

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO.

FOR
DREDGING OF BERTHS J, K AND I
THE PORT OF STOCKTON
SAN JOAQUIN COUNTY

The purpose of this Monitoring and Reporting Program (MRP) is to determine compliance with Waste Discharge Requirements Order No _____. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

This monitoring program includes two areas, receiving water at the dredge site and long-term monitoring of the disposal site. The San Joaquin River, at the dredge site, is monitored to determine the effect of the dredging operations and to provide immediate information so that mitigation measures may be adjusted as needed. The dredge material disposal site has long-term monitoring to determine if acidic conditions will develop and cause accelerated leaching.

This monitoring program includes 4 different time periods:

- Prior to dredging, monitoring is done in the San Joaquin River to establish baseline conditions.
- During the first 3 days of dredging, monitoring of the San Joaquin River is more comprehensive to determine whether there are water quality impacts occurring from dredging operations. Turnaround times on lab results are shorter to provide feedback on dredging operations.
- During dredging operations, adjustments to monitoring are made based on the initial results received. If water quality objectives are not met and mitigation measures are employed, monitoring is accelerated to determine the effectiveness of control measures. If initial results indicate that excursions from water quality objectives are unlikely, monitoring is reduced.
- After dredging operations are completed, this MRP requires long-term monitoring of the material in the disposal site. The soil pH will be monitored for up to two years to determine the potential for accelerated leaching of metals into groundwater.

DREDGE SITE RECEIVING WATER MONITORING

Dissolved Oxygen	}	Field analysis with immediate results
Ammonia		
Turbidity		
Barium	}	Laboratory analysis
Other metals		
BOD, COD		

Quality assurance:

Dissolved oxygen, ammonia and turbidity shall be measured with field equipment to obtain immediate results. For field measurements, the Discharger shall document calibration, quality assurance procedures (including record of membrane replacement) and standardization of sample collection and measurement procedures. In addition, the Discharger shall use an additional method of measurement at least once in the pre-dredge monitoring and three times during the dredging operations to provide quality assurance for the field equipment. For example, the dissolved oxygen may be measured using the Winkler titration method. Ammonia measurements may be duplicated by sending a split sample to the lab for analysis.

Dissolved Oxygen:

Due to spatial and temporal variability, dissolved oxygen monitoring must be comprehensive. Since dissolved oxygen is a field measurement, the comprehensive monitoring will not create additional analysis costs. Dissolved oxygen levels are known to have daily fluctuations due to algal activity and vary with depth.

The water temperature shall also be measured and recorded to accompany each dissolved oxygen measurement. The dissolved oxygen monitoring shall be performed in four phases:

- Pre-dredge monitoring (background)
- First 3 days of dredging
- Adjusted monitoring based on first 3 days
- Mitigation monitoring

Pre-dredge monitoring (background)

Pre-dredge monitoring of dissolved oxygen shall be performed for 3 consecutive days prior to the commencement of dredging, according to the schedule described below (2 times per day, 6 locations, 2 depths).

First 3 days of dredging

During the first 3 days of dredging, the dissolved oxygen monitoring shall be performed according to the schedule described below (2 times per day, 6 locations, 2 depths).

Adjusted monitoring based on first 3 days

Beginning on the 4th day of dredging the monitoring frequency may be adjusted based on the results of the first 3 days. If water quality objectives for dissolved oxygen have been met for all samples in the first 3 days of operation, the monitoring may be reduced to once per day (mid-morning) and locations #1 and #6 may be omitted from the monitoring. If any of the dissolved oxygen concentrations during the first 3 days of dredging are below water quality objectives, the monitoring shall proceed according to the schedule below (2 times per day, 6 locations, 2 depths) for the duration of dredging.

Mitigation monitoring

If implementation of mitigation measures is required to meet water quality objectives, the monitoring frequency may be increased to once per 4 hours during dredge operations. The increased monitoring frequency is needed to determine the effectiveness of the mitigation

measures. Once the water body is returned to compliance, the monitoring may resume according to the schedule below (2 times per day, 6 locations, 2 depths) for the duration of the dredging, or until additional mitigation measures are implemented.

The dissolved oxygen monitoring shall be performed at six locations in the San Joaquin River:
Dissolved oxygen monitoring locations in the San Joaquin River:

1. ½ mile east of the dredge site
2. ¼ mile east of the dredge site
3. 250 feet east of the dredge
4. 250 feet west of the dredge
5. ¼ mile west of the dredge site
6. ½ mile west of the dredge site

At each of these locations, dissolved oxygen shall be measured at two depths:

1. approximately 5 feet below the surface
2. approximately 20 feet below the surface in the main channel, or 2/3 of the depth for other areas.

For pre-dredge monitoring, during the first 3 days of dredging, and unless otherwise specified, the dissolved oxygen shall be monitored two times per day:

1. early morning (before 9 AM)
2. afternoon (after 2 PM)

Ammonia:

Temperature and pH shall also be measured and recorded to accompany each ammonia sample. The ammonia monitoring shall be performed in 3 phases:

- Pre-dredge monitoring
- During dredging, while there is no exceedances of chronic Water Quality Objective (WQO) for ammonia
- To determine the effectiveness of mitigation.

Pre-dredge monitoring:

The San Joaquin River shall be monitored for ammonia at two locations for 3 consecutive days just prior to commencement of dredging. The two locations shall be as follows:

1. 500 feet east of the dredge site
2. 500 feet west of the dredge site

During dredging:

The San Joaquin River shall be monitored for ammonia at 3 locations each day of dredging operations. The samples shall be taken while the dredge is in operation, after it has been operating at least 4 hours. The water samples shall be collected at mid-depth. The three sampling locations are as follows:

1. 500 feet east of the dredge site
2. within 200 feet of the operating dredge
3. 500 feet west of the dredge site

To determine effectiveness of mitigation:

If the ammonia levels exceed chronic WQO for aquatic life (See Table 6 of the WDR), mitigation measures shall be implemented immediately and increased monitoring shall be performed to determine the effectiveness of the mitigation. The ammonia shall be monitored at least every 4 hours while the dredge is operating. Once the water body returns to compliance for at least 2 samples at four hour intervals, the monitoring may resume at once per day, as described above.

Turbidity:

The turbidity monitoring shall be performed in 3 phases:

- Pre-dredge monitoring
- During dredging, with no exceedances of WQO for turbidity
- To determine the effectiveness of mitigation.

Pre-dredge monitoring:

The San Joaquin River shall be monitored for turbidity at two locations for 3 consecutive days just prior to commencement of dredging. The two locations shall be as follows:

1. 300-500 feet east of the dredge site
2. 300-500 feet west of the dredge site

During dredging:

The San Joaquin River shall be monitored for turbidity at 2 locations each day of dredging operations. The samples shall be taken while the dredge is in operation, after it has been operating at least 4 hours. The water samples shall be collected at mid-depth. The three sampling locations are as follows:

1. 300 feet east of the dredge
2. 300 feet west of the dredge

To determine effectiveness of mitigation:

If the turbidity levels exceed WQO from the Basin Plan, mitigation measures shall be implemented immediately and increased monitoring shall be performed to determine the effectiveness of the mitigation. The turbidity shall be monitored at least every 4 hours while the dredge is operating. Once the water body returns to compliance for at least 2 samples at four hour intervals, the monitoring may resume at once per day, as described above.

Barium:

Monitoring for barium shall be implemented in three phases:

- Pre-dredge monitoring
- First 3 days of dredging
- Monitoring adjusted according to results obtained on first 3 days.

Pre-dredge monitoring (background concentrations)

The Discharger shall collect a minimum of three water samples within 500 feet of the proposed dredge location to be analyzed for dissolved barium. The samples must be taken no more than 15 days before the dredging starts, at three different sampling events, with a minimum of 48

hours between each sampling event. The results from this sampling must be available before the dredging begins.

First 3 days of dredging

The Discharger shall collect a minimum of one water samples each day during the first three days of dredging. The samples shall be collected during dredging, after the dredge has been in operation at least 4 hours. The samples shall be collected down-current within 250 feet of the dredge. The water samples shall be analyzed for dissolved barium within 24 hours of sample collection, with results reported to Regional Board staff as soon as they are available. The results from these 3 days of testing will determine the sampling required for the duration of the dredging. If the results indicate that the dredging may be causing or contributing to exceedances of water quality objectives, mitigation measures will be activated immediately to reduce impacts from the dredging operation. If mitigation measures are activated, the monitoring frequency may be increased to twice daily, at the discretion of the Regional Board Executive Officer.

Adjusted monitoring:

If the dissolved barium results from the first 3 days of dredging are all below 90 ppb (10% below the WQO of 100 ppb) or the average of the results is not significantly higher than the average of the background concentrations prior to dredging, the monitoring frequency will be reduced. Water samples shall be taken once every 3 days for the duration of the dredging and analyzed for dissolved barium with a 3-day turnaround time. The samples shall be collected during dredging, after the dredge has been in operation at least 4 hours. The samples shall be collected down-current within 250 feet of the dredge.

If any of the dissolved barium results from the first 3 days of dredging are above 90 ppb (which is 10% below the WQO) and the average of the results is significantly higher than the average of the background concentrations, the monitoring frequency shall continue daily with a 24-hour lab turnaround time. The monitoring frequency may be adjusted to twice daily, if the results indicate that the dredging is causing a serious water quality problem and mitigation measures are being activated. The additional monitoring may be required to determine the effectiveness of the mitigation.

Other metals:

Monitoring for barium can be broken into three phases:

- Pre-dredge monitoring
- First day of dredging
- Monitoring adjusted according to results obtained on first day.

Pre-dredge monitoring (background concentrations)

The Discharger shall collect a minimum of two water samples within 500 feet of the proposed dredge location to be analyzed for dissolved copper, zinc, and lead. The samples must be taken no more than 15 days before the dredging starts at three different sampling events, with a minimum of 48 hours between each sampling event. The results from this sampling must be available before the dredging begins.

First day of dredging

The Discharger shall collect a minimum of one water sample on the first day of dredging. The sample shall be collected during dredging, after the dredge has been in operation at least 4 hours. The sample shall be collected down-current within 250 feet of the dredge. The water samples shall be analyzed for dissolved copper, zinc, and lead within 24 hours of sample collection, with results reported to Regional Board staff as soon as they are available. The results from this first day of testing will determine the sampling required for the duration of the dredging. If the results indicate that the dredging may be causing or contributing to exceedances of water quality objectives, mitigation measures will be activated immediately to reduce impacts from the dredging operation. If mitigation measures are activated, the monitoring frequency may be increased, depending on the seriousness of the water quality impact.

Adjusted monitoring:

If the dissolved barium results from the first day of dredging are all 20% below the WQO or the average of the results is not significantly higher than the average of the background concentrations prior to dredging, the monitoring frequency will be reduced. Water samples shall be taken once every 7 days for the duration of the dredging and analyzed for dissolved copper, lead and zinc with a 3-day turnaround time. The samples shall be collected during dredging, after the dredge has been in operation at least 4 hours. The samples shall be collected down-current within 250 feet of the dredge.

If any of the dissolved barium results from the first day of dredging are within 10% of the WQO and the average of the results is significantly higher than the average of the background concentrations, the monitoring frequency shall continue daily with a 24-hour lab turnaround time. The monitoring frequency may be adjusted to twice daily, if the results indicate that the dredging is causing a serious water quality problem and mitigation measures are being activated. The additional monitoring may be required to determine the effectiveness of the mitigation.

BOD, COD (Oxygen depleting compounds):

The Discharger shall collect water samples from the San Joaquin River to be analyzed for 5-day Biological Oxygen Demand and Chemical Oxygen Demand. The water samples should be taken a mid-depth, at a location 300-500 feet downcurrent from the dredging operation. The monitoring for the oxygen depleting compounds shall be in two phases:

Pre -dredge monitoring (background)

Two sampling events shall occur within 7 days before the dredging commences. The sampling events shall be separated by at least 24 hours. The samples shall be taken at mid depth within 500 feet of the project site.

During dredging

One water sample to be analyzed for BOD and COD will be taken on the first day of dredging. Thereafter, sampling shall occur once every 3 days of operation, for the duration of the dredging.

DREDGE PLACEMENT SITE MONITORING

Beginning 3 months after placement of the dredge material, the Discharger shall monitor the dredge material from this project for soil pH to determine if acidic conditions are developing. Once every 3 months, the Discharger shall collect 3 representative moist soil samples and extract the soil solution to be measured for pH. If the pH drops below 6.0, the Discharger shall implement soil management practices and begin monitoring once per month to determine if the mitigation was sufficient. The monitoring for pH shall continue for two years or until the dredge material is retested and found to have a ratio of neutralizing potential to acid generating potential of less than 3.

REPORTING

The following constituents shall have monitoring performed with field equipment in the San Joaquin River with violations reported to Regional Board staff immediately:

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

Sample holding times must be observed according to U.S. EPA recommendations.

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

Self Monitoring Reports shall be submitted to Regional Board Staff no more than 15 days after the end of the dredging operations. The Self Monitoring Reports shall include:

1. The date, exact place, time of sampling and the name of the person taking the sample. It is recommended that the location of monitoring points be recorded using Global Positioning System (GPS).
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.
5. Record of location and start/stop times for operation of dredge.
6. Field log that indicates any special conditions that may affect water quality.
7. Signature of Discharger verifying that information is correct.

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: _____
GARY M. CARLTON, Executive Officer

DMP:dmp/19 July 2001