the entire procedure will take approximately 90 minutes.

Report the concentration of Total PCBs, indicating the name and degradation status of the predominant aroclor (e.g., Aroclor 1260, undegraded). The name and status of a secondary PCB aroclor shall also be reported, if present. Similarly, specify the concentration of Total PCTs assumed to be Aroclor 5460. Report the presence of any unidentified mixture of chlorinated hydrocarbons detected by electron capture gas chromatography. Additional PCB/PCT information, such as the concentrations of individual congeners, should also be provided if available without additional analytical costs.

⁵ Polynuclear Aromatic Hydrocarbons (PAHs)

The concentrations of the individual PAHs can be determined by further analysis of the unsaturated aromatic fraction. The concentrations of the following eight PAHs shall be reported: Phenanthrene, 1-Methyl Phenanthrene, 2-Methyl Phenanthrene, Benzo(a)pyrene, Chrysene, Fluoranthene, Pyrene, and Anthracene.

Additional information, such as the concentration of other PAHs, should also be provided if available without additional analytical costs.

⁶ Total Organic Carbon

Although not initially required, composited sediment from each sample shall be retained for possible future Total Organic Carbon (TOC) analysis. All samples shall be frozen and retained for a period of no less than 45 days from the date on which Regional Board staff received the corresponding analytical results. At that time, the Regional Board shall be notified and approval to discard the samples shall be obtained, before the samples are discarded.

4. Monitoring Results and Reports

i. Discharge Monitoring Reports

Monitoring results must be reported on Discharge Monitoring Report forms. Discharge Monitoring Report forms shall be submitted to the Regional Board in hard copy form and on either a compact disc or a 3.5 inch floppy diskette in IBM Microsoft Word 98 or older format.

The Discharge Monitoring Report shall contain all required sampling results in the following three forms:

(a) Tables:

Current, as well as historical, monitoring data shall be provided in tabular form. Historical monitoring data is defined as sample results from all previous reporting periods collected as a part of this Monitoring and Reporting Program. All concentrations shall be reported in both dry and wet weights. Tabular data shall

be submitted in hard copy and on either a compact disk or a 3.5 inch floppy diskette in IBM Microsoft Excel 98 or older format.

(b) Graphs:

The specific type of graph(s) to be generated (e.g., histogram) is not specified, but left to the discretion of the discharger's consultant who should determine the most effective way of presenting the data. Graphical data shall be submitted in hard copy and on either a compact disk or on a 3.5 inch floppy diskette in Excel 98 or older format.

(c) Facility and Reference Station Maps:

The facility and reference station maps developed for the final Sample Collection Plan and confirmed during the "pre-sampling field effort" shall be used to present the monitoring data. A separate facility and reference station map shall be developed for each monitored contaminant or contaminant group indicating the measured concentrations at each station (rather than concentration contours).

(d) Paint Chip Analysis

In addition to tables, graphs, and maps, shipyard Discharge Monitoring Reports must also include the results of the annual paint chip analyses.

ii. Trend Curves and Statistical Analysis

The discharger shall submit annual "trend curves" for each monitored constituent, in which concentrations are plotted as a function of time. The discharger shall also determine if a statistically significant change (increase or decrease) in sediment concentrations has occurred over time for each contaminant, relative to reference concentrations.

In making this determination, the discharger shall employ a statistical method that is best suited for the data available (parametric vs. non-parametric test).

In all cases, the discharger shall report as soon as possible the cause(s) or suspected cause(s) of any increase in contaminant concentrations, if they are known.

Monitoring results shall be compared against the following three sets of reference data:

- (a) The discharger's own historical baseline data (historical data is defined as sample results from all previous sampling/reporting periods collected as a part of the Sediment Monitoring and Reporting Program);

- (b) Concentrations measured at the three remote reference sites;
- (c) Concentrations measured at nearby city storm drain(s), if present.

5. Sediment Monitoring Station Locations

NASSCO shall collect surficial sediment samples in accordance with **Table 6. NASSCO Facilities Sampling Site Coordinates.**

TABLE 6. NASSCO Facilities Sampling Site Coordinates (Lambert/California Coordinates).

Station Number	Easting	Northing	Indicators Only ¹	Full Analysis ²	Paint Chips
NSS – 01	1725720	191680		X	X
NSS – 02	1725925	191535	X		
NSS – 03	1726265	191650	X		
NSS – 04	1726705	191685	X		
NSS – 05	1726545	191635		X	X
NSS – 06	1726505	190095	X		
NSS – 07	1726835	191690	X		
NSS – 08	1726925	191580	X		
NSS – 09	1726780	191365	X		
NSS – 10	1726905	191255		X	
NSS – 11	1727025	191150	X		
NSS – 12	1727395	191130	X		
NSS – 13	1727165	190280		X	X
NSS – 14	1727125	190835	X		
NSS - 15	1726725	190575	X		
NSS - 16	1727570	190615	X		
NSS – 17	1728395	190770	X		
STD-NSS-01	1728575	190650		X	X

¹. Indicators Only Analysis
Grain Size

Trace Metals
Tributyltin (TBT)

2. Full Analysis
Grain Size
Trace Metals
Tributyltin (TBT)
Total Petroleum Hydrocarbons (TPH)
Polychlorinated Biphenyls/Terphenyls (PCBs/PCTs)
Polynuclear Aromatic Hydrocarbons (PAHs)

3. Paint Chip Analysis
For each analysis, paint chips shall be extracted from a total of approximately 9 liters of sediment; 3 liters from each of the three sampling sites.

In the laboratory, the sediment shall be sieved using a screen size just large enough to allow the sediment to pass but not the paint chips. Do not exceed a maximum screen size of 16 openings per inch (openings are approximately 1/16th of an inch). The remaining debris shall then be sorted by hand to remove paint chips. After removal, the paint chips shall be photographed, quantified, and analyzed for metals and TBT.

If paint chips are present, three separate analyses shall be conducted annually. Each analysis will be conducted on paint chips extracted from three stations or replicates; the first analysis will use paint chips extracted from stations SWM-02, SWM-04, and SWM-06. The second analysis shall use paint chips from the three reference stations listed in *Table 7* of this MRP. The third analysis shall be conducted on three replicates taken from storm drain station STD-SWM-01.

The discharger shall collect surficial samples from the three reference stations in accordance with *Table 7. Reference Station Sampling Site Coordinates*.

TABLE 7. Reference Station Sampling Site Coordinates (Lambert/California Coordinates).

Station Number	Easting	Northing	Indicators Only ¹	Full Analysis ²	Paint Chips ³
REF-01	1697300	196600		X	X
REF-02	1706085	204810		X	X
REF-03	1715225	201110		X	X

1. Indicators Only Analysis (see *Table 6* above)
2. Full Analysis (see *Table 6* above)
3. Paint Chip Analysis (see *Table 6* above)

L. ENDNOTE REFERENCES

^a The presence of acute toxicity shall be determined as specified in *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms* (EPA 600/4-90-027F,

August 1993 or subsequent editions). Dischargers shall conduct a 96-hour static-renewal test with the vertebrate *Menidia beryllina*, or the invertebrate *Mysidopsis bahia*. The acute toxicity testing shall be a 96-hour static renewal test conducted on a sample of 100% effluent and a laboratory control. Use of two laboratory controls, a receiving water control, and a synthetic laboratory seawater control, is highly recommended. The salinity of the sample should be adjusted to the salinity level typical of the receiving water using dry sea salt. The adjusted salinity level shall be reported. The effluent tests shall be conducted with concurrent reference toxicant tests. Both the reference toxicant and the effluent test shall meet all test acceptability criteria as specified in the above named manual. If the test acceptability criteria are not achieved, the discharger shall re-sample and re-test.

^b The presence of chronic toxicity shall be determined as specified in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/600/4-87/028, 1988) and/or *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95-136). Dischargers shall conduct a 7-day survival and larval growth test on *Menidia beryllina* or a 7-day survival, growth/ fecundity test on *Mysidopsis bahia*. Since the test methods provide for an acute/chronic dual endpoint, the discharger may use the same test species as is used for the acute toxicity test. The chronic toxicity testing shall be a 7-day static renewal test on a sample of 100% effluent and a laboratory control. Use of two laboratory controls, a receiving water control, and a synthetic laboratory seawater control, is highly recommended. The salinity of the sample should be adjusted to the salinity level typical of the receiving water using dry sea salt. The adjusted salinity level shall be reported. The effluent tests shall be conducted with concurrent reference toxicant tests. Both the reference toxicant and the effluent test shall meet all test acceptability criteria as specified in the above named manual. If the test acceptability criteria are not achieved, the discharger shall re-sample and re-test.

^c PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo(k)fluoranthene, 1,12-benzoperylene, benzo(a)pyrene, chrysene, dibenzo(ah)anthracene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene.

^d If one type of flow of water (waste stream) is combined with one or more other types of waste streams prior to discharge, the discharger shall monitor the combined discharge at the highest monitoring frequency required for any individual waste stream which is part of the combined discharge. The discharger's monitoring reports shall indicate which types of waste streams were combined.



JOHN H. ROBERTUS
Executive Officer
February 5, 2003