

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO.
GENERAL WASTE DISCHARGE REQUIREMENTS
FOR MAINTENANCE DREDGING OPERATIONS
SACRAMENTO-SAN JOAQUIN DELTA
(GENERAL ORDER)

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) finds that:

1. This General Order specifies general waste discharge requirements (WDRs) regulating maintenance dredging projects within the Central Valley Region Water Board that remove up to 100,000 cubic yards of material during the life of the Notice of Applicability (NOA) for coverage under this order, and meet other criteria as further described herein.
2. The removal, transport, and placement of dredge sediments are the primary components of the dredging process. These actions may be logically divided into two distinct components common to all dredging operations: 1) the excavation and removal of sediments from water bodies (i.e., dredging), and 2) the disposal and/or reuse of these dredged materials in another location (i.e., placement). These actions involve separate regulatory considerations and, where appropriate, are discussed separately in this order. Both actions have the potential to produce waste as defined in California Water Code (CWC) Section 13050(d). Dredging could cause sediment containing metals and other constituents to be discharged to waters of the state. The placement of dredged material on land may be a discharge of waste and has the potential to degrade both surface and ground water.
3. California Water Code (CWC) Section 13260(a) requires that any person discharging waste or proposing to discharge waste within any region, other than to a community sewer system, that could affect the quality of the waters of the State, file a Report of Waste Discharge (RWD).
4. This General Order specifies general WDRs regulating maintenance dredging projects situated within the legal boundaries of the Sacramento-San Joaquin Delta (Delta), and the area under the jurisdiction of the Regional Water Board.
5. For the purposes of this General Order, maintenance dredging is defined as dredging to a previously permitted or previously achieved design depth, that removes less than 100,000 cubic yards of material during any authorized dredging window, which, if discharge occurs, will have a return flow rate less than one million gallons per day, and in which the dredged materials are deposited in areas authorized by applicable state and federal regulatory

agencies, and/or beneficially reused in a manner approved by the Regional Water Board.

6. This General Order shall apply to dredging at marinas for areas of existing marina operations and use, in order to restore depth to original or previous design or operational depth. Expansions of marina facilities or dredging beyond previous design or operational depth are not covered under this General Order.
7. This General Order shall apply to municipalities or companies and to individual property owners and/or operators (collectively Discharger) that have submitted a RWD for maintenance dredging operations, paid the appropriate fees for coverage under this General Order, and have been issued a Notice of Applicability by the Regional Water Board's Executive Officer.

RATIONALE FOR THESE GENERAL WASTE DISCHARGE REQUIREMENTS

8. Dredging is necessary to maintain channel capacity for flood flows and provides material for the maintenance of the Delta levees, which are essential for the protection of residents and land use. The levees also prevent tides from bringing saltwater into the east Delta and provide protection for drinking water and agriculture water from saltwater intrusion.
9. Presently, more than 1,100 miles of levees protect the Delta islands from flooding. The U.S. Army Corps of Engineers maintains approximately 385 miles of levees as part of the Sacramento Flood Control Project. Local reclamation districts maintain approximately 715 miles of levees.
10. Pursuant to California Water Code Section 13263(i) the Regional Water Board may prescribe general waste discharge requirements for categories of discharges if the Regional Water Board finds that the following criteria apply to the discharges:
 - a. The discharges are produced by the same or similar operations.
 - b. The discharges involve the same or similar types of waste.
 - c. The discharges require the same or similar treatment standards.
 - d. The discharges are more appropriately regulated under general requirements than individual discharge requirements.
11. Dredging of accumulated sediment in channels is necessary to maintain channel capacity, safe navigation for recreational boaters, and safe passage of ship traffic. Sediments deposited by the rivers and waterways must be periodically removed in order to keep ports, marinas, boat berths, and launch ramps operational for navigational access. Without a General Order, each dredging project would be required to have individual WDRs, which take a

minimum of 4 months between submittal of a RWD and Regional Water Boardissuance. By authorizing a General Order, the permitting process is streamlined, so that project approval can occur within a few weeks. Because of the limited time frame when protected species such as Chinook salmon and Delta smelt are absent from the project area, dredging within the Delta is generally restricted to a dredging window between August and December each year. Therefore, streamlining the permitting process for maintenance dredging operations is necessary.

12. Most dredging operations of less than 100,000 cubic yards conducted in inland surface waters within the Central Valley Region are similar. The dredging materials are typically of similar character and are generally subject to similar discharge standards. In addition, the General Order would provide project applicants with a set of “known” requirements that are consistently and fairly applied to all projects. Given these similarities, regulation by means of a general order is appropriate.

PROCEDURES FOR ENROLLMENT

13. To obtain initial “first-time” coverage under the General Order, the following items and documentation must be submitted:
 - a. A complete RWD, including:
 - (1) cover letter requesting coverage under this General Order
 - (2) justification of applicability to maintenance dredging criteria
 - (3) a complete description of the dredging operation and site
 - (4) a complete description of the placement operation and site
 - (5) description of proposed best management practices (BMPs) for dredging and placement and/or reuse
 - b. The permit fee;
 - c. The results and technical analysis of pre-dredge sediment analysis of constituents shown in Table 1, demonstrating compliance with the terms of this General Order;
 - d. A Monitoring Plan outlining steps for compliance with the Monitoring and Reporting Program of this Order;
 - e. For placement at sites not previously authorized for dredged material placement, documentation of compliance under the California Environmental Quality Act (CEQA);
 - f. Copies of applications for dredging, or permits from other applicable state and federal agencies; and

- g. if required, as per the terms of this Order:
 - (1) Mailing list of adjoining property owners
 - (2) An Operations Plan
 - (3) An Erosion Control Plan
 - (4) A Traffic Management Plan
- 14. For placement of dredged material in locations that have not previously been used for dredged material placement, the Discharger must submit a mailing list of adjoining property owners to the proposed placement area. After the Executive Officer determines that a proposed discharge is eligible for enrollment under this General Order, a notice of the Regional Water Board's intent to enroll the proposed discharge under the General Order will be mailed to all adjoining property owners. The property owners and other interested persons will be allowed a two-week comment period. After receipt of the comments, the Executive Officer may schedule a public hearing before the Regional Water Board to consider the applicant's enrollment under this General Order, or may issue the NOA.
- 15. To obtain continuing coverage under this General Order in subsequent years for projects which have already been initially authorized under this order, re-characterization of dredged material through pre-dredge sampling and analysis may be waived at the discretion of the Executive Officer, when existing sediment data are deemed to be representative of the sediments proposed to be dredged. In this case, projects will be evaluated based on the results of existing pre-dredge sampling. Project proponents may submit updated sampling results at their discretion.

APPLICABILITY

- 16. Unless otherwise specified, the NOA issued for dredging the specified quantity of material under this General Order is valid for a period of five (5) years, assuming there is no change in the character of the remaining material to be dredged affecting its potential threat to water quality. If the Regional Water Board determines that a change in the character of the material to be dredged has, or may have occurred during the five-year validity period, the NOA may be revoked by the Regional Water Board at its discretion, and dredged material may be subject to revaluation by the applicant.
- 17. This General Order does not apply to projects that:
 - a. Are within the Sacramento and Stockton Deep Water Ship Channels;
 - b. Involve more than 100,000 cubic yards of dredging material;
 - c. Involve undisturbed sediments (i.e., areas where dredging to a previously permitted or operations depth has not previously occurred);
 - d. Involve more than 1 million gallons per day (MGD) return flow rates;

- e. discharge to lands listed as hazardous materials sites pursuant to Government Code Section 65962.5;
 - f. Could significantly alter the existing drainage pattern of the discharge site; and
 - g. Negatively impact wetlands.
18. Due to the limited period available annually to dredge in the Delta, maintenance dredging projects may take several years to complete. Projects may receive coverage under this General Order for greater than one but not to exceed five years. The Discharger is required to notify the Regional Water Board after the dredging project is completed. If after review, the Executive Officer determines that the Discharger has satisfied the requirements of this General Order, coverage for the project may be terminated by the Executive Officer.

DESCRIPTION OF DREDGING OPERATIONS

19. The two common methods of dredging in the Delta are hydraulic and clamshell. A clamshell dredge consists of a mechanically operated “bucket” that is used to dig sediments from the bottom. The dredge material is removed bucket-by-bucket and placed on the bank (such as the landward side of the levee) or may be placed in a barge or truck for transport to another location. The lifting action created by the bucket being pulled up from the channel bottom may suspend sediment and increase turbidity throughout the water column. The actual turbidity that may occur depends on the physical characteristics of the sediment (grain size, compaction) and characteristics of the water body (depth, rate of flow, tidal influences).

Clamshell dredging may be preferred for levee maintenance, since the material can sometimes be directly placed and may not require extensive re-handling. The dredge material from clam shell dredging has less water content than that produced by hydraulic dredging.

20. Hydraulic dredging typically uses a cutter-head suction dredge that cuts into the sediment with a rotary cutting tool and suctions the dredge material out through a pipe. The dredge material is pumped as slurry that is typically 10 to 20% solids and the remainder water. This slurry is usually delivered to a settling pond(s) dewatering facility via pipeline. The maximum distance that slurry can be transported is restricted by the expense, logistics, and physics of the pipeline system, usually a maximum of a few miles.

DREDGED MATERIAL DISCHARGE AND PLACEMENT

21. A dewatering site is required for settling of the hydraulic dredging slurry. Dewatering sites typically are diked on all sides, and may have several internal dikes to route the water. The size and depth of the site is based on the total

amount of material and water to be retained, including water that may accumulate from rainfall.

22. At the dewatering or settling pond, the water may be either retained on site and disposed of through evaporation and percolation, or returned back into the receiving water body. The returned water is typically referred to as decant water, return water, or effluent.
23. Many areas of the Delta consist largely of peat soil formations that may become unstable when loads are placed on them. Settling ponds may be hydraulically overloaded potentially causing pond levees or berms to fail. Therefore, settling ponds with a capacity of greater than 10,000 cubic yards effective volume (less freeboard) shall be designed and constructed under the supervision of a California Registered Civil Engineer or Certified Engineering Geologist.
24. Berms can fail from a lack of maintenance, or overtopping due to flooding or wave action. This Order requires a minimum pond freeboard of two feet be maintained to minimize the potential for overtopping.
25. Dredged materials have a potential for erosion until the material has been significantly incorporated into the levee embankment. During the wet season, dredged materials can erode from the levee embankment and subsequently be discharged to surface waters via adjacent stormwater, agriculture, and reclamation ditches. To control erosion, the Discharger shall implement an **Erosion Control Plan**. If the contiguous levee area in which dewatered dredged material is applied is greater than one (1) acre in size, a NPDES General Permit for Storm Water Discharges Associated with Construction Activities, NPDES No. CAS000002, Order No. 99-28-DWQ is required. Compliance with this permit is sufficient to satisfy the conditions for an Erosion Control Plan.

CHARACTERISTICS OF DREDGED MATERIALS

26. Historical data from the DREDGE database were used to assess the potential waste constituents in Delta sediments. The DREDGE database was developed by the Department of Fish and Game and contains physical, chemical, and biological (i.e. toxicity) data collected from approximately 50 studies conducted between 1986 and 2000 on Delta sediment samples. The data were grouped into three broad categories based on their locations: (1) deep water ship channels and ports (Ship Channel); (2) small marinas (Marinas); and (3) other river areas, channels, backwaters, and sloughs (Riverine).

The physical characteristics of Delta sediment were found to exhibit the following characteristics:

Sediment Physical Characteristics	Marinas	Riverine	Ship Channel
Percent Total Organic Carbon (TOC)	0.77	0.56	0.1
Percent Fines (% silt and clay)	64	38	22

27. Sediments containing higher concentrations of silt/clays and TOC have a greater potential to cause turbidity to the receiving water and may require longer periods for settling in the dewatering facility. Sediment from marinas was found to contain the highest concentrations of silt and TOC. Marinas may be situated behind breakwaters and are less subject to water currents and therefore have the potential for fine sediment deposition and accumulation of organic carbon.
28. Many chemical constituents are lipophilic (typically hydrophobic) and will preferentially sorb or attach to organically enriched or fine particles of sediment. Therefore, sediment waste constituents may correlate with measured physical properties such as grain size and total organic carbon. Water column effects from dredging may occur when waste constituents on the sediment particles are either dissolved or resuspended in the water column. Dredging operations may cause some degradation temporarily to surface waters as concentrations of turbidity, total suspended solids, and other wastes may increase and dissolved oxygen decreases as bottom sediments are disturbed in the excavation process (i.e., by the cutter head or bucket).
29. The DREDGE database also contains chemical constituent data from dredged sediment leachate extracted using the deionized water waste extraction test (DIWET). The DIWET data were used to predict the potential characteristics of leachate from dredge materials. In general, dewatering facilities and dredged material placement sites are not equipped with liners, and therefore leachate from dredged sediments may migrate through the soil column via soil pore space to the underlying groundwater. Metal waste constituents typically detected in the DIWET leachate at concentrations that have the potential to impact groundwater are aluminum, arsenic, chromium VI, copper, lead, manganese, mercury, and zinc.
30. The DREDGE database contains information on constituents of concern that may be present in the return water discharges to surface waters from dewatering facilities, as determined using the modified elutriate test (MET). The MET simulates the dredging and settling process by mixing four parts river water and one part sediment, then mechanically mixing and aerating for one hour. The mixture is then allowed to settle for 24 hours, or the length of the estimated retention time of the dewatering facility. The supernatant is then decanted off and analyzed. Constituents identified in the MET in concentrations that have the potential to impact receiving waters are aluminum, arsenic, copper, lead, manganese, mercury, nickel, and zinc.

31. Dewatered dredged material may be directly placed or beneficially reused for levee improvement, as foundation material or other uses. However, during the wet season, stormwater runoff and leachate from dredged materials may contain soluble constituents that could migrate to surface water adjacent to the placement site. Dredged sediment must be accurately characterized prior to placement or reuse, as specified in this order or in the Notice of Applicability.
32. The Regional Water Board has reviewed extensive long-term monitoring data from a network of 27 wells installed at Roberts Island dredged material placement site. These data indicate that the effect of continuous dredged material placement, at that site over several decades, has not significantly impacted underlying groundwater to a greater extent than nearby agricultural operations.
33. The data from Roberts Island No. 1 long-term ground water monitoring indicate that procedures for evaluating dredge material placement are at least adequate enough to prevent significant water quality impacts to ground water from long-term dredged material placement at this site.
34. Similar, long-term monitoring of other dredge material placement sites is currently being undertaken. Results from additional sites in the Delta will provide wider understanding of the degree of attenuation that may occur at various sites. The results of these long-term monitoring studies will guide decisions applicable to this General Order on the suitability of placement of dredged material.
35. Dredged material represents a potential resource for rehabilitation of levees, for use as foundation materials for construction projects, for subsidence mitigation, for ecosystem restoration, and other productive uses.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

36. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Board). These requirements implement the Basin Plan.
37. The beneficial uses of the Sacramento-San Joaquin Delta are municipal supply; domestic supply; agricultural irrigation; process; service supply; water contact recreation; non-contact water recreation; warm fresh water habitat; cold fresh water habitat; warm water migration; cold water migration; warm water spawning; wildlife habitat; and navigation.

38. Designated beneficial uses of ground water are municipal and domestic supply, industrial service and process supplies, and agricultural supply.
39. Section 13267(b) of the California Water Code provides that:

“In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”

The technical reports required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements.

40. USEPA adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan [SIP]), which contains guidance on implementation of the *National Toxics Rule* and the *California Toxics Rule*. The Basin Plan contains the “Policy for Application of Water Quality Objectives” that requires consideration of published standards of other agencies in implementing narrative water quality objectives. The CTR and NTR standards may be incorporated in waste discharge requirements where appropriate to implement the Basin Plans consistent with the Policy for Application of Water Quality Objectives.
41. Section 1.4.4 of the SIP provides that the Regional Water Board may consider **Intake Water Credits** when establishing water quality-based effluent limitations for discharges to surface water, if the following conditions are met:
 - a. The maximum ambient background concentration and the intake water concentration of pollutant exceed the most stringent applicable criterion;
 - b. Intake water credits are consistent with any Total Maximum Daily Load (TMDL) limit;

- c. The intake water is from the same water body as the receiving water body;
 - d. A direct hydrological connection between the intake and discharge points;
 - e. The water quality characteristics are similar in the intake and receiving waters; and
 - f. The facility does not alter the intake water pollutant chemically or physically in a manner that adversely affects water quality and beneficial uses.
42. Delta waterways are impaired by a number of chemical constituents, and dredging operations utilize intake water directly from the Delta for slurry transport. The dewatering facility may not remove all the dissolved constituents that were originally present in the intake water and the effluent water from the dewatering facility may contain some of the same chemical constituents in concentrations that exceed promulgated water quality criteria. Therefore, Dischargers subject to this General Order may use Intake Credits for these constituents.
43. The Basin Plan requires that total identifiable persistent **chlorinated hydrocarbon** (OC) pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by either the EPA or the Executive Officer. In addition, new sources of bioaccumulative wastes are not authorized. Therefore, the use of Intake Credits for OC pesticides or bioaccumulative waste such as mercury is not allowed or appropriate.
44. The Basin Plan numerical and narrative water quality objectives for surface and groundwater within the basin are achieved primarily through the adoption of WDRs. Narrative water quality objectives are implemented consistent with the Policy for Application of Water Quality Objectives contained in the Basin Plan by establishing numerical limitations based on, among other factors, published standards.
45. The Basin Plan contains a Chemical Constituents water quality objective that, among other objectives, identifies numerical water quality objectives for waters designated as municipal supply. At a minimum, water designated for domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the California maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations:
 - a. Table 64431-A (Inorganic Chemicals) of Section 64431;
 - b. Table 64431-B (Fluoride) of Section 64431;
 - c. Table 64444-A (Organic Chemicals) of Section 64444; and
 - d. Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449.

The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that the Regional Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

46. The Basin Plan contains narrative water quality objectives for chemical constituents, taste and odor, and toxicity. The narrative toxicity objective requires that surface waters and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in plants or animals. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses.
47. State Board Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality Waters in California") requires that the Regional Water Board, in regulating the discharge of waste, must maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State; will not unreasonably affect beneficial uses; and will not result in water quality less than that described in the Regional Water Board's policies.
48. The discharges authorized by this General Order are consistent with State Board Resolution 68-16 and 40 CFR 131.12 (the federal anti-degradation policy). This General Order establishes requirements that will result in best practicable treatment or control of the discharge to assure that pollution or nuisance will not occur and that the discharges will not unreasonably affect beneficial uses or result in water quality less than prescribed in the Basin Plans.
49. Projects eligible for enrollment in this General Order require a U.S. Army Corps of Engineers Section 10 permit (Rivers & Harbors Act) for dredging operations and may require a Clean Water Act (CWA) Section 404 permit for the discharge of the "effluent" to surface waters. Each project also requires a CWA Section 401 Water Quality Certification from the Regional Water Board. Such Certification will be issued as part of the approved "Notice of Applicability." Other applicable state and federal permits must be obtained prior to discharge. Projects may also be subject to regulation by the California Department of Fish and Game, the National Marine Fisheries Service, the United States Fish and Wildlife Service, and the State Lands Commission.
50. The wastewater and sediment discharges authorized herein and the treatment and storage facilities associated with the discharge are exempt from the requirements of Title 27 CCR. The exemption, pursuant to Title 27 CCR Section 20090(b), is based on the following:

- a. Issuance of WDRs;
 - b. The consistency of the WDRs with the Basin Plan;
 - c. No need to manage wastewater according to Title 22, CCR, Division 4.5, and Chapter 11, as a hazardous waste. In order to be eligible for coverage under this Order, the Discharger must demonstrate that the waste is not classified as a hazardous waste;
 - d. Any slurry water from hydraulic dredging receives treatment, if necessary, in the dewatering facility; and
 - e. Any effluent return flows must comply with the specified effluent and receiving water limitations that are protective of water quality.
51. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of this General Order does not create a vested right to continue the discharge.
52. This General Order does not preempt or supersede the authority of municipalities, flood control agencies, and other local agencies to prohibit, restrict, or control discharges of waste subject to their jurisdiction, but such regulation by other entities may not be less stringent than this General Order.
53. These General WDRs are exempt from the California Environmental Quality Act (CEQA) because (a) they are not a “project” within the meaning of CEQA, since a “project” results in a direct or indirect physical change to the environment (Title 14, CCR section 15378); and (b) the term “project” does not mean each separate government approval (Title 14, CCR section 15378(c)). These WDRs do not authorize any specific project. They recognize that dredge and fill discharges that need a federal license of permit must be regulated under CWA section 401 Certification, pursuant to CWA section 401 and Title 23, CCR section 3855, et seq. Certification and issuance of WDRs are overlapping regulatory processes, which are both administered by the SWRCB and RWQCBs. Each project subject to Certification requires independent compliance with CEQA and is regulated through the Certification process in the context of its specific characteristics. Any effects on the environment will therefore be a result of the certification process, not from these General WDRs.
54. Maintenance dredging and placement of the dredged material in areas authorized by applicable regulatory agencies is categorically exempt from the provisions of CEQA in accordance with Title 14, California Code of regulations, Chapter 3, Section 15304 (g).

DELTA CONCERNS

55. The Delta waterways are listed pursuant to Clean Water Act (CWA) section 303(d) as impaired for chlorpyrifos, DDT, diazinon, Group A pesticides, and

mercury. A portion of the Delta is listed for electrical conductivity, and low dissolved oxygen causes impairment in the Stockton Deep Water Ship Channel.

56. Dischargers located within the watershed of a 303(d) impaired water body, for which a TMDL has been adopted, may be required to implement additional BMPs, conduct additional monitoring activities, and/or comply with additional requirements.
57. The Stockton Deep Water Ship Channel and Sacramento Deep Water Ship Channel are routinely dredged to maintain navigation access. However, the amount of sediment removed normally exceeds 100,000 cubic yards of material annually. Maintenance dredging operations in the Stockton or Sacramento Deep Water Ship Channels are not appropriate under this General Order and are regulated under separate Orders.
58. For Delta waters, the Basin Plan general objective for turbidity shall not exceed 50 NTU in waters of the Central Delta and 150 NTU in other Delta waters. Exceptions to the Delta specific objective will be considered when dredging operations may cause a short-term localized increase in turbidity. In this case, an allowable zone of dilution within which turbidity in excess of the limits can be tolerated will be defined for the operation and prescribed in a discharge permit. Dredging operations can be modified to reduce the amount of turbidity. In addition, silt curtains or other measures may be employed to control any turbidity to within 300 feet from dredging operations. The point of compliance with the turbidity limitation shall be 300 feet downstream of the dredging operation. However, the dredging operation cannot cause or contribute to acute toxicity in the water body at any point of discharge. Therefore, the point of compliance with the toxicity limitation shall be at the point of discharge (i.e., the dredging operation).
59. The Delta is subject to tidal influence, seasonal water pumping, and agricultural return flows, which have significant impacts on water quality, flow hydrodynamics, and the amount of water available for dilution. Furthermore, flow exchange in backwater sloughs and marinas may be very limited or stagnant at times. Therefore, no reliable dilution may be available in the receiving stream for a mixing zone.
60. In addition to an accurate characterization of the material to be dredged, an evaluation of the potential groundwater impacts caused by the placement or reuse of dredged material is required. Because of the shallow depth to groundwater in some areas of the Delta, attenuation within the unsaturated soil column underlying placement sites is often limited. Therefore, without a specific technical analysis submitted by the project proponent justifying a higher attenuation factor for the proposed placement site(s), an attenuation factor of one (1) will be assigned.

EFFLUENT LIMITATIONS FOR RETURN FLOWS TO SURFACE WATER

61. As discussed in Finding 42, Delta waterways are impaired by a number of chemical constituents and intake water from the dredged material may exceed water quality criteria. Additionally, dredging operations may utilize surface water for sediment transport and therefore, the discharge may contain background concentrations of these chemicals that exceed the chemical constituent objective. When the following chemicals are detected in intake samples, Dischargers subject to this General Order may use Intake Credits for these constituents for return flows.
62. Based on data contained in the DREDGE database, the effluent concentration of aluminum in the Delta has been reported as high as 5,200 $\mu\text{g/l}$. **Aluminum** can be toxic to aquatic organisms. The Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for aluminum is 87 $\mu\text{g/l}$ as a 4-day average. Effluent discharge has a potential to cause violation of the Basin Plan narrative toxicity objective. Therefore, an aluminum effluent limitation has been included in this General Order.
63. Sediments contain organic material and **Ammonia**. Dredging operations may result in the discharge of ammonia to the receiving stream. Furthermore, retention time in the dewatering area may be insufficient to allow biological processes sufficient time to convert the ammonia to nitrate. Ammonia is known to cause toxicity to aquatic organisms in surface waters, for which the Basin Plan contains a narrative toxicity objective. U.S. EPA has developed Ambient Water Quality Criteria for ammonia, which is dependent on pH and the presence of salmonids. Because salmonids may be present in the Delta during dredging operations, an effluent limitation, based on the Ambient Water Quality Criteria for ammonia with salmonids present, has been included in this Order consistent with the Policy for Application of Water Quality Objectives.
64. The Basin Plan contains a chemical constituent objective for **Arsenic** of 10 $\mu\text{g/l}$ in the Sacramento-San Joaquin Delta. Based on data contained in the DREDGE database, the effluent concentration of arsenic in the Delta has been reported as high as 37 $\mu\text{g/l}$. The Effluent discharge has a potential to cause violation of the Basin Plan chemical constituent objective for arsenic. Therefore, an arsenic effluent limitation, based on the Basin Plan chemical constituent objectives, has been included in this General Order.
65. The Basin Plan contains a chemical constituent objective for **Barium** of 100 $\mu\text{g/l}$ in the Sacramento-San Joaquin Delta. The Delta waterways have been found to periodically contain barium concentrations that exceed the chemical constituent objective. Therefore, a barium effluent limitation, based

on the Basin Plan chemical constituents objective, has been included in this General Order.

66. The San Joaquin River is impaired for boron. **Boron** can be toxic to plants. The *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1, recommends that the boron concentrations in waters used for agricultural irrigation (Agricultural Water Quality Goal) not exceed 700µg/l. Effluent discharge to surface waters may contain concentrations of boron that exceed the chemical constituent objective. Therefore, a boron effluent limitation presented in total concentration has been included in this General Order.
67. **Chromium VI** is toxic to aquatic life. It is soluble and is not sorbed to any significant degree by clays or hydrous metal oxides, and therefore may not be adequately removed by settling in the dewatering facility. The USEPA's 4-day average Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for chromium VI is 11 µg/l. Applying the Policy for Application of Water Quality Objectives, a chromium VI effluent limitation, based on the Basin Plan narrative toxicity objective, has been included in this General Order.
68. The Basin Plan contains a chemical constituent objective in the Sacramento-San Joaquin Delta for **Copper** of 10 µg/l. The CTR also contains copper criteria that vary with hardness. At levels less than a hardness of 120 mg/l as CaCO₃, the 4-day average CTR criterion is more stringent than the Basin Plan objective. Based on data contained in the DREDGE database, the effluent concentration of copper in the Delta has been reported as high as 441 µg/l. Applying the Policy for Application of Water Quality Objectives, a copper effluent limitation, based on the Basin Plan chemical constituents objective and the CTR criteria, has been included in this General Order.
69. The **Electrical Conductivity (EC)** may increase when dredged minerals are suspended in the water column and dissolved from the dredged sediments. EC may also increase when water in a dredged slurry dewatering facility evaporates. EC is a critical water quality parameter for determining the suitability of water for irrigation. The Basin Plan constituent objective for EC is 700 µmhos/cm (calculated with a 30-day running average, from April through August each year). During the period from September through March of each year, the constituent objective for EC is 1,000 µmhos/cm (calculated with a 30-day running average). An effluent limitation, based on the Basin Plan EC constituent objective, has been included in this General Order.
70. Based on data contained in the DREDGE database, the effluent concentration of **Lead** has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for Lead. Lead toxicity to aquatic life and humans is hardness dependent. The CTR limit for lead is 1.8 µg/l for the 4-day

chronic limit at 65 mg/l hardness. The Cal/EPA Office of Environmental Health Hazard Assessment has published a Public Health Goal of 2 ug/L for lead in drinking water. Applying the Policy for Application of Water Quality Objectives, an effluent limit for lead, based on CTR criteria and the Public Health Goal, and presented in total concentration, has been included in this Order.

71. The Basin Plan contains a chemical constituent objective of 50 µg/l for **Manganese** in the Sacramento-San Joaquin Delta. Based on data contained in the DREDGE database, the effluent concentration of manganese in the Delta has been reported as high as 597 µg/l. The discharge has a reasonable potential to cause violation of the Basin Plan chemical constituent objective for manganese. Therefore, a manganese effluent limitation, based on the Basin Plan chemical constituent objectives, has been included in this General Order.
72. Based on data contained in the DREDGE database, effluent discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR Standard for **Mercury**. Mercury bioaccumulates in animal tissue and can be harmful to human health. The CTR limit for mercury is 0.05 µg/l for sources of drinking water. Applying the Policy for Application of Water Quality Objectives, an effluent limit for mercury based on the CTR has been included in this General Order.
73. Based on data contained in the DREDGE database, the effluent discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR Standard for **Nickel**. Nickel is a heavy metal whose toxicity is hardness dependent. The CTR 4-day average limit for nickel is 52 µg/l at 100 mg/l hardness. Applying the Policy for Application of Water Quality Objectives, an effluent limit for nickel, based on the CTR and presented in total concentration, has been included in this General Order.
74. Based on data contained in the DREDGE database, the effluent concentration of tributyltin in the Delta has been reported as high as 1,400 µg/l. **Tributyltin** can be toxic to aquatic organisms. The USEPA's Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life 4-day average limit for tributyltin is 0.063 µg/l. Applying the Policy for Application of Water Quality Objectives, an effluent limitation for tributyltin, based on the Basin Plan narrative toxicity objective, has been included in this General Order.
75. Based on data contained in the DREDGE database, the effluent concentration of **Zinc** in the Delta has been reported as high as 31,390 µg/l. The Basin Plan for the Sacramento-San Joaquin Delta contains a chemical constituent objective for zinc of 100 µg/l. The CTR lists a 4-day average criterion for zinc of 81 ug/L for the protection of freshwater aquatic life. Applying the Policy for Application of Water Quality Objectives, a zinc effluent limitation, based on the

Basin Plan chemical constituents objective and the CTR criteria has been included in this General Order.

Pesticides

76. Delta waters are CWA 303(d) listed for **Chlorpyrifos**, which can be toxic to aquatic organisms. The USEPA's 4-day average Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for chlorpyrifos is 0.014 µg/l. Applying the Policy for Application of Water Quality Objectives, a chlorpyrifos effluent limitation, based on the Basin Plan narrative toxicity objective, has been included in this General Order.
77. Delta waters are CWA 303(d) listed for **Diazinon**, which can be toxic to aquatic organisms. The CDFG 4-day average Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for diazinon is 0.05 µg/l. Applying the Policy for Application of Water Quality Objectives, a diazinon effluent limitation, based on the Basin Plan narrative toxicity objective, has been included in this General Order.
78. The Basin Plan contains a pesticide objective for **OC Pesticides**. The Basin Plan states, "*Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by either the EPA or the Executive Officer.*" Based on data contained in the DREDGE database, effluent discharge in the Delta may contain OC pesticides. This General Order contains an effluent limitation prohibiting the discharge of OC pesticides at concentrations detectable within the accuracy of analytical methods.

PUBLIC NOTICE

79. All of the above, as well as the supplemental information and details in the attached Information Sheet, incorporated by reference herein, were considered in establishing the following conditions of discharge.
80. Interested agencies and persons were notified of the intent to prescribe a General Order for this group of discharges and were provided an opportunity for a public hearing, and an opportunity to submit their written views and recommendations.
81. In a public meeting, all comments pertaining to the discharges were heard and considered.

IT IS HEREBY ORDERED that all Dischargers that file a complete Report of Waste Discharge and are issued a Notice of Applicability under provisions of this General Order, and all heirs, successors, or designees, in order to meet the provisions

contained in Division 7 of California Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. The discharge from dredging operations, including material disturbed by either the cutter head or bucket during dredging, shall not cause or contribute to acute toxicity in the receiving waters.
2. Except as designated in the NOA or as described in Finding No. 22, the discharge of dredged material (water or solid waste) from a dredged material dewatering facility to surface waters and surface water drainage courses is prohibited.
3. Except for activities permitted by the U.S Army Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the CWA, soil, silt, or other organic material shall not be placed where such material could pass into surface water or surface water drainage courses.
4. Maintenance dredging shall be confined to the area of operation described in the NOA.
5. Maintenance dredging shall not exceed the maximum depth or volume stated in the NOA.
6. The discharge of dredged material shall be confined to the designated area stated in the NOA unless authorized for removal or reuse.
7. Bypass or overflow of untreated or partially treated sediment or water from the dredged material dewatering facility is prohibited.
8. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR is prohibited.
9. The discharge of petroleum products to surface waters is prohibited.
10. The discharge of OC pesticides at concentrations detectable within the accuracy of analytical methods is prohibited.
11. Activities shall not cause visible oil, grease, or foam in the work area or downstream.
12. Activities shall not cause turbidity to exceed 50 NTU in waters of the Central Delta and 150 NTU in other Delta waters as measured in surface waters 300 feet down-current from the project.

13. The discharge of domestic wastewater is prohibited.
14. The discharge to wetlands is prohibited.

B. Discharge Specifications:

1. The average daily return flow discharge rate shall not exceed 1 MGD.
2. The total amount of dredged material shall not exceed 100,000 cubic yards for any one Notice of Applicability.
3. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the California Water Code, Section 13050.
4. No constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitation.
5. Objectionable odors originating at this facility disposal site shall not be perceivable beyond the limits of the property owned or operated by the Discharger.
6. As a means of discerning compliance with Discharge Specification No. 5, the dissolved oxygen content in the upper zone (1 foot) of all standing water in the ponds shall not be less than 1.0 mg/l.
7. The Discharger shall maintain two feet of freeboard in the dewatering facility at all times.
8. All areas disturbed by the project activities shall be protected from washout and erosion. The Discharger shall develop and implement an Erosion Control Plan, which shall be submitted with the RWD.
9. The dewatering facility shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
10. Newly constructed or rehabilitated levees at dewatering facilities with a capacity greater than 10,000 cubic yards effective volume, less freeboard, shall be designed and constructed under the direct supervision of a California Registered Civil Engineer, or Certified Engineering Geologist.

11. The Discharger shall operate all systems and equipment to maximize treatment of return water and optimize the quality of the discharge.

C. Groundwater Limitation:

The discharge, in combination with other site-derived sources, shall not cause underlying groundwater to contain waste constituents statistically greater than background water quality.

D. Effluent Limitations:

The point of compliance for effluent limitations is the location where the effluent discharge to the receiving waters from the dewatering facility occurs. The actual point of compliance for each discharger will be specified in the NOA.

1. Effluent discharged to surface waters shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Maximum Concentration</u> ¹
Aluminum	µg/L	87
Arsenic	µg/L	10
Barium	µg/L	100
Boron	µg/L	700
Chromium VI	µg/L	11
Copper	µg/L	Attachment C
Lead	µg/L	Attachment D
Manganese	µg/L	50
Mercury	µg/L	0.05
Nickel	µg/L	Attachment E
Zinc	µg/L	Attachment F
Chlorpyrifos	µg/L	0.014
Diazinon	µg/L	0.05
Oil and Grease	mg/L	5
Tributyltin	µg/L	0.063

¹ Concentrations shall be determined using methods specified in the Monitoring and Reporting Program. Metal concentrations are dissolved except for lead, mercury, nickel, and boron, which are total recoverable.

² Intake water credits as described in the SIP Section 1.4.4 may be used.

2. The discharge shall not exceed the pH-Dependent Effluent Limits for ammonia shown on Attachment B.
3. The discharge shall not have a pH less than 6.5 nor greater than 8.5.
4. During the time period from 1 April through 31 August each year, the effluent discharge shall not have an EC value greater than 700 $\mu\text{mhos/cm}$ as calculated on a 30-day running average. From 1 September through March each year, the effluent discharge shall not have EC value greater than 1,000 $\mu\text{mhos/cm}$ as calculated on a 30-day running average.
5. The effluent shall not contain any constituent at concentrations that could cause acutely toxic conditions to aquatic life nor adversely impact biologically sensitive or critical habitats.
6. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the discharge at concentrations detectable within the accuracy of analytical methods approved by either the EPA or the Executive Officer.

E. Dredge Material Reuse Limitations

1. Sediment placed or reused for levee improvement projects with the potential to discharge runoff to surface waters shall not exceed the following leachable concentrations:

<u>Constituent</u>	<u>Units</u>	<u>Maximum Concentration</u> ^{1,2}
Aluminum	$\mu\text{g/L}$	87
Arsenic	$\mu\text{g/L}$	10
Chromium VI	$\mu\text{g/L}$	11
Copper	$\mu\text{g/L}$	10
Lead	$\mu\text{g/L}$	2.5
Manganese	$\mu\text{g/L}$	50
Mercury	$\mu\text{g/L}$	0.05
Zinc	$\mu\text{g/L}$	100

¹ Concentrations shall be determined using methods specified in the Monitoring and Reporting Program. Metal concentrations are dissolved except for lead, mercury, nickel, and boron, which are total recoverable.

² To be determined using California Code of Regulations, Title 22, Waste Extraction Test modified to use deionized water

F. Receiving Water Limitations

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this General Order.

The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/l in all other Delta waters, except for those bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use.
2. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.
3. Activities shall not cause turbidity increases in surface waters to exceed:
 - a. where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU;
 - b. where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
 - c. where natural turbidity is between 50 and 100 NTUs, increase shall not exceed 10 NTUs;
 - d. where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

In determining compliance with the above turbidity limit for in-water construction and excavation work (i.e. the dredge operation) shall be 300 feet down current of the operation.

4. Water quality objectives of constituents of concern as established in the Basin Plan follow. Chemical constituents shall not exceed these concentrations.

<u>Constituent</u>	<u>Units</u>	<u>Maximum Concentration</u> ¹
Arsenic	µg/L	10
Barium	µg/L	100
Copper	µg/L	10
Cyanide	µg/L	10
Iron	µg/L	300
Manganese	µg/L	50

<u>Constituent</u>	<u>Units</u>	<u>Maximum Concentration</u> ¹
Silver	µg/L	10
Zinc	µg/L	100

¹Metal objectives in this table are expressed in dissolved concentrations

5. Esthetically undesirable discoloration.
6. Fungi, slimes, or other objectionable growths.
7. The ambient pH to fall below 6.5, exceed 8.5, or the 30-day average to change by more than 0.5 units.
8. The ambient temperature to increase more than 5°F.
9. Deposition of material that causes nuisance or adversely affects beneficial uses.
10. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
11. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
12. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
13. Violation of any applicable water quality standard for receiving waters adopted by the Regional Water Board or the State Board pursuant to the CWA and regulations adopted thereunder.
14. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
15. The fecal coliform concentration in any 30-day period to exceed a geometric mean of 200 MPN/100 ml or cause more than 10 percent of total samples to exceed 400 MPN/100 ml.

G. Provisions

All of the following reports shall be submitted pursuant to California Water Code Section 13267 and shall be prepared by registered professionals as described by Provision G. 6:

1. If the project involves the upland placement of dredged material or dewatering of dredge slurry, the Discharger shall develop and implement an **Operation Plan** that describes site operations and procedures to be followed before, during, and after dredged sediment or dredge slurry placement. The Operation Plan must be submitted with the RWD and shall include emergency procedures for potential risks, including levee failures.
2. If the project will result in the construction of a new dredged material dewatering facility, then at least **60** days prior to construction of the facility, the Discharger must submit a Biological Assessment Report for the Executive Officer approval. The Biological Assessment Report shall, at a minimum, contain the following information:
 - a. A description of the project;
 - b. A map showing the site location for the project;
 - c. Review of the biological resources for the site and documentation that the project will not adversely affect endangered, threatened, or rare species and that the project will not adversely affect the habitat of such species;
 - d. A demonstration that the project will not interfere with the movement of native resident or migratory species; and
 - e. Documentation that the project will not conflict with policies or ordinances protecting biological resources or will conflict with an adopted Habitat Conservation Plan or other type of approved biological habitat management plan.
3. Pursuant to Section 13267 of the California Water Code, the Discharger may be required to submit other technical reports as directed by the Executive Officer.
4. The Discharger shall comply with the attached Monitoring and Reporting Program, which is part of this General Order, and any revision thereto as ordered by the Executive Officer.

5. The Discharger shall submit an Erosion Control Plan as described in Finding 25 of this Order.
6. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal, as appropriate.
7. The Discharger shall take all reasonable steps to prevent any discharge in violation of this General Order. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of the Notice of Applicability.
8. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are, by reference, a part of this General Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
9. The Discharger shall notify the Regional Water Board when the dredging project is complete, so that the Notice of Applicability may be withdrawn and the Discharger removed from coverage by this General Order.
10. The Discharger shall immediately notify the Regional Water Board by telephone whenever a violation or an adverse condition occurs as a result of the dredging and disposal operation or the discharge of effluent. Written confirmation shall follow within two (2) weeks. An "adverse condition" is defined as any action or incident that may result in a risk to public health and safety, condition of nuisance, violation of water quality standards or violation of other conditions of this General Order.
11. The Discharger shall not alternate any material or change the character, location, or volume of the discharge as described in the RWD.
12. The Discharger shall comply with all conditions of this General Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action, or imposing civil monetary liability, or in revision or rescission of the Notice of Applicability. The Regional Water Board considers the Discharger to have continuing responsibility for correcting any problems which may arise

in the future as a result of the dredging activities and of the subsequent use of the dredge material disposal sites.

13. This General Order does not relieve the Discharger from the responsibility to obtain other necessary local, State, and Federal permits to construct facilities necessary for compliance with this Order, nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency.
14. A copy of this General Order and the Notice of Applicability shall be kept as a reference for dredging operation personnel. Key operating personnel shall be familiar with their contents.
15. If the Regional Water Board adopts a site-specific individual waste discharge requirement order for a project authorized under this general order, the individual order automatically supersedes and voids the NOA.

I, PAMELA CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on _____.

PAMELA CREEDON, Executive Officer