POTENTIAL ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED CONSOLIDATED TOXIC HOT SPOTS CLEANUP PLAN

The previous section of this FED summarizes the environmental benefits of remediation of the high priority Toxic Hot Spots. However, CEQA requires public agencies to consider the potential adverse environmental effects of an action. In this case, the proposed action is SWRCB adoption of the proposed Consolidated Cleanup Plan as policy for water quality control. Consideration of potential adverse effects of remediation should be considered in the context of the fact that overall environmental conditions at these sites will be improved by remediation; and that potential adverse effects of remediation can be lessened by proper site-specific planning, site-specific compliance with laws protecting the environment, and application of mitigation measures outlined in the Consolidated Plan.

Potentially Adverse Significant Impacts

Analyzing the potential adverse impacts of adoption of an environmental policy or plan is considerably different in nature than the analysis of actions described in a more typical, public facility or private development environmental impact report. The environmental effects of a policy or plan do not occur directly as a result of the action (i.e., adoption of the document), but as an indirect consequence of the practices used to comply with the policy. The analysis of actions due to the SWRCB adoption of the proposed Consolidated Cleanup Plan should compare a baseline description of remediation practices under the existing regulatory framework (no Consolidated Cleanup Plan) with practices that would result from adoption of the Cleanup Plan.

Because of the extensive existing authority vested in the RWQCBs and the SWRCB by the Porter-Cologne Water Quality Control Act, all of the remediation alternatives identified in the Consolidated Cleanup Plan can take place regardless of whether the Plans are adopted by the RWQCBs and the SWRCB. At each of the high priority Toxic Hot Spots, beneficial uses have been shown to be adversely affected. The RWQCBs and the SWRCB currently have the authority to issue and revise waste

discharge requirements, and issue and implement enforcement actions to require remediation of these sites. Adoption of the Consolidated Cleanup Plan does not change RWQCB authority or responsibility to remediate the identified high priority Toxic Hot Spots, nor does adoption of the Plans change the physical way in which the sites might be remediated. The Consolidated Cleanup Plan is a response to a legislative requirement to identify sites, rank sites and plan for their cleanup. Because of this legislative mandate, remediation may be more likely to proceed.

The Consolidated Cleanup Plan provides both a number of alternatives for cleanup and a generic description of the remediation alternatives. Responsible parties may select among the identified remediation alternatives, or they may reject them all and propose another method to remediate the Toxic Hot Spot. (See Water Code Section 13360, which provides that the SWRCB and RWQCBs shall not specify the manner in which compliance may be had with a requirement, order, or decree. Persons shall be permitted to comply with the order in any lawful manner.)

A description of the existing environmental setting is provided in a previous section of this FED. However, a quantitative evaluation of environmental effects can only be done when site-specific remediation is selected and specific cleanup orders are developed. The exact timeframe for implementation of remediation alternatives is not known for many of the high priority Toxic Hot Spots.

For the above reasons, the potential environmental effects of identified remediation alternatives on the environmental setting at the time of remediation will be addressed in this FED in a generic, policy-level manner.

It is possible that the quality of the environment could be degraded or biological resources adversely impacted, at least temporarily, if cleanup and mitigation efforts are not carefully planned and executed. This FED is not intended to provide CEQA compliance of the individual remediation projects. Appropriate CEQA compliance is required when site-specific remediation plans are developed. The FED also provides policy-level mitigation measures that must be considered by the RWQCBs to lessen or avoid potential adverse environmental impacts of remediation.

Finally, it should be noted that the remediation alternatives identified in the Consolidated Cleanup Plan are regulated to protect against adverse impacts to the environment. Compliance with applicable laws, and local and State regulations will reduce the potential for significant adverse impacts to the environment. These regulatory programs are discussed in this section of the FED.

This section of the FED focuses on discussions of potential impacts to water resources, wetlands, air quality, fish and wildlife, and the handling and potential for release of pollutants. Other issues were evaluated and determined not to be significant based on the environmental checklist and supporting analysis included in a subsequent section of this FED.

The following table (Table 17) lists the high priority Toxic Hot Spots, and the remediation alternatives currently identified by the RWQCBs.

TABLE 17. IDENTIFIED REMEDIATION ALTERNATIVES

Site	Dredging/Excavation and Disposal	Capping	No Action Natural Recovery	Source Control[21]	Education-Institutional Controls[22]	Study[23]
Humboldt Bay Eureka Waterfront H Street	X					
San Francisco Bay (entire)				X	X	X
S.F. Bay - Peyton Slough	X	X				X
S.F. Bay - Castro Cove	X	X	X	X		X
S.F. Bay - Stege Marsh	X	X	X	X		X
S.F. Bay - Point Potrero	X	X	X		X	
S.F. Bay - Mission Creek	X	X	X	X		X
S.F. Bay - Islais Creek	X	X	X	X		X

[21] Includes watershed management, TMDLs, best management practices, the SWRCB and RWQCB storm water programs, treatment, pretreatment.

[22] Includes education to reduce use of products that are sources of pollutants; signs; warnings.

[23] Includes monitoring, investigation, feasibility studies, subsequent development of TMDLs independent of the cleanup plan (cf. Central Valley RWQCB pesticide cleanup plans).

Site	Dredging/Excavation and Disposal	Capping	No Action Natural Recovery	Source Control[21]	Education-Institutional Controls[22]	Study[23]
Moss Landing and tributaries	X			X	X	X
Cañada de la Huerta	X	X				X
Santa Monica Bay/Palos Verdes Shelf		X			X	
Mugu Lagoon	X		X			
McGrath Lake	X			X		
Los Angeles Inner Harbor/ Dominguez Channel Consolidated Slip	X					
Los Angeles Outer Harbor/ Cabrillo Pier	X	X				
San Joaquin River/ Sacramento River Delta, Mercury				X		X
San Joaquin River/ Sacramento River Delta, Dissolved Oxygen				X		X

Site	Dredging/Excavation and Disposal	Capping	No Action Natural Recovery	Source Control[21]	Education-Institutional Controls[22]	Study[23]
San Joaquin River/ Sacramento River Delta, Diazinon Dormant Spray				X	X	X
San Joaquin River/ Sacramento River Delta, Urban Stormwater Pesticide				X	X	X
San Joaquin River/ Sacramento River Delta, Irrigation Return Flow Pesticide				X	X	X
Lower Newport Bay, Rhine Channel	X					
San Diego Bay, Seventh Street Channel	X					

The Consolidated Cleanup Plan identifies 22 high priority toxic hot spots Statewide (Table 18). These sites are located in ocean waters (e.g., Santa Monica Bay), enclosed bays (e.g., sites in Humboldt Bay, Moss Landing Harbor, Los Angeles Harbor, Lower Newport Bay, San Diego Bay), estuaries (e.g., San Francisco Bay and the Sacramento/San Joaquin River Delta), and coastal lagoons (e.g., Mugu Lagoon). The size of the toxic hot spots ranges from approximately 1.5 acres to 1631 square miles (San Francisco Bay).

TABLE 18: AREAL EXTENT AND HABITAT AT TOXIC HOT SPOTS (SORTED BY AREAL EXTENT)

Toxic Hot Spot	Areal Extent	Habitat
San Francisco Bay, Point Potrero/ Richmond Harbor	Approximately 1 acre	Enclosed Bay
San Francisco Bay, Peyton Slough	Approximately 1.25 acres	Estuary/Slough
Lower Newport Bay, Rhine Channel	1.5 to 2.5 acres	Enclosed bay
Los Angeles Outer Harbor, Cabrillo Pier	25,000-50,000 cubic yards	Enclosed bay
Los Angeles/ Inner Harbor, Dominguez Channel/ Consolidated Slip	Approximately 50,000 cubic yards	Enclosed bay
Cañada de la Huerta, Shell Hercules Site	3600 feet x 1200 feet	Creek mouth
San Diego Bay, Seventh St. Channel Naval Station	Approximately 3 acres	Enclosed Bay
Humboldt Bay, Eureka Waterfront H Street	3.5 acres, 10,000 cubic yards	Enclosed bay
San Francisco Bay, Mission Creek	Approximately 9 acres	Estuary
San Francisco Bay, Stege Marsh	Approximately 10 acres to 23 acres	Estuary
San Francisco Bay, Islais Creek	Approximately 11 acres	Estuary

Toxic Hot Spot	Areal Extent	Habitat
San Francisco Bay, Castro Cove	Between 10 and 100 acres	Enclosed Bay
McGrath Lake	15,000 –300,000 cubic yards	Estuary
Mugu Lagoon east arm, Main Lagoon, western arm Calleguas Creek Tidal Prism	150 acres, 725,000 cubic yards	Coastal lagoon
Delta Estuary, Morrison Creek, Mosher, 5-Mile, Mormon Slough & Calaveras River	5 linear miles of back sloughs	Estuary
San Joaquin River, City of Stockton	Approximately 10 miles	River
Delta Estuary, Ulatis Creek, Paradise Cut, French Camp & Duck Slough	up to 15 linear miles of waterways	Estuary
Santa Monica Bay, Palos Verdes Shelf	Approx. 15 square miles	Ocean
Moss Landing Harbor and Tributaries	Harbor and Tributaries: 3,210 acres, lineal river miles 20 miles, and associated watershed subarea 187,596 acres	Enclosed Bay Estuaries and river
Delta Estuary, Entire Delta	78 square miles of water area, 1,000 linear miles of waterways	Estuary
Delta Estuary, Cache Creek	1100 square mile watershed, 1500 linear miles of creek	Creek in the Delta
San Francisco Bay, Entire Bay	1631 square miles	Estuary

Dredging, Disposal, and Capping

Many of the remediation alternatives outlined in the Consolidated Cleanup Plan involve dredging, disposal, and/or capping of polluted sediments (see Table 17). While removal of the polluted sediments will have a beneficial impact on aquatic life and human health (e.g., improvement in aquatic life resources, recreational opportunities, etc.), there may be environmental impacts associated with remediation.

Dredging involves the use of machinery with scooping or suction devices to remove sediment. Typical dredging methods include mechanical or hydraulic dredging. Mechanical dredging removes sediments through direct application of mechanical force and excavates the material at almost *in situ* densities. Sediments removed by a mechanical dredge are placed into a barge or boat for transport to the disposal site. Sediments can be resuspended by the impact of the bucket, by the removal of the bucket, and by leakage of the bucket. Mechanical dredging typically produces sediments low in water content.

Hydraulic dredging uses centrifugal pumps to remove sediments in the form of a slurry. Although less sediment may be resuspended at the removal site, sediment slurries contain a high percentage of water at the end of the pipe. The slurry is transported by pipeline to a disposal area.

Removal and consolidation can involve a diked or containment structure which retains the dredged material and assures that pollutants do not migrate. Large portable settling tanks can also be used to consolidate sediment. After consolidation, disposal to an off-site location may include either upland (landfill) or containment. Considerations once the material has been dredged shall be (1) staging or holding structures or settling ponds, (2) de-watering issues including treatment and discharge of wastewater, (3) transportation of dredged material, (i.e., pipeline, barge, rail, truck), or (4) regulatory constraints.

Capping involves subaqueous coverage of polluted sediments to contain the toxic waste at the site.

Potential Impacts to Air Quality

Emissions from equipment used for dredging, disposal, and capping have the potential for temporary adverse effects to air quality. The primary pollutants of concern in these emissions are NOx or nitrogen oxides (Grant Chin, Air Resources Board, pers.

comm.). NOx are precursors to ozone formation, and many of the remediation projects are located in areas which have been designated as nonattainment areas for ozone[24]. Nonattainment areas for State ambient air quality standards are all the coastal counties from San Diego County north to Marin County as well as Sonoma, Napa, Yolo, Sacramento, San Joaquin, Contra Costa, and Solano counties. In addition, nonattainment areas for National ambient air quality standards are all the coastal counties from San Diego County north to Santa Barbara County as well as San Mateo, San Francisco, Marin, Sonoma, Napa, Yolo, Sacramento, San Joaquin, Contra Costa, and Solano counties. Emissions from dredging operations are from mechanical or hydraulic dredges and supporting vessels.

Other emissions of concern could be carbon monoxide and PM_{10} (particulate matter < 10 microns). Los Angeles County is a nonattainment area for State carbon monoxide standards, and both the Los Angeles and Orange counties are carbon monoxide nonattainment areas under national standards. Los Angeles and Orange counties are also nonattainment areas for PM_{10} under national standards; all coastal counties are nonattainment areas for PM_{10} under State standards.[25]

In order to evaluate the air quality impact of emissions due to dredging, disposal, and capping equipment, the project proponent must identify the specific type of equipment that will be used in the remediation action. Next, emissions from the equipment must be quantified and evaluated in the context of air quality standards for the area in which the remediation is occurring, climate and meteorology, and time of year remediation will occur. A project scheduled in the winter may be less likely to cause exceedances of ozone standards than an action taken in the summer when ambient ozone levels are higher.

When evaluating the potential adverse effects to air quality, the project proponent must contact the appropriate regional air district for assistance in determining whether the amount of emissions generated at the remediation site will cause a violation of air

[24] Proposed Amendments to Designation Criteria and Amendments to the Area Designations for State Ambient Air Quality Standards and Proposed Maps of the Area Designations for the State and National Ambient Air Quality Standards, California Air Resources Board, August 1998; and errata with changes adopted by California Air Resources Board on September 24, 1998.

[25] Proposed Amendments to Designation Criteria and Amendments to the Area Designations for State Ambient Air Quality Standards and Proposed Maps of the Area Designations for the State and National Ambient Air Quality Standards, California Air Resources Board, August 1998; and errata with changes adopted by California Air Resources Board on September 24, 1998.

standards. Project proponents would be responsible for meeting the requirements of the local air quality district for their specific project. If there is potential for an air quality violation, the project proponent should attempt to prevent or control emissions. This can be done by operating equipment under permit, purchase of air credits or offsets, use of electric dredging equipment, planning the project for the time of year or day when emissions would be least likely to cause an exceedance of air quality standards, optimizing the mode of transportation, favoring disposal sites closer to dredge sites, and minimizing the number of trips necessary to transport dredged material to the disposal site or rehandling facility.

Subaqueous material has the potential to create objectionable odors (e.g., hydrogen sulfide), and this is a potential adverse impact to air quality at the site where dredged materials are disposed or reused. In addition, objectionable odors may occur during dredging of subaqueous material. Whether the odor is considered to be significant is a function of the location of the site and whether a substantial number of people are affected. The impact is expected to be less than significant due to the short duration and locations of these activities. Reuse and disposal facilities must be located and designed to avoid generating nuisance odors that will adversely affect surrounding neighborhoods.

Water Resources and Wetlands

Generally, the stated goal of the State and Federal agencies is no net loss of wetlands (this includes acreage and value). This is done by requiring mitigation in the following order:

- Avoiding impacts by issuing permits only for the least environmentally damaging practical alternative or reconfiguring the project;
- minimizing impacts by modifying the project or restoring areas temporarily affected during a phase of the project; and, finally, if necessary
- compensating for unavoidable adverse impacts by restoring or creating wetlands:
  (1) restoring existing degraded wetlands
  (2) creating new wetlands in upland sites.

The proper application of the regulatory requirements (presented below generally) for project review and mitigation should reduce the potential for impacts to wetlands and water quality due to disposal of dredged materials.

Project-specific planning can also reduce the potential for adverse environmental effects due to dispersal of polluted sediments. Following is a discussion of the regulatory framework and issues that should be considered when planning for disposal of polluted sediments.

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne) establishes a comprehensive program for the protection of water quality and beneficial uses of water. It applies to surface waters including wetlands. Porter-Cologne requires adoption of Water Quality Control Plans that identify beneficial uses of waters, water quality objectives that will protect the uses, specified discharge prohibitions, and a plan of implementation for achieving water quality objectives. Typical beneficial uses include water supply, water contact and non-contact recreation, warm freshwater habitat, wildlife habitat, ground water recharge, preservation of rare and endangered species, and establish a program of implementation. Anyone discharging or proposing to discharge materials that could affect water quality (other than to a community sewer system) must file a report of waste discharge. The RWQCBs regulate discharges under Porter-Cologne primarily through issuance of WDRs. WDRs are intended to protect the beneficial uses of water bodies, and list what can and can not be discharged to waters of the State.

CWA Section 404/401

Under CWA Section 404, the Corps issues permits to regulate discharges of dredged or fill material to waters of the United States. The CWA Section 404(b)(1) Guidelines are the environmental criteria used in evaluating discharges of dredged or fill material under CWA Section 404. Under the guidelines, the analysis of practicable alternatives is the primary screening mechanism to determine the necessity of permitting a discharge of dredged or fill material into regulated waters. The guidelines prohibit all discharges of dredged or fill material into regulated waters unless the discharge constitutes the least environmentally damaging practicable alternative that will achieve the basic project purpose.

Disposal or discharge of dredged materials into waters of the United States (including wetlands) are highly regulated in order to protect against adverse environmental effects as well as to protect against net loss of wetlands. Section 404(a) of the Clean Water Act makes it unlawful to discharge dredged materials into waters

of the United States without a permit from the Army Corps of Engineers. The Corps must conduct a public interest review that weighs benefits versus detriments of the project and considers all relevant factors including: conservation, aesthetics, wetlands, flood hazards, flood plain values, navigation, recreation, water quality, safety, mineral needs, economics, general environmental concerns, cultural values, fish and wildlife values, land use, shoreline erosion and accretion, water supply and conservation, energy needs, food and fiber production, property ownership, and the needs and welfare of the public. The permit process must comply with National Environmental Policy Act (NEPA).

The Corps may also issue General Permits for discharges of dredged materials that have minimum adverse environmental effects (including cumulative effects). General Permits usually contain project-specific mitigation requirements. Nationwide Permits are issued by the Corps for specified types of projects that are limited in size and impacts.

Section 404(b)(1) directs the U.S. EPA to develop guidelines for issuance of fill permits. The stated policy in these guidelines is that discharges of dredged or fill material into waters of the United States should not be conducted unless it can be proven that it will not have an unacceptable adverse direct or cumulative impact. U.S. EPA may prohibit placement of fill if there will be an unacceptable adverse effect on: municipal water supplies, shellfish beds, fisheries, wildlife, or recreation areas. The guidelines provide that dredged or fill material shall not be permitted in a water of the United States if there is a practicable alternative that would have less impacts. For "Special Aquatic Sites" (wetlands, wildlife sanctuaries, mudflats, vegetated shallows, and riffle and pool complexes in streams), the guidelines presume that practicable alternatives are available and the permit applicant must provide otherwise. The CWA Section 404(b)(1) Guidelines are the substantive environmental criteria used in evaluating discharges of dredged or fill material under CWA Section 404. Under the guidelines, the analysis of practicable alternatives is the primary screening mechanism to determine the necessity of permitting a discharge of dredged or fill material into regulated waters. The guidelines prohibit all discharges of dredged or fill material into regulated waters unless the discharge constitutes the least environmentally damaging practicable alternative that will achieve the basic project purpose.

CWA Section 401 allows states to deny or grant water quality certification for any activity which may result in a discharge to

waters of the United States and which requires a Federal permit or license. Certification requires a finding by the State that the activities permitted will comply with all water quality standards individually or cumulatively over the term of the permit. Under Federal regulations (40 Code of Federal Regulations Section 131), water quality standards include the designated beneficial uses of the receiving water, the water quality criteria for those waters, and an antidegradation policy. Certification must be consistent with the requirements of the Federal CWA, the CEQA, the California Endangered Species Act (CESA), and the SWRCB's mandate to protect beneficial uses of waters of the State.

The SWRCB considers issuance of Water Quality Certifications for the discharge of dredged and fill materials. CWA Section 401 allows the State to grant or deny water quality certification for any activity which may result in a discharge to navigable waters and which requires a federal permit. Title 23 California Code of Regulations Section 3830 provides the regulatory framework under which SWRCB issues Water Quality Certifications under CWA Section 401. The Corps may not issue a Section 404 permit if the State denies water quality certification.

In order to certify a project, the SWRCB must certify that the proposed discharge will comply with all of the applicable requirements of CWA Sections 301, 302, 303, 306, and 307 (42 U.S.C. §§ 1311, 1312, 1313, 1316, and 1317). Essentially, the SWRCB must find that there is reasonable assurance that the certified activity will not violate water quality standards. Water quality standards include water quality objectives and the designated beneficial uses of the receiving water. CEQA compliance is required during the Section 401 water quality certification process. CWA Section 401 requires the water quality certification process to comply with CWA Section 404(b)(1) Guidelines.

In addition to the 404(b)(1) guidelines, both the San Francisco and Los Angeles districts of the U.S. Army Corps of Engineers have habitat mitigation and monitoring guidelines, and California DFG, Fish and Wildlife, and NMFS have wetlands mitigation guidelines. Fish and Game Code Section 5650 could also be invoked if there is the discharge of deleterious substances into the environment.

Stream Bed Alteration Agreement Program

Fish and Game Code Section 1600 et seq. establishes a process to ensure that projects conducted in and around lakes, rivers or streams do not adversely impact fish and wildlife resources, or

when adverse impacts cannot be avoided, ensures that adequate mitigation and or compensation is provided. Sections 1601 and 1603 of the Fish and Game Code are the primary sections with regard to developing Stream Bed Alteration Agreements. Projects that divert, obstruct or change the natural flow or bed, channel or bank of any river, stream, or lake where there is an existing fish or wildlife resource are subject to Section 1600. Fish and Game Code 1601 regulates the agreement process for projects proposed by state or local government agencies or public utilities while section 1603 regulates the process for projects proposed by all private project sponsors and federal projects without a state agency sponsor.

Landfill Disposal

In some cases, the cleanup of sites may generate significant amounts of materials that could be disposed in an appropriately designated solid waste disposal site. This could create increased demand for landfill capacity. In order to assess the potential effect to landfills, the areal extent and volume of sediment should be characterized. Once this is done, project impact to landfill capacity can be evaluated. If estimates exceed capacities, plan for alternative use of polluted sediments to remove impact (e.g., land-based confined disposal facilities, capping confined aquatic disposal, wetland restoration, levee reuse). Environmental effects and mitigation of site-specific impacts of these other alternatives would have to be evaluated.

Rehandling Facilities and Confined Disposal Facilities

Rehandling facilities are a link between dredging projects and the ultimate disposal of dredged material in upland projects. Dredged materials are typically off-loaded from barges, dewatered, dried, then transported to a final destination. Material (such as polluted sediments) that requires confinement may be transported to a dedicated confined disposal facility (CDF) constructed for the permanent storage of the dredged material, to other existing sites (e.g., landfills) that provide the necessary confinement. It is unknown if there is adequate rehandling or CDF capacity to handle the volume and quality of dredged material identified for removal in the Consolidated Plan.

Consequently, it is necessary when site-specific projects are considered that an evaluation be completed on the availability of rehandling facilities and CDFs (LTMS, 1996). If inadequate capacity is available, the RWQCB should consider, in the planning effort, the development of new facilities. In the evaluation of new

facilities the RWQCB should consider, but not be limited to: (1) site selection, (2) facility construction practices, (3) facility operation,
(4) facility administration and maintenance, and (5) regulatory, mitigation, and monitoring requirements (Table 19).

TABLE 19: DREDGE MATERIAL DISPOSAL ISSUES RELATED TO REHANDLING FACILITIES AND CONFINED DISPOSAL FACILITIES TO BE ADDRESSED DURING PROJECT-SPECIFIC REVIEW

Factor to be Considered	Issues to be Addressed During Project-Specific Review.
Site Selection	Water access to site
	Evaluation of site conditions: • elevation • tidal range • Alignment and elevation of existing levees • area available for dredged material use (fill depth) • Typical foundation conditions • Characteristics of dredged material to be used (e.g., material density, grain size, dredge method, etc.
	Assessment of land uses
Site Construction	Assessment of adequately engineered and constructed perimeter and interior levees
	Assessment of the feasibility of proposed dredged material off-loading facilities and methods of transporting the dredged material
Site Development	Proximity to channel with sufficient water depth to allow access for dredged material off-loading.
	Sufficient mooring for barges
	Evaluation of suitable off-loading site(s) in terms of proximity to the site of final use and its ability to handle the proposed types of off-loading equipment.
	Evaluation of the proposed means for dredged material placement at the site of final use.
	Evaluation of the ability to prevent overfilling of the site of final use.
Facility Administration and Maintenance	Evaluation of the proposed management of all construction operations and post-construction maintenance.
	Evaluation of the proposed inspection and supervision of contractors working on site.
Regulatory, Mitigation and Monitoring Requirements	Determination of the need for Federal and State permits or reviews.
	Determination of the need for local approvals.
	Evaluation of the proposed mitigation and monitoring plans to ensure compliance with all applicable Federal and State regulations and policies.

Capping or Confined Aquatic Disposal

Capping or Confined Aquatic Disposal (CAD) generally refers to capping polluted sediments but can also include nearshore fill or wetland creation projects where polluted sediments are not used as cover material. CAD projects must include consideration of siting, design and monitoring (Table 20). Polluted sediments must be placed at a CAD site with acceptable levels of dispersion, and the cap must be successfully placed and maintained. The evaluation process for a CAD project includes selection of an appropriate site, characterization of both polluted and capping sediments, selection of equipment and placement techniques, prediction of material dispersion during placement, determination of the required cap thickness, evaluation of cap stability against erosion and bioturbation, and development of a monitoring program to assess the effectiveness of the capping project (LTMS, 1996).

TABLE 20: ISSUES RELATED TO CONFINED AQUATIC DISPOSAL AND CAPPING SITES TO BE ADDRESSED DURING PROJECT-SPECIFIC REVIEW

Factor to be Considered	Issues to be Addressed During Project-specific Review.
Site Selection	Depositional/erosional characteristics • Identify if site is depositional or erosional to assess dispersion during cap placement • The potential for later cap erosion The need for armoring or long-term cap maintenance.
	Current velocities • Water column currents (affect dispersion during cap placement) • Bottom currents (affect resuspension; erosion of mound and cap) • Storm-induced waves (affect maximum bottom current velocities)
	Bathymetry that may confine the material and reduce dispersion and erosion • Natural or man-made depressions • Other features including constructed subaqueous berms
	Other siting issues • Location relative to sensitive resources • Capacity to meet the disposal need • Depth and width needed to maintain the spread of material during placement • Water access • Potential for interference with navigation traffic or other activities
Design	Potential water column impacts during placement • Release of pollutants • Water column toxicity • Mass loss of pollutants • Initial mixing
	Efficacy of cap placement • Type of capping material • Dredging/placement method for polluted sediment • Dredging/placement method for cap material • Compatibility of site conditions, material types, and dredging/placement methods

Factor to be Considered	Issues to be Addressed During Project-specific Review.
	Long-term cap integrity • Physical isolation of pollutants • Bioturbation of the cap by benthos • Consolidation of the sediments (both cap and polluted sediments) • Long-term pollutant loss (due to advection/diffusion) • Potential for physical disturbance of the cap (e.g., by currents, waves, anchors, ship traffic)
	Cap composition and thickness • Thickness needed for physical isolation • Thickness needed for bioturbation • Consolidation of both confined and cap material • Potential need for cap armoring against worst case erosive events
Monitoring	Ensure polluted sediments are placed as intended, with acceptable levels of dispersion and release • Pre-disposal bathymetry surveys, as appropriate • Plume monitoring during placement
	Ensure cap material is placed as intended, and that required thickness is attained and maintained • Intermediate post-capping bathymetry surveys • Core samples through cap immediately after capping • Sediment toxicity testing
	Ensure cap remains effective in isolating the polluted material • Periodic post-capping bathymetry surveys • Periodic core samples through cap • Sediment toxicity testing and chemical measurements

Proper cap design and construction can avoid adverse impacts such as perforation of the cap by burrowing organisms and exposure of underlying contaminated sediment to the water column; inability of aquatic plants such as an eel grass, to become established over the cap; or prohibition by local planning agency of changing tidal prism. Potential for these impacts can be avoided by placement of a layer of rock or gravel over underlying sediment to exclude burrowing organisms, such as burrowing shrimp; placement of a layer of sand of appropriate grain size over the layer of armor rock or gravel; and dredging at site adjacent to the cap to remove an equal amount of bottom material to provide no net change in tidal prism. Anchoring of vessels over the cap can result in destruction of bottom habitat by anchors and keels; resuspension of bottom sediment by propeller wash; destruction of the cap, or depositing of trash or oil. These potential impacts can be avoided by marking the cap on navigation charts; excluding vessels from areas near the cap; or selection of dredging as the remediation alternative. Many of the mitigation measures outlined above to reduce or avoid impacts due to dredging and disposal are also appropriate for capping.

Placement of a cap could release pollutants into the marine environment if the design and deployment of capping materials are not properly done. Monitoring must be conducted to verify the integrity of the final cap.

Other water resources issues

Dredging equipment can cause turbulence in the water body and thus the dredging process can cause short-term adverse impacts to water quality from turbidity or from stirring up pollutants in the sediment. These impacts can be regulated through WDRs and can be reduced by requiring use of dredging equipment or operations that minimize the discharge of chemical pollutants during dredging (e.g., use of clam shell dredger, etc.), use of settling tanks to reduce excessive turbidity in discharge, use of silt curtains to reduce dispersal of turbidity plume beyond dredge site, coffer dams in small channels, and accurate positioning of disposal equipment during dredging. DFG also has dredging regulations to protect against adverse biological impacts.

At some sites, a portion of the cleanup activity will take place on the shoreline. Depending on the cleanup method selected for the shore line activity, minor changes in absorption rates, drainage patterns, and the rate of surface runoff may change. On land, excavation can be mitigated by performing all work during the dry

season and using best management practices for the control of erosion.

In addition, runoff from excavation activities or disposal of dredged materials above sea level can adversely affect surface water quality. Impacts from land excavation can be reduced by doing work during the dry season or by implementing BMPs to reduce erosion. Most local governments also have erosion control ordinances and grading ordinances.

Changes in bottom contours brought by dredging or capping would probably have minimal effects on water circulation if properly managed. Relatively small areas are under consideration for modification at most of the sites. At larger sites, removal and placement will attempt to retain regional bottom depth and contour, except where bathymetry is planned for environmental improvement.

Dredging activities have the potential to destabilize channel slopes and undermine pilings. Standard engineering practices such as installation of sheet pile walls at the toe of the shore slope would reduce or avoid this impact.

Biological resources

Dredging, disposal, and capping all have the potential to cause adverse effects to biological resources in several ways: short-term habitat destruction and displacement of sensitive species, possibly during critical periods such as nesting, disturbance of sensitive spawning or migrating fish species due to turbidity, and "take" of endangered species.

As described in the Environmental Setting and Remediation at Toxic Hot Spots sections of this document, identified remediation alternatives occur in various types of habitats. As explained earlier in this FED, provisions of the cleanup plans are expected to result in the removal of pollutants that have adverse effects on plants and animals. This will improve habitat, and encourage development of and protect rare and endangered species as well as fish and wildlife generally. There is a possibility that the quality of the environment could be temporarily degraded and that there could be effects on endangered species if cleanup and mitigation projects are not carefully planned and executed. Potential adverse effects of identified remediation alternatives vary with different habitats, species, and time of year, as well as methods for remediating the site. Any potential adverse effects would be mitigated through consultation with the DFG and the USFWS. The SWRCB received

a CESA consultation letter from DFG during the development and review of the Policy on Guidance for Development of Toxic Hot Spot Cleanup Plans (SWRCB, 1998a; 1998b). The DFG consultation letter reiterated that the toxic hot spot cleanup actions, if implemented by the RWQCBs, would most likely result in the long term in beneficial impacts for threatened and endangered species and the habitat upon which they depend, but it also noted the potential for short-term adverse impacts to threatened and endangered species during the cleanup effort itself if not properly planned. The DFG consultation letter requested that DFG continue to be informed and involved in the evolving toxic hot spot cleanup plans as they were prepared by the RWQCBs, and in fact deferred any final determination of impacts to threatened and endangered species until site specific cleanup plans were actually proposed. Similar DFG consultation letters were prepared for each Regional Toxic Hot Spots Cleanup Plan, again, requesting continued DFG involvement in the review of and comment upon threatened and endangered species potential impacts from project specific actions for cleanup at individual sites. DFG recognized that most negative biological resource impacts, if any, would be minimal and temporary if planned properly.

Table 21 is a list of Federal and State listed endangered and threatened animals which DFG staff (Puckett, pers. comm.) believes could possibly be present, or have habitat they depend on, and thus could possibly be adversely impacted, if only temporarily, during cleanup implementation at the toxic hot spots sites. (Remediation activities in the Central Valley/Delta region bring in many of the non-marine/estuarine species.) According to DFG, there could be others and some of those listed are probably not present at any of the 21 sites; but this provides a broad brush look at species that could be affected. Ultimately, the precise determination of what is present at a particular site will have to come with the definitive project for a site.

TABLE 21: ENDANGERED AND THREATENED ANIMALS THAT MAY BE PRESENT AT IDENTIFIED TOXIC HOT SPOTS

Organism	Classification			
	State	List Date	Federal	List Date
FISHES				
Winter-run chinook salmon[26] (*Oncorhynchus tshawytscha)*	SE[27]	9-22-89	FE[28]	3-23-94
Chinook salmon-Central valley fall/late fall-run ESU[29] (*Oncorhynchus tshawytscha*)			FPT[30,31]	3-9-98
Chinook salmon-So. Oregon & California coastal ESU[32] (*Oncorhynchus tshawytscha)*			FPT	3-9-98
Spring-run chinook salmon (*Oncorhynchus tshawytscha*)	ST	8-28-98[33]	FPT[34]	3-9-98
Coho salmon-Central California ESU (*Oncorhynchus kisutch*)	SE[35]	12-31-95	FT[36]	11-30-96
Coho salmon-Do. Oregon/No. California ESU[37] (*Oncorhynchus kisutch*)			FT	6-5-97
Steelhead-Central California Coast ESU[38] (*Oncorhynchus mykiss*)			FT	10-17-97
Steelhead-South/Central California Coast ESU[39] (*Oncorhynchus mykiss*)			FT	10-17-97
Steelhead-Southern California ESU[40] (*Oncorhynchus mykiss*)			FE	10-17-97
Steelhead-Central Valley ESU[41] (*Oncorhynchus mykiss*)			FT	5-18-98
Sacramento splittail (*Pogonichthys macrolepidotus*)			FPT	1-6-94
Colorado Squawfish	SE	6-27-71	FE	3-11-67

[26] Federal: Sacramento River winter run chinook salmon

[27] SE = State-listed Endangered

[28] FE = Federally-listed Endangered

[29] ESU = Evolutionarily Significant Unit

[30] FPT = Federally proposed (Threatened)

[31] Populations spawning in the Sacramento & San Joaquin Rivers and their tributaries

[32] All naturally spawned coastal spring & fall chinook salmon spawning between Cape Blanco, Oregon (inclusive of the Elk River) and Pt. Bonita, California

[33] The Fish & Game Commission has voted to list; administrative rulemaking is in progress

[34] Federal: Central Valley Spring-Run ESU. Includes populations spawning in the Sacramento River & its tributaries

[35] The State listing is limited to Coho south of San Francisco Bay

[36] The federal listing is limited to naturally spawning populations in streams between Punta Gorda, Humboldt Co. & the San Lorenzo River, Santa Cruz Co.

[37] Populations between Cape Blanco, Oregon and Punta Gorda, California

[38] Federal: *Oncorhynchus (=Salmo) clarki seleniris*

[39] Coastal basins from the Russian River, south to Soquel Creek, inclusive. Includes the San Francisco & San Pablo Bay basins, but excludes the Sacramento-San Joaquin River basins

[40] Coastal basins from the Santa Maria River, south to the southern extent of the range (presently considered to be Malibu Creek)

[41] The Sacramento and San Joaquin Rivers and their tributaries

Organism	Classification			
	State	List Date	Federal	List Date
(*Ptychocheilus lucius*)				
Unarmored threespine stickleback	SE	6-27-71	FE	10-13-70
(*Gasterosteus aculeatus williamsoni*)				
Tidewater goby			FE	2-4-94
(*Eucyclogobius newberryi*)				
Rough sculpin	ST	1-10-74		
(*Cottus asperrimus*)				
AMPHIBIANS				
Santa Cruz long-toed salamander	SE	6-27-71	FE	3-11-67
(*Ambystoma macrodactylum croceum*)				
California red-legged frog			FT	5-20-96
(*Rana aurora draytonii*)				
BIRDS				
California brown pelican[42]	SE	6-27-71	FE	10-13-70
(*Pelecanus occidentalis californicus*)				
Bald eagle	SE(rev)	10-2-80	FT	8-11-95
(*Haliaeetus leucocephalus*)	SE	6-27-71	FE(rev)	2-14-78
			FE	3-11-67
Swainson's hawk	ST	4-17-83		
(*Buteo swainsoni*)				
Peregrine falcon			FPD	8-26-98
(*Falco peregrinus*)			FE (S/A)[43]	3-20-84
American peregrine falcon	SE	6-27-71	FPD	8-26-98
(*Falco peregrinus anatum*)			FE	10-13-70
California black rail	ST	6-27-71		
(*Laterallus jamaicensis coturniculus*)				
California clapper rail	SE	6-27-71	FE	10-13-70
(*Rallus longirostris obsoletus*)				
Light-footed clapper rail	SE	6-27-71	FE	10-13-70
(*Rallus longirostris levipes*)				
Western snowy plover[44]			FT	4-5-93
(*Charadrius alexandrinus nivosus*)				
California least tern	SE	6-27-71	FE	10-13-70
(*Sterna antillarum browni*)				
MAMMALS				
Salt-marsh harvest mouse	SE	6-27-71	FE	10-13-70
(*Reithrodontomys raviventris*)				
Steller (=northern) sea lion			FT	4-5-90
(*Eumetopias jubatus*)				

[42] Federal: Brown pelican, *Pelecanus occidentalis*

[43] "(S/A)" is the Federal code for "similarity of appearance". (Not included in counts of listed species)

[44] Federal status applies only to the pacific coastal population

Organism	Classification			
	State	List Date	Federal	List Date
Southern sea otter (*Enhydra lutris nereis*)			FT	1-14-77

Turbidity during dredging activities have the potential to disrupt spawning periods or the migration of fish species or exceedances of water quality objectives. Mitigation to reduce turbidity is discussed in the water quality section of this FED. Impacts to sensitive species can be further mitigated by avoiding dredging and excavation activities during periods when species are spawning or migrating through the remediation site.

Dredging and aquatic disposal normally can result in short-term impacts to benthic communities. However, these communities would be expected to fully recover within a relatively short term (typically 2-3 years).

Another potential adverse impact, which can usually be avoided by proper planning, is the possible disturbance of nesting activities of threatened or endangered bird species, such as snowy plovers, least terns, etc. Cleanup actions would obviously have to be planned to occur in time periods when it would not impact such nesting activities.

Sensitive species may be displaced by removing habitat or threat of burial or contamination of sensitive habitats due to excessive turbidity caused by dredging operations. Mitigation to reduce turbidity is discussed in the water quality section of this FED. Bird species (e.g., least terns) may also be impacted by sediment management activities. Any displaced habitats should be replaced nearby with equal or greater area and density, and restoration of the site or restoration of an offshore location should be required to mitigate for loss of any intertidal habitat.

While in general the DFG believes that remediation of the identified high priority toxic hot spots would benefit endangered species in California (SWRCB, 1998b), the DFG, and where appropriate the USFWS and NMFS, must be consulted as site-specific remediation plans are developed. Under the California Endangered Species Act, no person can "take" endangered or threatened species, except in cases where the DFG issues an

"incidental take" permit. Such a permit can only be issued if all of the following conditions are met (Attwater, 1999):

- The take is incidental to an otherwise lawful activity.
- The impacts of the take are minimized and fully mitigated.
- The permit is consistent with any applicable Department regulations.
- The applicant ensures adequate funding to implement the mitigation measures and for monitoring compliance with, and effectiveness of, those measures.
- Permit issuance would not jeopardize the continued existence of the species.

Mitigation actions DFG has typically required in association with incidental take authorizations and consultations have included:

- Protection of habitat of the affected species
- Establishment of an endowment to manage the protected habitat
- Provision of funds for enhancement of the protected land by fencing, initial trash cleanup, and related measures
- Implementation of various standardized construction avoidance measures
- Implementation of various standardized construction monitoring and reporting actions
- Implementation of other miscellaneous actions to reduce potential impacts; e.g., requiring that construction or operations employees be given orientation and training regarding the sensitive species, their habitats, and actions to be taken to minimize or avoid impact.

The USFWS or NMFS must also be consulted if the remediation is considered to be a federal action. The remediation alternatives that involve the disposal of dredged material in waters of the United States will require consultation with these agencies through CWA Section 404 permitting processes. Involvement of USFWS and NMFS is required in other projects if the actions are authorized, funded, or carried out by federal agencies.
A remediation project cannot proceed if it is determined that the project would jeopardize the continued existence of a endangered species.

Hazards and Polluted Sediments

In any action involving toxic pollutants, there is a potential for release of pollutants due to an accident or upset condition. The potential for such releases can be greatly reduced by proper planning. Measures to prevent releases of toxic pollutants include such things as pollution prevention technology (e.g., automatic sensors and shut-off valves, pressure and vacuum relief valves, secondary containment, air pollution control devices, double walled tanks and piping), access restrictions, fire controls, emergency power supplies, contingency planning for potential spills and releases, pollution prevention training and other types of mitigation appropriate to the cleanup plan.

In southern California, at least one high priority toxic hot spot may have been the site of disposal of ordnance. Dredging near a former explosives disposal area could pose a danger to people, equipment, and wildlife at the dredge site; and to the public at the disposal site. Risk of these potential hazards can be reduced by placing a grate at the dredge cutter head to reject large ordinance; disposal of dredge material where explosives could not cause harm; testing sediment for leakage of explosives; and inspection at disposal site.

Trucking hazardous explosive wastes over bridges or through neighborhoods has the potential to result in possibility of fire or explosion; exclusion of hazardous waste from certain neighborhoods; inability to get bridge-crossing permits in a timely manner. It may be necessary to select a remediation measure such as capping to avoid such hazards. Fuels, lubricating oils, and other petroleum products will be used during cleanup activity. Well established techniques for controlling spills, leaks, and drips will be incorporated in the work plans to assure the control of petroleum products and any other chemicals used during the cleanup activity.

Source Control

The RWQCBs identified source control as a potential remediation approach for some of the high priority toxic hot spots in the proposed Consolidated Plan (see Table 22). A wide range of potential source control measures were identified, and these control measures are summarized below in Table 22. Project proponents are not, of course, limited to these source control measures.

TABLE 22. SUMMARY OF POTENTIAL SOURCE CONTROL MEASURES IDENTIFIED IN CONSOLIDATED TOXIC HOT SPOTS CLEANUP PLAN

Site	Study	TMDLs	NPS BMPs	Storm water Urban runoff	Public Education	Point source discharges	Other existing plans, policies
Cañada de la Huerta	X						
Delta Estuary Mercury	X	X					
Delta Estuary Pesticides (3 THS)		X	X	X	X		
Humboldt Bay "H" Street							
Los Angeles Inner Harbor							
Los Angeles Outer Harbor							
Lower Newport Bay Rhine Channel		X					
McGrath Lake		X	X				
Moss landing Harbor & Tributaries			X	X	X		X
Mugu Lagoon, Calleguas Creek Tidal Prism							
San Diego Bay, 7th Street Channel							
San Francisco Bay, Castro Cove	X						
San Francisco Bay, Entire Bay	X	X			X		X
San Francisco Bay, Islais Creek	X					X	
San Francisco Bay Mission Creek	X					X	

Site	Study	TMDLs	NPS BMPs	Storm water Urban runoff	Public Education	Point source discharges	Other existing plans, policies
San Francisco Bay, Peyton Slough	X						X
San Francisco Bay, Point Potrero							
San Francisco Bay, Stege Marsh	X						
San Joaquin River, Dissolved O_2	X	X					
Santa Monica Bay, Palos Verdes Shelf					X		

Some of the actions outlined in the Consolidated Cleanup Plan are related to addressing sources of pollutants in order to reduce the threat on the marine environment. Source control must be accomplished through existing RWQCB authority and includes a wide range of potential actions such as TMDLs, best management practices, the SWRCB and RWQCB stormwater programs, point source treatment, and pretreatment. It is not possible to evaluate the environmental effects of source control per se; one must evaluate the specific source control measure on a site-specific basis. It is not reasonably feasible at this time to evaluate the environmental effects of these hypothetical source control projects or mitigation measures for such hypothetical actions. In addition, as stated earlier in this document, this FED is not intended to take the place of site-specific CEQA review.

While adverse impacts are a possible consequence of source control measures for some sites, these impacts may be minimized or avoided by the implementation of a watershed management approach that balances the potential impacts (and cost effectiveness) of correcting the toxic hot spots. The watershed management approach should involve point and nonpoint dischargers in addressing prevention and remediation of toxic hot spots. The Consolidated Cleanup Plan requires this approach to address prevention of toxic hot spots.

Consequently, the environmental impact of source control efforts that result from a watershed management effort should be analyzed on a site-specific basis once the sites have been selected, and the function and general designs of the actions or facilities have been determined.

Watershed management is actually a process, rather than a regulatory requirement, and it is not possible to evaluate the physical environmental effects of such a process. Compared to the more traditional programmatic, regulatory approach to water management the watershed approach looks at all types of pollution and all sources of pollution. In a collaborative, stewardship effort, local interests are engaged with State and Federal interests, and land managers to work with water managers to solve complex resource management problems. The purpose of watershed management is variously viewed as (1) a method for increasing participation at the local level in water quality protection, (2) an approach to reducing the impact of nonpoint sources, (3) a strategy for integrating management of all components of aquatic ecosystems, and (4) a process for optimizing the cost effectiveness of a number of point and nonpoint source control efforts.

Water shed management is not a new centralized program that replaces existing programs. The significant advantage of a watershed management approach is it encourages a collaborative process where diverse interests (i.e., individuals, landowners, growers, municipal agencies, industries, environmental groups and agencies) can work in conjunction with the SWRCB and the RWQCB staff to develop a consensus on approaches for addressing water quality problems. Further, watershed management provides a mechanism for considering social and economic interests in the context of solving water quality problems.

Taking a comprehensive approach to addressing pollution problems where point and nonpoint source pollution is considered together provides an opportunity to minimize environmental impacts of future pollutant reductions and consider cost-effectiveness together. It is impossible to predict the outcome of this combined process before it is completed. The potential impacts and mitigation depend on future decisions of watershed groups and the RWQCBs. It is apparent in Table 22 that in many cases, the RWQCB includes further study of the sources of toxic hot spot pollutants prior to selection of control measures. These studies are consistent with the Consolidated Cleanup Plan requirement to address prevention of toxic hot spots through a watershed management effort.

Total Maximum Daily Loads (TMDLs)

TMDLs are required for all waters listed pursuant to CWA Section 303(d)(1)(A). TMDLs establish the amount of a pollutant that may be discharged into a water body and still maintain water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. The TMDL process is defined in Federal regulations (40 CFR Section 130.7, revised as of July 1, 1996) and generally consists of five steps:

1. Identification by each state of water quality limited waters that do not now, or are not expected to, attain state water quality standards after implementation of technology-based effluent limitations, more stringent effluent limitations required by Federal, State, or local authority, and other pollution control requirements (e.g., best management practices) required by local, State, or Federal authority, and identification of impairment;

2. Establishment of priority rankings for the development of TMDLs;

3. Development of waste load allocations for point sources, load allocations for nonpoint sources, and TMDLs;

4. Incorporation of the loadings in the RWQCB basin plans; and

5. Submittal of segments identified, priority ranking and loads established to U.S. EPA for approval.

Development of TMDLs can use the watershed approach to assess and identify water quality limited segments and pollutants causing impairment, identify sources, and allocate pollutant loads. The watershed approach may address a broader range of issues than the TMDLs, but the approach can: (1) result in achieving or maintaining water quality standards so that waters are not added to the 303(d) list; (2) result in water quality improvements, through means other than the TMDL process, so that waters can be removed from the 303(d) list; or (3) be used to develop TMDLs. A watershed group can develop a TMDL if the TMDL complies with applicable Federal requirements.

This Plan does not change the process for or technical development of TMDLs. It would be speculative to try in this FED to identify and evaluate potential environmental impacts of all possible means of implementing a TMDL that has not yet been established. TMDLs must be incorporated in RWQCB basin plans, and RWQCBs must comply with CEQA as part of the Basin Plan revision process.

Nonpoint Sources

~~Some of the RWQCB Toxic Hot Spot Cleanup Plans identify nonpoint source pollution control as an alternative for source control. Nonpoint source pollution control programs are used by the RWQCBs to protect beneficial uses in waters of the State affected by nonpoint source pollution dischargers. Currently, the SWRCB and RWQCBs are implementing these activities for control of nonpoint source pollution:~~

- ~~Nonpoint Source Management Plan (adopted by the SWRCB in November 1988);~~
- ~~Initiatives in Nonpoint Source Management (adopted by the SWRCB and submitted to USEPA in September 1995,~~

implementing the Coastal Zone Act Reauthorization Amendments);

- Management Agency Agreement (MAA) with the Department of Pesticide Regulation (DPR) and the Pesticide Management Plan (PMP) (1997); and the
- Watershed Management Initiative.

The Nonpoint Source Management Plan is the foundation of the SWRCB/RWQCB nonpoint source pollution control program. The NPS Plan states that nonpoint sources are a major cause of water pollution in California and that effective management of nonpoint sources will require:

- An explicit long-term commitment by the SWRCB and the RWQCBs
- More effective coordination of existing SWRCB and RWQCB nonpoint source related programs
- Greater use of RWQCB regulatory authorities coupled with non-regulatory programs
- Stronger links between the local, State, and Federal agencies which have powers that can be used to manage nonpoint sources
- Development of new funding sources.

The NPS Management Plan provides a general approach to addressing all types of nonpoint source discharges. It does not address specific measures for individual types of nonpoint source discharges of sources of nonpoint source pollution. Three management approaches, frequently referred to as the Three-Tier Approach, are presented to address nonpoint source pollution problems. RWQCBs have the discretion to decide whether or what mix of the three options are appropriate to address any given nonpoint source pollution problem. Those management approaches are:

1. Discharger voluntary implementation of BMPs;

2. Regulatory based encouragement of BMP implementation; and

3. Adoption of effluent limitations in WDRs.

BMPs are methods, measures, or practices designed and selected to reduce or eliminate the discharge of nonpoint source pollution. BMPs include structural and non-structural controls, and operation and maintenance procedures which can be applied before, during and/or after pollution producing activities. The NPS Plan also

states that "[i]n general the least stringent option that successfully protects or restores water quality will be employed, with more stringent measures considered if timely improvements in beneficial use protections are not achieved." The NPS Plan further states that "[w]hen necessary to achieve water quality objectives, RWQCBs will actively exercise their regulatory authority over nonpoint sources through enforcement of effluent limitations and other appropriate regulatory measures."

The Initiatives in Nonpoint Source Management (Initiatives) were developed in partial response to the Coastal Zone Act Reauthorization Amendments. CZARA requires states to develop and implement an enforceable nonpoint source program for reducing nonpoint source pollution from specific source and land-use categories in coastal areas. The U.S. EPA and the National Oceanic and Atmospheric Agency (NOAA) jointly prepared guidance documents with specific management measures that would fulfill CZARA requirements. Under the SWRCB's NPS Program, technical advisory committees (TAC) were formed to examine the U.S. EPA/NOAA management measures and their applicability to California. TACs were convened regarding: Confined Animals; Irrigated Agriculture; Pesticide Management; Plan Nutrient Management; Range Management; Abandoned Mines; Hydromodification; Wetlands and Riparian Areas; Marina and Recreational Boating; On-site Sewage Disposal Systems; and Urban Runoff. Each TAC prepared its own report with recommendations.

The Coastal Nonpoint Pollution Control Submittal consists of the NPS Plan and the Initiatives. This package was provided to the U.S. EPA and NOAA pursuant to Section 6217 of CZARA in September 1995. The Federal agencies have not taken final actin on the submittal.

The SWRCB and DPR have entered into a MAA to eliminate duplication of effort and inconsistency of actions dealing with pesticide use and water quality (SWRCB and DPR, 1997). The PMP describes how DPR and the County Agriculture Commissioners will work in cooperation with the SWRCB and the RWQCBs to protect water quality from the use of pesticides. The PMP contains, among other things, provisions for outreach, compliance with water quality objectives, ground and surface water protection, self-regulatory and regulatory compliance. The MAA is a useful tool for addressing nonpoint source runoff.

~~The Watershed Management Initiative (WMI) will guide a portion of SWRCB and RWQCB work and resource allocation decisions through a comprehensive perspective that considers water-related impacts within the context of a watershed. Under the WMI, each organization is preparing workplans (Chapters) that describe work activities and resource needs for the next five to seven years in targeted and nontargeted areas. The goals of the WMI are to:~~

~~1. Integrate water quality monitoring, assessment, planning, standard setting, permit writing, point source regulatory programs, nonpoint source management, ground water protection, and other programs at the SWRCB and RWQCBs to promote more efficient use of personnel and fiscal resources while ensuring maximum water quality protection benefits;~~

~~2. Provide water resource protection, enhancement, and restoration while balancing economic and environmental impacts by phasing in an integrated watershed management approach;~~

~~3. Promote cooperative relationships and better assist the regulated community and the public. This will require that the WMI approach include coordination with other Federal, State, and local agencies, as well as stakeholder participation in policy development and review; and~~

~~4. Reduce the impact of nonpoint source discharges on water quality through voluntary, collaborative decision-making at the local level that is open to all stakeholders.~~

~~The RWQCB basin plans provide additional discussion and provisions, such as, conditional waivers of WDRs for some types of nonpoint source discharges including agriculture, silviculture, mining, grazing, marinas and boating, highways, on-site septic systems, and erosion and sediment control. Additionally, the basin plans of San Francisco Bay, Central Valley, Santa Ana, and San Diego RWQCBs have prohibitions of discharge applicable to nonpoint sources.~~

~~Adoption of the Consolidated Cleanup Plan would not change the process and requirements for regulation of nonpoint source discharges nor would it change the methods for controlling nonpoint sources. Implementation of this Plan will be consistent with the SWRCB's Nonpoint Source Management Plan. Nonpoint source pollution control can best be achieved through the cooperative efforts of the dischargers, other interested persons, and~~

~~the SWRCB and RWQCBs. The watershed management approach in the proposed Consolidated Plan embraces this approach.~~

A majority of the pollutants associated with toxic hot spots have been identified in the *Plan for California's Nonpoint Source Pollution Control Program* (Program Plan) (SWRCB 2000) as primary pollutants of concern for NPS control. In addition, some of the RWQCB Toxic Hot Spot Plans identify nonpoint source pollution (NPS) control as the mechanism to control toxic hot spot pollutants.

The 2000 NPS Program Plan, an update of the state's original 1988 NPS Plan, focuses on control of pollutants generated within six categories. These are agriculture, forestry, urban areas, marinas and recreational boating, hydromodification activities, and vegetated treatment systems and protection of wetlands and riparian areas. Since the Program Plan was released, problems associated with mercury—a toxic hot spot pollutant-- and abandoned mines have been recognized as an NPS problem and included among nonpoint source control efforts.

Within the six NPS categories, 61 Management Measures (MMs) have been identified as goals that when achieved will lead to NPS pollution prevention and control. The MM goals, a number of which directly reference control of pollutants associated with Toxic Hot Spots, are to be achieved through discharger implementation of on-site Management Practices (MPs) and Best Management Practices (BMPs). Management of pesticides, for instance, a toxic hot spot pollutant, is identified within three NPS control categories: agriculture, forestry and urban runoff.

Through the Program Plan, and the 61 identified nonpoint source MMs, the state has committed to controlling NPS pollution by 2013. The Plan, although developed by the SWRCB in cooperation with the California Coastal Commission (CCC) and the RWQCBs, depends upon implementation by taking advantage of the mandates and authorities of over 21 other state agencies. Multi-agency activities are coordinated through an Interagency Coordinating Committee (IACC), developed to facilitate state agency cooperation under the leadership of the SWRCB and CCC.

After adoption by the SWRCB and CCC, the Program Plan was approved by the federal Environmental Protection Agency and the National Oceanic and Atmospheric Administration and fulfills requirements of both the Clean Water Act, for an updated

nonpoint source plan, and the Coastal Zone Act Reauthorization Amendments.

The state Porter–Cologne Water Quality Control Act (CWC 31000 et. Seq.) provides the authority, including three regulatory management options, to control NPS discharges. All NPS discharges are subject to regulation and, if necessary, enforcement. NPS regulatory management options include: waivers and "non-regulatory implementation" of MPs/BMPs; regulatory-based encouragement through the use of waivers and Management Agency Agreements (MAAs) allowing other state agencies to take the lead in controlling nonpoint sources of pollution while not relinquishing SWRCB/RWQCB authority to control NPS discharges; and Waste Discharge Requirements (WDRs) and basin plan prohibitions.

All options require the implementation of MPs/BMPs. These are described as including, but not limited to, structural and nonstructural controls as well as operation and maintenance procedures. MPs/BMPs can be applied before, during and/or after pollution producing activities to eliminate or reduce the introduction of pollutants into receiving waters. Successful MP/BMP implementation includes (1) adaptation to specific site conditions; (2) monitoring to assure that practices are properly applied and effective in attaining and maintaining water quality standards; (3) immediate mitigation of a problem where the practices are not effective; and (4) improvement of MP/BMP implementation or implementation of additional MPs/BMPs when needed to resolve a deficiency.

In July 2003, the state began the second five-year planning and implementation phase of the NPS program (2003-2008). In addition to planning and direct SWRCB/RWQCB actions, the boards maintain an extensive outreach and education program to provide other agencies, as well as dischargers, information on the most up-to-date NPS control measures and they administer several multi-million dollar grant and loan programs.

Storm Water/Urban Runoff

~~The 1987 amendments to the CWA added Section 402(p) which specified that discharges of storm water from municipal separate storm sewer systems (MS4's) serving a population of 100,000 or more, and from industrial activities (specified at 40 CFR Section 122.26), must be in compliance with NPDES permits (i.e., WDRs).~~

The 1987 amendments to the CWA added Section 402(p) which defines certain storm water discharges as point sources and subject to National Pollutant Discharge Elimination System (NPDES) permits. Section 122.26 of 40 CFR specifies that discharges from designated municipal separate storm sewer systems (MS4s), industrial activities as defined in 40 CFR section 122.26, and construction activities disturbing one acre or more must obtain permit coverage.

MS4 Permitting

~~The RWQCBs have adopted NPDES storm water permits for MS4's required to be permitted and for facilities not suited for coverage under the General Industrial Permit (discussed below). The MS4 permits require the discharger to develop and implement a Storm Water Management Plan whose goal is to reduce the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. Components of the storm water management plan address public education and outreach; illicit connection/illegal discharge detection and elimination; fiscal resources; monitoring; and the BMPs which will be used. To date, the efforts of the municipalities subject to MS4 permits have been focused on implementation of BMPs to *reduce* pollutants, rather than on treatment of storm water to *remove* pollutants.~~

The RWQCBs have adopted NPDES storm water permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. The SWRCB has adopted a General Permit for the Discharge of Storm Water from Small MS4s to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes. Additionally, the SWRCB has issued a permit for the discharge of storm water from all facilities owned by Caltrans.

MS4 permits require dischargers to develop and implement a Storm Water Management Plan to reduce the discharge of pollutants to the maximum extent practicable (MEP) and protect water quality. MEP is the technical standard specified in section 402(p) of the Clean Water Act. Storm water management plans identify best management practices (BMPs) to be implemented for various program areas. These program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for

municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not. Storm water management are to implement an effective combination of source control and pollution prevention, structural and treatment BMPs to reduce pollutants in storm water discharges. Current MS4 permits includes specific requirements to ensure treatment BMPs are being adequately considered and implemented.

Industrial/construction permitting

~~The SWRCB has adopted two Statewide NPDES general storm water permits. The first, originally adopted on November 19, 1991, and subsequently reissued on April 17, 1997, addresses storm water discharges associated with 10 broad categories of industrial activities. This permit is known as the General Industrial Permit. The second, adopted on August 20, 1992, addresses storm water discharges associated with construction activities resulting in a land disturbance of at least five acres. This permit is known as the General Construction Permit. Both of these permits are implemented (inspections, report review, complaint investigation and enforcement) by the RWQCBs.~~

~~Both the General Industrial and Construction Permits are NPDES permits and must meet all applicable provisions of Sections 301 and 402 of the Clean Water Act. These permits require the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). Both the General Industrial and Construction Permits require the development of a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring plan. The General Industrial Permit requires that an annual report be submitted each July 1; the General construction Permit requires only filing of an annual certification.~~

The SWRCB has adopted two Statewide NPDES general storm water permits to address storm water discharges associated with industrial and construction activities. The first, originally adopted on November 19, 1991, and subsequently reissued on April 17, 1997 (Order 97-03-DWQ), addresses storm water discharges associated with 10 broad categories of industrial activities defined in the federal regulations. This permit is known as the General Industrial Permit. The second, adopted on August 20, 1992, addresses storm water discharges associated with construction activities resulting in a land disturbance of at least five acres. This permit is known as the General Construction Permit. The General Construction Permit was reissued on August 19, 1999 (Order 99-

08-DWQ). The reissued permit was modified on December 2, 2002 to also regulate construction projects disturbing between one and five acres. Both of these permits are implemented (inspections, report review, complaint investigation and enforcement) by the RWQCBs.

Both the General Industrial and Construction Permits are NPDES permits and must meet all applicable provisions of Sections 301 and 402 of the Clean Water Act. These permits require the implementation of management measures that will achieve the technical standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to protect water quality. Both the General Industrial and Construction Permits require the development of a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce storm water pollution are described. The General Industrial Permit requires that an annual report be submitted each July 1; the General construction Permit requires only an annual certification by the discharger.

~~Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce storm water pollution are described. Because of the nature of storm water discharges and the typical lack of information upon which to base numeric water quality based effluent limitations, it has not been feasible for the SWRCB to establish numeric effluent limitations for storm water permits. The effluent limitations contained in the storm water permits (both MS4, and General Industrial and Construction Permits) are, therefore, narrative and include the requirement to implement the appropriate control practices and/or BMPs. BMPs can range from good housekeeping to structural controls.~~

~~The proposed Consolidated Cleanup Plan makes no changes in the existing storm water program at the SWRCB and RWQCBs or the way in which BMPs, BAT, or BCT would be implemented, and any of these measures can be developed through a watershed process.~~

Effluent Limitations in Storm Water Permits

MS4 permits and the Industrial and Construction General storm water permits issued by the SWRCB and RWQCBs do not contain numeric effluent limitations. Instead, effluent limitations are narrative and require the permittee to implement appropriate Best Management Practices (BMPs) to reduce the discharge of

pollutants in storm water runoff to comply with technological discharge standards established in the Federal Clean Water Act Section 402(p). Establishing numeric effluent limitations for storm water permits is difficult because of the dynamic nature of rainfall events and storm water discharges. U.S. EPA recognized this difficulty when they promulgated the final Phase II storm water regulations by adding 40CFR Section 122.44(k)(2) to allow NPDES permits to require implementation of BMPs to control or abate the discharges pollutants for storm water authorized under Section 402(p) of the Federal CWA. ,.

The proposed Consolidated Cleanup Plan makes no changes in the existing storm water program at the SWRCB and RWQCBs or the way in which BMPs are implemented. Any of these measures can be developed through a watershed process.

Public Education

Public education is identified as a potential source control measure for several of the toxic hot spots. Public education may include informing people of the risks associated with the site (e.g., informing local persons who consume fish about the health advisories and ways to decrease their risk, posting "no swimming" signs, etc.). Public education can also be used to inform the public of product or replacement in order to decrease concentrations of pollutants. Examples could include use of dioxin free, paper, limiting use of fireplaces, substitution of mercury containing products. No adverse environmental effects are foreseen due to public education.

Point Source Discharges

Further controls on point source discharges are listed as a potential source control alternative. This source control alternative is only discussed in the Plans as one of several options that may be warranted after further study to delineate the sources of the pollutants of concern for the toxic hot spot. If it is determined that it is necessary to reduce a point source discharge in order to restore beneficial uses at a designated toxic hot spot, these reductions may be accomplished in various ways. Discharge reductions can be accomplished through (1) treatment process optimization (measures facilities can implement to modify or adjust the operating efficiency of the existing wastewater treatment process - such measures usually involve engineering analysis of the existing treatment process to identify adjustments to enhance pollutant removal or reduce chemical additional); (2) waste minimization/pollution prevention costs (conducting a facility waste minimization or pollution prevention study);

(3) pretreatment (conducting study of sources and reducing inflow from indirect discharges); or (4) new or additional treatment systems. The construction of additional treatment systems has the most potential for adverse environmental effects, and a CEQA compliance is required for such facility changes.

Actual construction of additional treatment systems for publicly owned or industrial treatment facilities have the potential to result in a wide range of environmental impacts. In order to assess such impacts, first one must know the specific processes that will be added (e.g., settling basins, new biological treatment units, or other treatment (cf., SWRCB, 1998b)); and the environmental setting (land use; geologic characteristics; air quality; fish, wildlife, and plant communities including endangered species; wetlands, ground water characteristics; agricultural land; cultural resources [e.g., archaeological, paleontological, etc.]; floodplain).

Next, it is necessary to identify primary and secondary impacts the facility may have on surface and ground water quality, air quality, geologic stability, soils (erosion) important vegetation types, fish and wildlife, aesthetics, noise, recreation, open space, cultural resources, threatened or endangered species, energy, transportation, public services, population, and housing. In addition to evaluating these potential impacts, impacts of sludge disposal and outfalls must be evaluated.

In the process of planning and CEQA review, most potential impacts due to construction or modification of treatment facilities are mitigated to less than significant levels. Between 1992 and 1997, the SWRCB Division of Clean Water Programs considered approximately 50 CEQA documents for construction or modification of wastewater facilities. Potential environmental impacts were less than significant for about 80 percent of these projects. About 20 percent of the projects had at least one environmental impact that could not be mitigated to a less than significant level. For these projects, both the discharger and the SWRCB determined that the benefits of the project outweighed the unavoidable impacts, and so the project was approved. (Personal communication, Wayne Hubbard, Division of Clean Water Programs, SWRCB, August 1997.)

Implementation of Existing Plan and Policies

A number of the cleanup plans cite existing programs and policies that will work to reduce sources of pollutants of concern in toxic hot spots. Examples include the Water Quality Protection Program of the Monterey Bay National Marine Sanctuary and the San

Francisco RWQCB Mercury Strategy. These programs and policies have their own environmental review and regulatory approval processes, and it is not appropriate to attempt to evaluate them in this FED.

Cumulative Impacts

A listing of other actions that are underway at or near the toxic hot spots is included in the section of this FED titled "Proposed Remediation Approach and Alternatives at Toxic Hot Spots." RWQCBs have developed remediation actions to build on or use the existing efforts to address the toxic hot spot.

It is not possible to assess the total volume of sediment that would be dredged for all high priority toxic hot spots because the information needed to make this estimate is not available for all sites. Some of the mitigation measures address the need to determine the sediment volume to be disposed (e.g., quantifying the volume, compare the volume to be disposed with disposal options available, etc.).

The existing body of laws, regulations, and programs described throughout this FED have established both the requirements to cleanup the identified high priority toxic hot spots and the regulatory framework for protection of the environment during remediation. Remediation and mitigation for any adverse impacts that occur due to remediation are complex matters that can only be determined on a site-specific basis while the actual remediation plans are being developed, impacts are quantified, appropriate mitigation determined, and appropriate legal mandates met. It is not possible to determine at this time whether, after mitigation is incorporated, remediation of the sites will result in any cumulatively considerable effects.

Regardless, from a CEQA compliance perspective, adoption of the proposed Plan does not contribute in a cumulatively considerable way to potential effects of remediation. To the extent that substantive effects to resources may occur, they would originate with the mandates and standards established by the existing body of laws, regulations, and programs that require remediation and environmental protection. SWRCB adoption of the Plan would not contribute to cumulative adverse effects to the environment.

Growth-Inducing Impacts

The proposed Consolidated Cleanup Plan has no effect on parameters that are typically evaluated in addressing potential growth inducement, such as generation of employment

opportunities, provision of housing supply, generation of the sale of goods and services, removal of growth obstacles, expansion of infrastructure, or extension of utilities. The proposed Plan would not result in any substantial growth-inducing impacts.

Mitigation For Potentially Significant Adverse Effects of Cleanup

The resources that may be adversely affected by dredging, disposal, and/or capping are protected by a number of existing regulations and agency policies, as well as "policy-level mitigation measures" incorporated in the Consolidated Cleanup Plan. Based on the regulatory requirements to protect the environment and policy-level mitigation, persons implementing remediation will take a number of steps to ensure that potentially significant environmental impacts are minimized or avoided during dredging, disposal, and capping activities (Table 23).

The policy-level mitigation measures contained in the Consolidated Plan differ from project-specific mitigation measures in that they address potential adverse impacts on a broad and generic level. In this regard, they help direct how and when site-specific measures may be needed to avoid or mitigate potential impacts, but they do not replace the need for site-specific environmental review or mitigation measures.

Many of the policy-level mitigation measures discussed in this document are restatements of existing federal and/or state laws and policies. Project proponents will evaluate proposed remediation plans consistent with these federal and state requirements (e.g., CEQA, Clean Water Act, Porter-Cologne Water Quality Control Act, etc.). The inclusion and coordination of these measures as part of the Cleanup Plans should help to minimize adverse environmental effects.

TABLE 23: POTENTIALLY SIGNIFICANT ADVERSE IMPACTS AND MITIGATION MEASURES.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
Dredging, Disposal, Capping, Confined Aquatic Disposal	Air Quality	Emissions from dredging, excavation; transport, disposal, and capping equipment	Use electric dredging equipment; purchase air credits; schedule remediation for time of year that will cause least impacts to air quality; optimize the mode of transportation to reduce air emissions; evaluate and minimize the relative impacts of hauling dredged material by alternate means; favor sites closer to dredge sites; minimize number of trips necessary to transport dredged material to disposal site or rehandling facility; meet requirements of air management plans.
Dredging, Disposal, Capping, Confined Aquatic Disposal		Potential for increased odors if dredged material is reused.	Design and locate reuse facility or other facility to remove impact.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Surface Water	Short-term impact on aquatic resources from high concentrations of chemical concentrations or turbidity	Require the use of dredging equipment or operations that minimize the discharge of chemical pollutants during dredging/capping; reduce impacts by accurate positioning of disposal equipment during dredging; use silt curtains to reduce dispersal beyond dredge/excavation site; use coffer dams in small channels use large settling tanks to reduce excessive turbidity; monitor dredging and disposal activities to assess project is being implemented as authorized and whether disposal of dredged/capping material stays within disposal area or is transported out of the disposal area.
Dredging, Disposal		Runoff from excavation or disposal above sea level	Comply with SWRCB/RWQCB storm water programs and WDRs. Construct storm water system that directs runoff away from sensitive resources and implement BMPs for improve water quality.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
Capping, Confined Aquatic Disposal		Leaching of pollutants from capped area into surface sediments and water.	Require a monitoring program to ensure polluted sediments are placed as intended, cap material is placed correctly and the cap is effective in isolating polluted sediments.
Dredging, Disposal		Changes in currents or course/direction of water movements	Removal and placement will attempt to retain regional bottom depth and contour, except where bathymetry is planned for environmental improvement.
Dredging, Disposal	Geology and groundwater	Destabilizing channel slopes and undermining pilings	Use BMPs or standard building practices to reduce instability of pilings and wharves.
		Destabilizing sediments under cap	Incorporate into design, the site depositional/erosional characteristics, current velocities, bathymetry, depth and width to contain spread of materials, etc.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Biological resources	Turbidity disrupting sensitive spawning or migrating fish species or excessive turbidity caused by dredging operation threatening burial or contamination of sensitive habitats; noise, light, or traffic causing seasonal disruption to nesting birds	See surface water mitigation for turbidity. Avoiding dredging operations during periods when species are spawning or migrating through project area; change schedule to avoid bird nesting season; operate during daylight hours; use of silt curtains to reduce dispersal of turbidity plume beyond immediate area.
Dredging, Disposal, Capping, Confined Aquatic Disposal		Sensitive species may be displaced by removing habitat or threat or burial or contamination of sensitive habitats due to excessive turbidity caused	See surface water mitigation for turbidity. Any displaced habitats should be replaced nearby with equal or greater area and density. Require restoration of the site or restoration of an offshore location to mitigate for loss of intertidal habitat.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
		by dredging operation.	
Dredging, Disposal, Capping, Confined Aquatic Disposal		Endangered species	For "incidental take" - habitat protection, funding to protect and/or manage habitat, training of construction/operation employees to avoid impacts, implementation of standardized avoidance measures. No project if it would result in jeopardizing continued existence of an endangered species.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Transportation	Access to berths by ships or recreational boating could be altered.	Coordinate/schedule dredging disposal activities with terminal managers/harbor masters. Ensure adequate access channels are available for shipping and other harbor/bay use; operate when vessel traffic minimal; use smaller dredges.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Noise	Operation of dredging operations may cause noise impacts.	Comply with local noise ordinances. Reduce or eliminate noise by using silencers or mufflers on dredging equipment. Consider use of electrical dredging equipment. Reduce noise during night hours. Use smaller dredges.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Hazards and Polluted wastes	Accidental spills/releases from dredging operations	Develop procedures and requirements for loading and unloading polluted sediments to eliminate potential for spillage. Establish in cleanup plan, cleanup procedures if spillage/release occurs.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
Disposal		Leaching of pollutants into groundwater.	Dry sediments in areas where impermeable liner or membrane blocks leaching.
Disposal		Disposal of polluted sediments may exceed landfill capacities or acceptance criteria.	The areal extent and volume of sediment should be characterized so realistic estimates are available to plan disposal. Reevaluate if impact still exists. Once these estimates still exceed capacities, plan for alternate use of polluted sediments to remove impact. Consider, as appropriate, confined aquatic disposal, wetland restoration, levee reuse. Consider and mitigate site-specific impacts of other alternatives
		Dredging near former explosives disposal area - danger of injury to people, equipment, and wildlife at dredge site; danger to public at disposal site.	Placing grate at dredge cutter head to reject large ordinance; disposal of dredge material where explosives could not cause harm; testing sediment for leakage of explosives; inspection at disposal site.
Dredging, Disposal, Capping, Confined Aquatic Disposal		Trucking hazardous or explosive wastes over bridges or through neighborhoods - possibility of fire or explosion, exclusion of hazardous waste from certain neighborhoods, inability to get bridge-crossing permits in timely manner.	Selection of feasible alternative mitigation measure such as capping, or in-situ or ex-situ treatment near dredge site.

Unavoidable Adverse Impacts

It is too speculative to determine that toxic hot spot remediation will not result in any significant adverse impacts that cannot be mitigated to a level where there is no impact or the impact is less than significant. In this FED, we have identified potentially significant impacts that could occur due to the remediation alternatives identified in the Consolidated Cleanup Plan. We have incorporated into the Plan, mitigation that could be used to lessen or avoid such potential effects. As long as the mitigation measures of the proposed Plan are considered, and all applicable laws, and local, State, and Federal regulations and policies are complied with, remediation is not expected to result in significant adverse environmental impacts.

As stated earlier in this document, this FED is not meant to take the place of site-specific CEQA compliance, including site-specific determination as to what mitigation is necessary to avoid significant adverse impacts or reduce them to less than significant levels. We recognize that a site-specific evaluation of environmental effects of remediation, and whether mitigation measures can reduce impacts to less than significant levels, is necessary before it is possible to determine with certainty whether there will be significant adverse effects of remediation.

The action of adoption of the Consolidated Cleanup Plan by the SWRCB will not result in significant adverse impacts. Any adverse environmental effects that may occur due to remediation under the proposed Plan would be substantially the same as environmental effects of remediation if the Plan is not adopted. As explained earlier in this section of the FED, both the regulatory framework requiring remediation and the regulatory framework protecting the environment against adverse affects of remediation, are unchanged by the adoption of the proposed Plan. In other words, the Plan will neither affect the requirements for remediation nor the way in which the environment is protected against adverse effects through permitting, CEQA, WDRs, etc. It can be reasonably argued that by listing potential mitigation measures in the Plan, these mitigation measures will be considered as site-specific remediation efforts are developed, and may, therefore lessen or avoid the potential for adverse effects.