

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0061-001

FOR  
UNITED STATES ARMY CORPS OF ENGINEERS, DEPARTMENT OF WATER  
RESOURCES AND  
THE PORT OF STOCKTON  
STOCKTON DEEP WATER SHIP CHANNEL MAINTENANCE DREDGING  
ACTIVITIES FROM CHANNEL MILE 4.4 TO MILE 41.0  
CONTRA COSTA, SACRAMENTO AND SAN JOAQUIN COUNTIES

This monitoring program includes pre-dredge sediment and elutriate analysis, dredge site monitoring, effluent (return-water) monitoring, biological survey and receiving water monitoring.

**PRE-DREDGE SEDIMENT AND ELUTRIATE MONITORING**

Pre-dredge sediment sampling and analyses shall be performed to determine sediment constituent concentrations for those items listed in Applicability Section A.3, Discharge Applicability Table. Soluble metal constituents shall be measured after performing a Title 22 Waste Extraction Test (WET) procedure. The WET procedure may be modified to use deionized water in place of the citrate buffer when the ratio of neutralizing potential (NP) to Acid Generating Potential (AGP) is greater than 3. Another extraction procedure may be used with approval by the Executive Officer. In some cases, the Waste Extraction Test with citrate buffer may be required to show that the dredge material is not classified as hazardous waste. A modified elutriate test (MET)(USACOE Tech Note EEDP 04-2) shall be performed on representative sediment samples and receiving water from the site. The supernatant from the MET shall be analyzed for the constituents listed in Part 2 of Table A.3. Approved analytical methods are listed in Table 3 below.

The frequency of samples required depends on a number of factors including: previous analysis results, location, distribution of the sediments and type of analysis. Historically, some reaches of the channels have smaller amounts of sediment deposited and other sections have had massive sediment deposits. It is assumed that the sediments within a reach have been recently deposited, and have similar characteristics and source of materials. Therefore, the sampling frequency will be adjusted for the amount of material to be dredged from a reach, so that reaches with large amounts of material will have a lower sampling frequency. In addition, sampling frequency may be decreased in the future if there are sufficient number of results to indicate that the constituent has a low probability of being found in levels that would cause concern. If ten samples taken in a given sampling frequency category have results well below the levels of concern, the sampling frequency can be decreased by one category (for example from A to B) for that constituent, with category D as a maximum. If results from a sample are above levels of concern, the sampling frequency may be increased by one category (for example from B to A). Table 2 shows the sampling frequency categories for different constituents depending on the amount of material in each discrete reach to be dredged.

A “reach” is defined as a segment of channel where the material to be removed has the following similarities: similar grain size, similar sources of contaminants, and a similar depositional environment.

**Table 1: Sampling frequency categories**

Category	Sampling Frequency Minimum
A	One sample per 12,500 cubic yards, or part thereof
B	One sample per 25,000 cubic yards, or part thereof
C	One composite sample per 50,000 cubic yards, or part thereof (composite of 2 different sample locations)
D	One composite sample per 75,000 cubic yards, or part thereof (composite of at least 3 different sample locations)

**Table 2: Sampling frequency assignments based on constituent and amount of material to be dredged in a reach.**

Constituent	Sampling category based on volume of dredge material to be removed from reach			
	Under 25,000	25,000-50,000	50,000-100,000	Over 100,000
Acid Generating Potential/ Neutralizing Potential	A	B	C	D
WET metals	A	B	C	D
MET metals	A	B	C	D
MET Ammonia & Ammonium	A	B	C	D
MET TOC	A	B	C	D
MET BOD	A	B	C	D
Metal solids	A	B	C	D
PAH solids	A	B	C	D
PCB solids	A	B	C	D
OC Pesticide solids	A	B	C	D
MET PAH	A	B	C	D
MET PCB	A	B	C	D
MET OC Pesticides	A	B	C	D
MET OP Pesticides	A	B	C	D
MET Toxicity Test	A	B	C	D
MET pH	A	B	C	D
MET Specific conductivity (EC)	A	B	C	D
MET Total Dissolved Solids(TDS)	A	B	C	D
MET Chloride	A	B	C	D
Receiving Water Hardness, pH	A	B	C	D
MET Tributyltin (filtered)	If within 500 yards of the Port or a marina			
MET Oil and Grease	If within 500 yards of the Port or a marina			

The sampling and analysis plan for pre-dredge sampling shall be approved by Regional Board staff before samples are taken.

**Table 3: Analytical Methods**

	Sample preparation	Analysis method
Acid Generating Potential/ Neutralizing Potential		
WET metals	Waste Extraction Test (citrate buffer or deionized water)	Arsenic 7062 Barium 6010B Cadmium 7131A
MET metals	Modified Elutriate Test (USACOE Tech Note EEDP 04-2)	Total Chromium 6010B Chromium VI 7195, 7196, or 7191 Copper 6010B Lead 7421 Mercury 7471A (RL<25 ng/l) Nickel 7521 Selenium 7740 or 7741 Zinc 6010B
MET Ammonia & Ammonium	Modified Elutriate Test	Standard Method 4500-NH <sub>3</sub>
MET COD	Modified Elutriate Test	5220B
MET BOD	Modified Elutriate Test	5210B
Metal solids		6010B except Mercury
PAH solids		8310
PCB solids		8082
OC Pesticide solids		8081A
MET PAH	Modified Elutriate Test	8310 or 8270C
MET PCB	Modified Elutriate Test	8082
MET OC Pesticides	Modified Elutriate Test	8081A
MET OP Pesticides	Modified Elutriate Test	8141A
MET Toxicity Test	Modified Elutriate Test	EPA 821-R-02-012
MET pH	Modified Elutriate Test	150.1
MET Specific conductivity (EC)	Modified Elutriate Test	2510
MET Total Dissolved Solids(TDS)	Modified Elutriate Test	2540C
MET Chloride	Modified Elutriate Test	300.0
Receiving Water Hardness		2340B
MET Tributyltin (filtered)	Modified Elutriate Test	Gas chrom. w/ FPD detect.
MET Oil and Grease	Modified Elutriate Test	5520C/8440

**BOD:** Biological Oxygen Demand

**COD:** Chemical Oxygen Demand

**MET:** Modified Elutriate Test U.S. Army Corps of Engineers Tech Note EEDP-04-1,-2,-3,-4

**OP:** Organophosphorous

**OC:** Organochlorine

**PAH:** Polyaromatic Hydrocarbons

**PCB:** Polychlorinated Biphenyls

**WET:** Waste Extraction Test

Equivalent analytical methods may be substituted with approval of Regional Board staff.

### DREDGE SITE RECEIVING WATER MONITORING

Grab samples shall be taken at two depths: 1) five feet below the surface, 2) approximately 2/3 of the distance to the bottom. The two grab samples from each station shall be composited together in equal volumes resulting in one sample from each station for analysis. Water samples shall be taken from the following stations:

<u>Station</u>	<u>Description</u>
<b>R-1</b>	Upcurrent of the dredging location undisturbed by the dredging operation, and not to exceed 3000 feet from the dredge.
<b>R-2</b>	within 50 feet downcurrent of the dredge suction head or clamshell.

In environments without significant current, R-1 should be located at a distance that is unaffected by dredging and R-2 shall be taken within 50 feet of the dredge. Other monitoring points may be required at the dredge site if the predredge analysis shows contaminants of concern that have the potential to cause toxicity at the dredge site.

Samples shall be collected and analyzed from Stations R-1 and R-2 as follows:

Constituent/ analysis	Units	Sampling Frequency	Sample Type
Turbidity	NTUs	Once per <del>eight-12</del> hours <sup>1</sup>	Grab/Meter
Dissolved Oxygen <sup>2</sup>	mg/l	Once per <del>eight-12</del> hours <sup>1</sup>	Grab/Meter
pH	STU	Once per <del>eight-12</del> hours <sup>1</sup>	Grab/meter
Temperature	°F	Once per <del>eight-12</del> hours <sup>1</sup>	Meter
Suspended Solids	mg/l	Twice a week	Grab
Constituents of concern <sup>3</sup>	µg/l	To be determined by sta	Grab/compos ite

<sup>1</sup> The Discharger shall collect a sample every ~~eight-12~~ hours in which dredging operations occur. The tidal stage at the time of monitoring shall also be logged and all unusual events with the dredge operations that may affect water quality or monitoring such as pipeline breakages shall be noted.

<sup>2</sup> Dissolved Oxygen measurements shall be collect from two feet above the river bottom.

<sup>3</sup> Constituents of concern will be identified by Regional Board staff after reviewing the pre-dredge sediment and elutriate analysis. The Notice of Applicability will include a list of constituents of concern for monitoring.

**DREDGE MATERIAL DISPOSAL FACILITY MONITORING**

Monitoring shall commence immediately after dredging materials are discharged into the Dredge Material Disposal (DMD) facility. Monitoring shall continue until the DMD is completely empty of water. The DMD facility shall be sampled for the parameters specified below:

**DMD MONITORING TABLE**

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Freeboard	0.1 feet	Measurement	Daily <sup>1</sup>
Odors	--	Observation	Daily <sup>1</sup>
Dissolved Oxygen <sup>2,3</sup>	mg/l	Grab	Weekly
pH	Standard units	Grab	Weekly
Levee condition <sup>4</sup>	--	Observation	Weekly

- 1 Inspections for freeboard measurements and odors shall be performed daily during the normal business week (i.e. Monday through Friday).
- 2 Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours. Monitoring for dissolved oxygen may cease any time that freeboard measurements indicate that level of water in the confined disposal facility is less than 0.5 feet.
- 3 If odors are detected during the daily site inspection, then the Discharger shall conduct daily monitoring for dissolved oxygen until the odors are abated.
- 4 Containment levees shall be observed for signs of seepage or surfacing water along the exterior toe of the levees. If surfacing water is found, then a sample shall be collected and tested for pH and total dissolved solids.

**DMD SITE EFFLUENT MONITORING**

The effluent from the sedimentation basin or Dredged Material Disposal (DMD) site shall be monitored at the overflow weir or discharge pipe during discharge. The initial set of samples shall be collected within 24 hours of the initiation of discharge. Subsequent samples shall be collected from the effluent discharge and analyzed according to the following schedule:

**DMD SITE EFFLUENT MONITORING (Continued)**

<u>Constituent/ analysis</u>	<u>Units</u>	<u>Sampling Frequency</u>
Flow	MGD	Daily
pH		Daily
Suspended solids	mg/l	Daily
Turbidity	NTU	Daily
Dissolved Oxygen	mg/l	Daily
Temperature	°F	Daily
Constituents of concern <sup>2</sup>	µg/l	To be determined by staff <sup>3</sup>

<sup>2</sup> Constituents of concern will be identified by Regional Board staff after reviewing the pre-dredge sediment and elutriate analysis. The Notice of Applicability will include a list of constituents of concern for monitoring.

<sup>3</sup> The following are the “normal” expected turnaround times for laboratory analysis:

Total Suspended Solids	3 days after sample collection
Chronic toxicity tests	21 days after sample collection
Acute toxicity tests	7 days after sample collection
BOD	10 days after sample collection
Ammonia	Field measurement verified with laboratory analysis
Other analyses	14 days after sample collection

Sample holding times must be observed according to U.S. EPA recommendations. Regional Board staff may ask for shorter turnaround times in cases where there is potential for the effluent to exceed water quality objectives in the receiving water and to impair beneficial uses.

### SCOUR POND BIOLOGICAL SURVEY

The Scour Pond I DMD site shall be surveyed for giant garter snakes (*Thamnophis gigas*) 24 hours prior to construction activities by a qualified biologist. Additional surveys of the project area shall be conducted if a lapse in construction activity of 2 weeks or greater occurs after the initial survey is completed.

Beginning October 2 each year and continuing until placement activities are completed within the Expanded Scour Pond I DMD site, the site will be surveyed for giant garter snakes once every 14 days by a qualified biologist.

### RECEIVING WATER MONITORING FOR THE DMD SITE DISCHARGE

Grab samples shall be taken at two depths: 1) five feet below the surface of the water, 2) approximately 2/3 of the distance to the bottom. Two grab samples from each station shall be composited together in equal volumes resulting in one sample from each station for analysis. Water samples shall be taken from the following stations:

<u>Station</u>	<u>Description</u>
<b>R-3</b>	Upcurrent of the discharge location and undisturbed by the effluent discharge from the DMD site, not to exceed 300 feet from the point of discharge.
<b>R-4</b>	within 50 feet down current of the discharge point and on the same side of the river as the discharge point.

Samples shall be collected and analyzed from Stations R-3 and R-4 as follows:

<u>Constituent/ analysis</u>	<u>Units</u>	<u>Sampling Frequency</u>
pH		Daily
Turbidity	NTU	Daily

Dissolved Oxygen	mg/l	Daily
Temperature	°F	Daily
Suspended solids	mg/l	Twice weekly
Constituents of concern <sup>4</sup>	µg/l	To be determined by staff. <sup>5</sup>

<sup>4</sup> Constituents of concern will be determined by Regional Board staff after reviewing the analytical results from the pre-dredge analysis. The Notice of Applicability will include a list of constituents of concern for monitoring.

<sup>5</sup> The following are the “normal” expected turnaround times for laboratory analysis:

Total Suspended Solids	3 days after sample collection
Chronic toxicity tests	21 days after sample collection
Acute toxicity tests	7 days after sample collection
BOD	10 days after sample collection
Ammonia	Field measurement verified with laboratory analysis
Other analyses	14 days after sample collection

Sample holding times must be observed according to U.S. EPA recommendations. Regional Board staff may ask for shorter turnaround times in cases where there is potential for the effluent to exceed water quality objectives in the receiving water and to impair beneficial uses.

## REPORTING

The following constituents shall have monitoring performed with field equipment at the dredge site, in the effluent and in the receiving water with violations reported to Regional Board staff immediately:

Flow	pH
Dissolved Oxygen	Temperature
Turbidity	Ammonia (with lab analysis for validation)

The following are the “normal” expected turnaround times for laboratory analysis:

Total Suspended Solids	3 days after sample collection
Chronic toxicity tests	21 days after sample collection
Acute toxicity tests	7 days after sample collection
BOD	10 days after sample collection
Ammonia	Field measurement verified with laboratory analysis
Other analyses	14 days after sample collection

Sample holding times must be observed according to U.S. EPA recommendations. Regional Board staff may ask for shorter turnaround times in cases where there is potential for the effluent to exceed water quality objectives in the receiving water and to impair beneficial uses.

The Discharger shall immediately notify the Regional Board by telephone whenever a violation or adverse condition occurs as a result of the dredging and disposal operation or the discharge of effluent. Written confirmation of the violation shall follow within 2 weeks.

If the project is in operation for more than one month, monthly Self Monitoring Reports shall be submitted to Regional Board Staff no more than 15 days after the end of the month. The Self Monitoring Reports shall include:

1. The date, exact place, time of sampling and the name of the person taking the sample.
2. The dates analyses were performed and the name of the person who performed the analyses.
3. Analytical techniques/methods used.
4. Results of the analyses.

The Discharger shall compile and summarize the data from the Self Monitoring Reports and submit an Annual Report to Board staff within 90 days of project completion.

If dredge material from a project has restrictions on beneficial reuse options, the owner of the DMD site shall be responsible for tracking and documenting the location of that material while it is in the site. If the material is removed from the site, the owner shall notify Board staff within 10 days and provide a description of how the material was appropriately reused. If the material is sold or used in another location, the owner of the DMD site shall inform the recipient of the restrictions and their responsibility for proper use of the material.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by: \_\_\_\_\_  
THOMAS R. PINKOS, Executive Officer

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23 April 2004

(Date)