STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 99 - 065

ADOPTION OF THE
CONSOLIDATED TOXIC HOT SPOTS CLEANUP PLAN

WHEREAS:

1. The Bay Protection and Toxic Cleanup Program (BPTCP) was established by the State Water Resources Control Board (SWRCB) to implement the requirements of Section 13390 et seq. of the Water Code.

2. Water Code Section 13394 requires the SWRCB and the Regional Water Quality Control Boards (RWQCBs) to develop a Consolidated Toxic Hot Spots Cleanup Plan (Consolidated Cleanup Plan).

3. The SWRCB adopted a Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spot Cleanup Plans (Guidance Policy) to be used by the RWQCBs in preparing their cleanup plans.

4. Each of the seven coastal Regional Water Quality Control Boards (RWQCBs) used the Guidance Policy in the development of their Regional Toxic Hot Spots Cleanup Plans and has submitted the Plans to the SWRCB.

5. The SWRCB has consolidated the Regional Toxic Hot Spots Cleanup Plans into a Consolidated Cleanup Plan.

6. The SWRCB prepared and circulated a draft Functional Equivalent Document (FED) supporting the proposed Consolidated Cleanup Plan in accordance with provisions of the California Environmental Quality Act and Title 14, California Code of Regulations Section 15251(g).

7. In compliance with Water Code Section 13147, the SWRCB held a public hearing in Sacramento, California, on June 3, 1999 on the Consolidated Cleanup Plan and has carefully considered all testimony and comments received.

8. The SWRCB staff determined that the adoption of the proposed Consolidated Cleanup Plan will not have a significant adverse effect on the environment.

9. The SWRCB staff has prepared a final FED that includes the revised proposed Consolidated Cleanup Plan and has responded to the comments received.
10. The SWRCB consulted with the Department of Fish and Game (DFG) on the potential impacts of the amendments on fish and wildlife resources, including threatened and endangered species. DFG did not find that the Consolidated Cleanup Plan will jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitat essential to the continued existence of the species.

11. The SWRCB completed a scientific peer review of the draft FED as required by Section 57004 of the Health and Safety Code.

12. As directed at the June 3, 1999 public hearing, SWRCB staff met with representatives of the RWQCBs, DFG and interested parties to discuss specific comments and concerns, and has made minor revisions to the Consolidated Cleanup Plan accordingly.

13. The regulatory provisions of the Water Quality Control Policy do not become effective until the regulatory provisions are approved by the Office of Administrative Law (OAL).

THEREFORE BE IT RESOLVED THAT:

The SWRCB:


2. Adopts the Consolidated Toxic Hot Spots Cleanup Plan.

3. Approves the Central Valley RWQCB’s request for a variance from the provision of the Guidance Policy in order to address pesticide regulation under the Clean Water Act Section 303(d) Total Maximum Daily Load (TMDL) process. The RWQCB shall report to the SWRCB annually on progress toward completing the TMDLs.

4. Directs the RWQCBs to consult with DFG on compliance with the California Endangered Species Act during the implementation of the Consolidated Cleanup Plan.
5. Authorizes the Executive Director, or his designee, to submit the Consolidated Cleanup Plan to the California Legislature by June 30, 1999 in compliance with Section 13394 of the California Water Code.

6. Authorizes the Executive Director, or his designee, to submit the regulatory provisions of the Consolidated Cleanup Plan to OAL for its approval.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 17, 1999.

Maureen Marché
Administrative Assistant to the Board
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Introduction

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) are required to (1) identify and characterize toxic hot spots, (2) plan for the cleanup or other appropriate remedial or mitigating action at the sites, and (3) prevent the creation of new toxic hot spots and the further pollution of existing hot spots (Water Code Section 13392). Toxic hot spots have been identified in California’s enclosed bays, estuaries and coastal waters. The SWRCB adopted guidance in 1998 on the development of the Regional Toxic Hot Spots Cleanup Plans (Regional Plans). The Regional Plans have been incorporated into the Consolidated Toxic Hot Spots Cleanup Plan (Consolidated Plan).

As required by Water Code Section 13394, the SWRCB has developed this Consolidated Plan that identifies and ranks known toxic hot spots. This plan also presents descriptions of toxic hot spots, actions necessary to remediate sites, the benefits of remediation, and a range of remediation costs. This plan is applicable, in its entirety, to point and nonpoint source discharges to the waters of the State that can be reasonably determined by the RWQCBs to contribute to or cause the pollution at toxic hot spots.

This Consolidated Plan contains two volumes: Volume I contains the policy statements, definitions and criteria to rank sites, the list of known toxic hot spots, a summary of the actions planned for high priority known toxic hot spots, and findings; and Volume II contains the Regional Plans.

Background

Water Code Section 13394 requires that the SWRCB and each RWQCB complete toxic hot spots cleanup plans. Each cleanup plan must include: (1) a priority listing of all toxic hot spots covered by the cleanup plan; (2) a description of each toxic hot spot including a characterization of the pollutants present at the site; (3) an assessment of the most likely source or sources of pollutants; (4) an estimate of the total costs to implement...
the cleanup plan; (5) an estimate of the costs that can be recovered from parties responsible for the discharge of pollutants that have accumulated in sediments; (6) a preliminary assessment of the actions required to remedy or restore a toxic hot spot; (7) a two-year expenditure schedule identifying State funds needed to implement the cleanup plan; and (8) for the SWRCB, findings on the need to establish a toxic hot spots cleanup program.

Policy for Water Quality Control

In furtherance of legislative intent set forth in Section 13390 of Division 7 of the California Water Code (Stats. 1989, Chap. 269) the SWRCB hereby finds and declares that protection of the quality of the enclosed bays, estuaries and coastal waters for use and enjoyment by the people of the State requires the implementation of remedial actions that provide protection of existing and future beneficial uses and that these actions be implemented through a plan for remedial action at toxic hot spots.

The provisions of the Consolidated Plan are intended to establish principles and guidance to protect and improve the quality of the enclosed bays, estuaries and coastal waters of the State from discharges of hazardous substances in accordance with the provisions of Chapter 5.6 of the California Water Code.

Remediation (if Potential Discharger Identified)

The RWQCBs shall implement the remediation portions of this Consolidated Plan (Volume II) to the extent that responsible parties are identified and funds are available and allocated for this purpose.

The RWQCBs shall use their existing authorities to issue and revise waste discharge requirements (WDRs), issue and implement enforcement actions pursuant to existing policies, including but not limited to, the Water Quality Enforcement Policy and SWRCB Resolution No. 92-49 (as amended on April 21, 1994 and October 2, 1996). To the extent possible, the RWQCBs shall encourage potential dischargers to address known toxic hot spots through voluntary implementation of corrective actions.
Remediation (in Absence of Potential Discharger)

When no potential discharger is identified, the RWQCBs shall seek funding from available sources to remediate the site.

Funding Programs

There are several federal and State funding programs currently in place that RWQCBs shall evaluate as potential funding sources to remediate toxic hot spots. These include the following:

Clean Water Act (CWA) Section 319 Nonpoint Source Grants

CWA Section 319(h) provides grant funds for projects directed at the management of nonpoint source pollution. High priority projects are considered those which implement specified nonpoint source management practices under Section 319 requirements, and projects which address nonpoint source problems in waters listed pursuant to CWA Section 303(d) as water quality limited segments.

Wetlands Grants

CWA Section 104(b) provides funds for wetland restoration. The focus of these grants is wetland protection, but wetland restoration can be included when it is part of an overall wetland protection program. Priorities for funding include watershed projects to address watershed protection which have a substantial wetlands component in a holistic, integrated manner, and development of assessment and monitoring information.

State Revolving Funds Loan Program

The State Revolving Funds Loan Program provides funding for the construction of publicly-owned treatment works, for nonpoint source mitigation programs and projects, and for the development and implementation of estuary conservation and management programs. The loan interest rate is set at one-half the rate of the most recent sale of a State general obligation bond.

Agricultural Drainage Management Loan Program

The State Agricultural Drainage Management Loan Program funds are available for feasibility studies and the design and construction of agricultural drainage water
management projects. The project must remove, reduce, or mitigate pollution resulting from agricultural drainage.

State Water Pollution Cleanup and Abatement Account (Cleanup and Abatement Fund)

The Cleanup and Abatement Fund (Water Code Section 13440 et seq.) can be used by the SWRCB to pay for cleaning up waste or abating the waste effects on waters of the State. RWQCBs may apply for these funds if, among other things, the RWQCB does not have adequate resources budgeted for this activity.

CALFED

The CALFED Bay-Delta Program was initiated in 1995 to address environmental and water management problems associated with the Bay-Delta system, an intricate web of waterways created at the junction of the San Francisco Bay and the Sacramento and San Joaquin rivers and the watershed that feeds them. The CALFED Bay-Delta Program is carrying out a process to achieve broad agreement on comprehensive solutions for problems in the Bay-Delta System.

Supplemental Environmental Projects

The RWQCB may impose administrative civil liability orders on an alleged violator for discharging waste, for failure to furnish or furnishing false technical or monitoring reports, for various cleanup and abatement violations, and other issues. These orders are based on the violation of a WDR, a NPDES permit, or a prohibition in a water quality control plan. As part of this process the RWQCB may direct dischargers to provide funding for a Supplemental Environmental Project.

Mass-based Permit Offset System (Trading Credits)

A mass-based permit offset system is a tool used to ensure that the largest controllable ongoing sources of pollutants and most cost-effective approaches are used to reduce the discharge of pollutants. An offset system provides an increase in flexibility for dischargers with potential compliance problems or for groups that wish to develop credit for anticipated offset of future loads associated with future population growth or increase in industrial discharges.
In using this approach, the RWQCBs shall consider the following factors: (1) application of the system to sites that do not have a responsible discharger identified, (2) bioaccumulation of pollutants at sites near discharges, (3) toxicity at sites where pollutants are allowed at higher concentrations, and (4) the chemical form of the pollutant discharged.

Remediation in San Diego Bay

San Diego Bay is one of the most precious economic and environmental resources in California and there is significant public concern about all the toxic hot spots identified in the Bay.

The San Diego RWQCB shall develop the characterization and remediation portions of the cleanup plan for the moderate priority known toxic hot spots identified in this Plan. In developing the revised cleanup plan the San Diego RWQCB shall (1) use the Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spot Cleanup Plans and (2) submit a revised Regional Plan within one year of the effective date of the Consolidated Plan.

To the extent that funding is available, the RWQCB shall initiate remediation or require potential dischargers to remediate each known toxic hot spot in San Diego Bay.

Toxic Hot Spot Prevention

In the process of developing and implementing strategies to remediate toxic hot spots related to both sediment and water, the RWQCBs shall focus on approaches that rely on existing State and federal programs to address identified toxic hot spots. In addressing prevention activities for point and nonpoint sources of pollution, the RWQCBs shall:

1. Consider use of any established prevention tools such as (a) voluntary programs, (b) interactive cooperative programs, and (c) regulatory programs, individually or in any combination that will result in an effective toxic hot spot prevention strategy. The RWQCBs shall consider site-specific and pollutant-specific strategies to
address the toxic hot spot including, but not limited to: pollution prevention audits, studies to specifically identify sources of pollutants, total maximum daily load development, watershed management approaches, pretreatment, recycle and reuse, revised effluent limitations, prohibitions, implementation of best management practices, etc.

2. Promote a watershed management protection approach focused on hydrologically defined areas (watersheds) rather than areas defined by political boundaries (counties, districts, municipalities), that take into account all waters, surface, ground, inland, and coastal and address point and nonpoint sources of pollution that may have influence or has been identified to have influenced the identified toxic hot spots. Link the cleanup plan to implementation of the Watershed Management Initiative and the SWRCB Strategic Plan.

3. Encourage the participation and input of, interdisciplinary groups of interested parties (including all potential dischargers) that are able to cross over geographical and political boundaries to develop effective solutions for preventing toxic hot spots.

4. Use prevention strategies that provide enough flexibility to be used as watershed protection plans where there are none established or have the ability to join with a watershed protection plan that is already being implemented to address the toxic hot spot. Solutions developed shall also be developed for, and applied at sites where it will do the most prevention and where it will be the most cost-effective at mitigating and preventing toxic hot spots at a watershed level.

Waste Discharge Requirement Reevaluation Guidance

In order to prevent the further pollution or creation of known toxic hot spots, RWQCBs shall reevaluate WDRs in compliance with Water Code Section 13395. The reevaluation shall consist of (1) an assessment of the WDRs that may influence the creation or further pollution of the known toxic hot spot, (2) an assessment of which WDRs need to be modified to improve environmental conditions at
the known toxic hot spot, and (3) a schedule for completion of any WDR modifications deemed appropriate.

When revising WDRs associated with known toxic hot spots, the RWQCBs shall comply with the provisions of Water Code Sections 13395 to the extent this Section applies. The RWQCB shall acknowledge in the WDR that the discharge may contribute to the pollution present at the toxic hot spot listed in the Consolidated Plan.

RWQCBs shall begin reevaluation of WDRs associated with high priority known toxic hot spots within 120 days after final approval of the Consolidated Plan. WDR reevaluation will be completed for all known toxic hot spots in ranked order. The RWQCBs shall submit a priority list to the SWRCB presenting the reevaluation as follows:

1. The list of WDRs associated with each known toxic hot spot that can reasonably be expected to cause or contribute to the creation and maintenance of the known toxic hot spot.

2. An assessment of the need to revise the WDR to improve the quality of the known toxic hot spot.

3. A schedule for completion of the needed WDR revisions.

Each RWQCB shall submit the priority list for high priority toxic hot spots within six months after final approval of the Consolidated Plan. The priority list for moderate and low priority known toxic hot spots shall be submitted within one year of final approval of the Consolidated Plan.

Reevaluation, as used in this plan and in Water Code Section 13395, does not mean the RWQCBs must revise WDRs associated with known toxic hot spots.

Removing Toxic Hot Spots from the Plan

A site may be removed from the known toxic hot spot list and other portions of this Consolidated Plan if the SWRCB determines that the site has been adequately remediated, was inappropriately listed as a toxic hot spot, or no longer
1. A petition shall be submitted to the SWRCB to remove a site from the Consolidated Plan. This petition shall provide:

- The reason for site delisting
- Documentation of investigations performed to demonstrate the site is no longer a toxic hot spot (post-remediation monitoring)
- Documentation of all remediation actions taken
- Documentation of the likelihood the toxic hot spot will be prevented from reoccurring

2. If the petition is submitted by a discharger, the SWRCB shall seek a recommendation on the petition by the appropriate RWQCB. If the petition is approved by the SWRCB, the site shall be removed from the toxic hot spot list and other portions of the Consolidated Plan.

Toxic Hot Spot Identification and Ranking

**Definition Used to Identify Candidate and Known Toxic Hot Spots**

Candidate and known toxic hot spots are locations (sites in waters of the State) in enclosed bays, estuaries or the ocean. Dischargers (e.g., publicly owned treatment works, industrial facilities, power generating facilities, agricultural land, storm drains, etc.) are not toxic hot spots.

Pesticide residues should not be considered under the Bay Protection and Toxic Cleanup Program (BPTCP) if they are detected in the water column in a pattern of infrequent pulses moving by the sampling location. Such detections will be addressed using cooperative approaches such as the Management Agency Agreement between the SWRCB and the Department of Pesticide Regulation, the NPS Management Plan, and existing authorities including the Porter-Cologne Water Quality Control Act and Clean Water Act.

**Candidate Toxic Hot Spot**

A site meeting any one or more of the following conditions is considered to be a "candidate" toxic hot spot.
1. The site exceeds water or sediment quality objectives for toxic pollutants that are contained in appropriate water quality control plans or exceeds water quality criteria promulgated by the U.S. Environmental Protection Agency (U.S. EPA).

This finding requires chemical measurement of water or sediment, or measurement of toxicity using tests and objectives stipulated in water quality control plans. Determination of a toxic hot spot using this finding should rely on recurrent measures over time (at least two separate sampling dates). Suitable time intervals between measurements must be determined.

2. The water or sediment exhibits toxicity associated with toxic pollutants that is significantly different from the toxicity observed at reference sites (i.e., when compared to the lower confidence interval of the reference envelope or, in the absence of a reference envelope, is significantly toxic as compared to controls (using a t-test) and the response is less than 90 percent of the minimum significant difference for each specific test organism), based on toxicity tests acceptable to the SWRCB or the RWQCBs.

To determine whether toxicity exists, recurrent measurements (at least two separate sampling dates) should demonstrate an effect. Appropriate reference and control measures must be included in the toxicity testing. The methods acceptable to and used by the BPTCP may include some toxicity test protocols not referenced in water quality control plans (e.g., the BPTCP Quality Assurance Project Plan). Toxic pollutants should be present in the media at concentrations sufficient to cause or contribute to toxic responses in order to satisfy this condition.

3. The tissue toxic pollutant levels of organisms collected from the site exceed levels established by the United States Food and Drug Administration (FDA) for the protection of human health, or the National Academy of Sciences (NAS) for the protection of human health or wildlife. When a health advisory against the consumption of edible resident non-migratory
organisms has been issued by Office of Environmental Health Hazard Assessment (OEHHA) or Department of Health Services (DHS), on a site or water body, the site or water body is automatically classified a "candidate" toxic hot spot if the chemical contaminant is associated with sediment or water at the site or water body.

Acceptable tissue concentrations are measured either as muscle tissue (preferred) or whole body residues. Residues in liver tissue alone are not considered a suitable measure for candidate toxic hot spot designation. Animals can either be deployed (if a resident species) or collected from resident populations. Recurrent measurements in tissue are required. Residue levels established for one species for the protection of human health can be applied to any other consumable species.

Shellfish: Except for existing information, each sampling episode should include a minimum of three replicates. The value of interest is the average value of the three replicates. Each replicate should be comprised of at least 15 individuals. For existing State Mussel Watch information related to organic pollutants, a single composite sample (20-100 individuals), may be used instead of the replicate measures. When recurrent measurements exceed one of the levels referred to above, the site is considered a candidate toxic hot spot.

Fin-fish: A minimum of three replicates is necessary. The number of individuals needed will depend on the size and availability of the animals collected; although a minimum of five animals per replicate is recommended. The value of interest is the average of the three replicates. Animals of similar age and reproductive stage should be used.

4. Impairment measured in the environment is associated with toxic pollutants found in resident individuals.

Impairment means reduction in growth, reduction in reproductive capacity, abnormal development, histopathological abnormalities. Each of these measures must be made in comparison to a reference condition where the endpoint is measured in the same
species and tissue is collected from an unpolluted reference site. Each of the tests shall be acceptable to the SWRCB or the RWQCBs.

**Growth Measures:** Reductions in growth can be addressed using suitable bioassay acceptable to the SWRCB or RWQCBs or through measurements of field populations.

**Reproductive Measures:** Reproductive measures must clearly indicate reductions in viability of eggs or offspring, or reductions in fecundity. Suitable measures include: pollutant concentrations in tissue, sediment, or water which have been demonstrated in laboratory tests to cause reproductive impairment, or significant differences in viability or development of eggs between reference and test sites.

**Abnormal Development:** Abnormal development can be determined using measures of physical or behavioral disorders or aberrations. Evidence that the disorder can be caused by toxic pollutants, in whole or in part, must be available.

**Histopathology:** Abnormalities representing distinct adverse effects, such as carcinomas or tissue necrosis, must be evident. Evidence that toxic pollutants are capable of causing or contributing to the disease condition must also be available.

5. **Significant degradation in biological populations and/or communities associated with the presence of elevated levels of toxic pollutants.**

This condition requires that the diminished numbers of species or individuals of a single species (when compared to a reference site) are associated with concentrations of toxic pollutants. The analysis should rely on measurements from multiple stations. Care should be taken to ensure that at least one site is not degraded so that a suitable comparison can be made.
Known Toxic Hot Spot

A site meeting any one or more of the conditions necessary for the designation of a "candidate" toxic hot spot that has gone through a full SWRCB and RWQCB hearing process, is considered to be a "known" toxic hot spot. A site will be considered a "candidate" toxic hot spot until approved by the SWRCB as a "known" toxic hot spot in the Consolidated Plan.

Ranking Criteria

A value for each criterion described below shall be developed provided appropriate information exists or estimates can be made. Any criterion for which no information exists shall be assigned a value of "No Action". The RWQCB shall create a matrix of the scores of the ranking criteria. The RWQCBs shall determine which sites are "High" priority based on the five general criteria (below) keeping in mind the value of the water body. The RWQCBs shall provide the justification or reason a rank was assigned if the value is an estimate based on best professional judgment.

Human Health Impacts

Human Health Advisory issued for consumption of non-migratory aquatic life from the site (assign a "High"); Tissue residues in aquatic organisms exceed FDA/DHS action level or U.S. EPA screening levels ("Moderate").

Aquatic Life Impacts

For aquatic life, site ranking shall be based on an analysis of the substantial information available. The measures that shall be considered are: sediment chemistry, sediment toxicity, biological field assessments (including benthic community analysis), water toxicity, toxicity identification evaluations (TIEs), and bioaccumulation.

Stations with hits in any two of the biological measures if associated with high chemistry, assign a "High" priority. A hit in one of the measures associated with high chemistry is assigned "moderate", and high sediment or water chemistry only shall be assigned "low". In analyzing the substantial information available, RWQCBs should take into consideration that impacts related to biological field
assessments (including benthic community structure) are of more importance than other measures of impact.

**Water Quality Objectives**

Any chemistry data used for ranking under this section shall be no more than 10 years old, and shall have been analyzed with appropriate analytical methods and quality assurance.

Water quality objective or water quality criterion:
Exceeded regularly (assign a “High” priority), occasionally exceeded (“Moderate”), infrequently exceeded (“Low”).

**Areal Extent of Toxic Hot Spot**

Select one of the following values: More than 10 acres, 1 to 10 acres, less than 1 acre.

**Natural Remediation Potential**

Select one of the following values: Site is unlikely to improve without intervention (“High”), site may or may not improve without intervention (“Moderate”), site is likely to improve without intervention (“Low”).

**Overall Ranking**

The RWQCB shall list the overall ranking for the candidate toxic hot spot. Based on the interpretation and analysis of the five previous ranking criteria, ranks shall be established by the RWQCBs as “high”, “moderate” or “low.”

**Benefits of Remediation**

In developing the Regional Plans the RWQCBs listed the qualitative benefits that will be derived by remediating toxic hot spots. The list of possible benefits of remediation are presented in Table 1.

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1 Water quality objectives to be used are found in RWQCB Basin Plans or the California Ocean Plan (depending on which plan applies to the water body being addressed). Where a Basin Plan contains a more stringent value than the statewide plan, the regional water quality objective will be used.
<table>
<thead>
<tr>
<th>Beneficial effect</th>
<th>Values quantifying these beneficial effects</th>
<th>Beneficial use affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower toxicity in planktonic and benthic organisms</td>
<td>Greater survival of organisms in toxicity tests.</td>
<td>MAR, EST</td>
</tr>
<tr>
<td>Undegraded benthic community</td>
<td>Species diversity and abundance characteristic of undegraded conditions.</td>
<td>MAR, EST</td>
</tr>
<tr>
<td>Lower concentrations of pollutants in water</td>
<td>Water column chemical concentration that will not contribute to possible human health impacts.</td>
<td>MIGR, SPWN, EST, MAR, REC 1, REC 2</td>
</tr>
<tr>
<td>Lower concentrations of pollutants in fish and shellfish tissue</td>
<td>Lower tissue concentrations of chemicals that could contribute to possible human health and ecological impacts.</td>
<td>MAR, EST, REC 1, COMM</td>
</tr>
<tr>
<td>Area can be used for sport and commercial fishing.</td>
<td>Anglers catch more fish. Impact on catches and net revenues of fishing operations increase.</td>
<td>REC 1, COMM</td>
</tr>
<tr>
<td>Area can be used for shellfish harvesting or aquaculture</td>
<td>Jobs and production generated by these activities increase. Net revenues from these activities are enhanced.</td>
<td>SHELL, AQUA</td>
</tr>
<tr>
<td>Improved conditions for seabirds and other predators</td>
<td>Increase in populations. Value to public of more abundant wildlife.</td>
<td>WILD, MIGR, RARE</td>
</tr>
<tr>
<td>More abundant fish populations</td>
<td>Increase in populations. Value to public of more abundant wildlife.</td>
<td>MAR, EST</td>
</tr>
<tr>
<td>Commercial catches increase</td>
<td>Impact on catches and net revenues of fishing operations.</td>
<td>COMM</td>
</tr>
<tr>
<td>Recreational catches increase, more opportunities for angling</td>
<td>Increased catches and recreational visitor-days.</td>
<td>REC 1</td>
</tr>
<tr>
<td>Improved ecosystem conditions</td>
<td>Species diversity and abundance characteristic of undegraded conditions.</td>
<td>EST, MAR</td>
</tr>
<tr>
<td>Improved aesthetics</td>
<td>Value to public of improved aesthetics. In some cases, estimates of the value to the public of improved conditions may be available from surveys.</td>
<td>REC 2</td>
</tr>
<tr>
<td>More abundant wildlife, more opportunities for wildlife viewing</td>
<td>Impact on wildlife populations. Impact on recreational visitor-days.</td>
<td>MAR, WILD, RARE, REC 2</td>
</tr>
</tbody>
</table>
Known Toxic Hot Spots

The RWQCBs have used the definition of toxic hot spots to identify candidate toxic hot spots and have used the ranking criteria to identify the highest priority sites for remedial action. The list in Table 2 is the list of known toxic hot spots in California's enclosed bays, estuaries and coastal waters. The general locations of the known toxic hot spots are presented in Figure 1.

A detailed list of the known toxic hot spots for each region is presented in Volume II of the Consolidated Plan.

The remedial actions, benefits of remediation and estimated remediation costs for the high priority toxic hot spots are listed in Table 3. More specific information on site characterization, benefits of remediation, proposed action and costs are presented in the Regional Plans (Volume II).

Mitigation Necessary to Avoid the Potential Environmental Impacts of Remediation

The provisions of the Consolidated Plan do not relieve the RWQCBs from complying with CEQA when requiring site-specific projects be completed or when amending their Basin Plans to incorporate the results of their planning efforts called for in the Consolidated Plan. Mitigation measures are presented in Table 4. These mitigation measures shall be considered by the RWQCBs to lessen or avoid the potential environmental impact of a site-specific project.

The mitigation measures presented in this Consolidated Plan address potentially significant adverse impacts on a broad, Statewide basis. These mitigation measures do not replace the need for site-specific measures or a site-specific analysis of environmental impacts. The mitigation measures in the Consolidated Plan are intended to focus the analysis, when possible, on the resources that are likely to be affected when site-specific projects are implemented.
**TABLE 2: KNOWN TOXIC HOT SPOTS**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Site Identification</th>
<th>Reason for Listing</th>
<th>Definition trigger</th>
<th>Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Cañada de la Huerta Shell Hercules Gas Plant Site</td>
<td>Aquatic Life Concerns - Sediment and water toxicity, sediment chemistry, bioaccumulation, Water Quality Concerns - violations of Basin Plan and Ocean Plan objectives.</td>
<td>PCBs</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Delta Estuary, Cache Creek watershed including Clear lake</td>
<td>Human health impacts</td>
<td>Mercury</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Delta Estuary</td>
<td>Aquatic life impacts</td>
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<td>Diazinon &amp; Chloryprifos</td>
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<tr>
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<td>High</td>
<td>Humboldt: Bay Eureka Waterfront H Street</td>
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<td>Los Angeles Inner Harbor Dominguez Channel, Consolidated Slip</td>
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<td>DDT, PCBs, PAH, Cadmium, Copper, Lead, Mercury, Zinc, Dieldrin, Chlordane</td>
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<tr>
<td>Rank</td>
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<td>Reason for Listing</td>
<td>Definition trigger</td>
<td>Pollutants</td>
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<td>High</td>
<td>Los Angeles Outer Harbor Cabrillo Pier</td>
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<tr>
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<td>Lower Newport Bay Rhine Channel</td>
<td>Sediment toxicity, exceeds objectives</td>
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<td>Arsenic, Copper, Lead, Mercury, Zinc, DDE, PCB, TBT</td>
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<tr>
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<td>McGrath Lake</td>
<td>Sediment toxicity</td>
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<td>DDT, Chlordane, Dieldrin, Toxaphene, Endosulfan</td>
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<td>Moss Landing Harbor and Tributaries</td>
<td>Aquatic life and human health concerns - Sediment chemistry, toxicity, bioaccumulation and exceedances of NAS and or FDA guidelines</td>
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<td>Pesticides, PCBs, Nickel, Chromium, TBT</td>
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<td>Mugu Lagoon/ Calleguas Creek tidal prism, Eastern Arm, Main Lagoon, Western Arm</td>
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<td>DDT, PCBs, metals, Chlordane, Chlorpyrifos</td>
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<td>Sediment toxicity and benthic community impacts</td>
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<td>Chlordane, DDT, PAHs and Total Chemistry²</td>
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<tr>
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<td>San Francisco Bay Castro Cove</td>
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<td>Mercury, Selenium, PAHs, Dieldrin</td>
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<td>High</td>
<td>San Francisco Bay Entire Bay</td>
<td>Human health impacts</td>
<td></td>
<td>Mercury, PCBs, Dieldrin, Chlordane, DDT, Dioxin</td>
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² The total toxic chemical concentration for a station was calculated as follows: The sum of individual ERMs (or PELs) was divided by the number of chemicals analyzed for which ERMs (or PELs) were known. The "average" ERM (or PEL), known as the Effects Range Median Quotient or ERMQ (or Probable Effects Level Quotient or PELQ) was compared to the "threshold" ERMQs (or PELQs) calculated to be 0.85 X ERMQ (or 1.29 X PELQ). If a threshold quotient was equaled or exceeded, the station was assumed to have a total chemistry hit.
<table>
<thead>
<tr>
<th>Rank</th>
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<th>Pollutants</th>
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<td>PCBs, chlordane,</td>
<td>Silver, Chromium, Copper, Mercury, Lead, Zinc, Chlordane, Chlorpyrifos, Dieldrin, Mirex, PCBs, PAHs, anthropogenically enriched H2S and NH3</td>
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<td>Silver, Cadmium, Copper, Selenium, Zinc, PCBs, Chlordane, ppDDE, Pyrene</td>
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<td>Richmond Harbor</td>
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<td>Arsenic, Copper, Mercury, Selenium, Zinc, chlordane, dieldrin, ppDDE, dacthal, endosulfan 1, endosulfan sulfate, dichlorobenzophenone, heptachlor epoxide, hexachlorobenzene, mirex, oxidiazon, toxaphene and PCBs</td>
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<td>Bioassay toxicity</td>
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<td>Copper, lead, Mercury, Zinc, TBT, DDT, PCB, PAH</td>
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<td>Chlordane, Zinc, DDE</td>
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<td>Exceeds water quality objectives</td>
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<td>Copper, Lead, Mercury, Zinc, Chlordane, DDE, PCB, TBT</td>
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<td>PAHs, Cu, Zn, Toxaphene, PCBs, Tributyltin</td>
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<td>PAHs, Total Chemistry</td>
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<td>San Diego Bay Chollas Creek</td>
<td>Benthic community impacts</td>
<td>Chlordane, Total Chemistry</td>
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<td>Moderate</td>
<td>San Diego Bay Fruitvale (area in front of stormdrain)</td>
<td>Benthic Community Impacts</td>
<td>PCBs, Antimonoy, Copper, Total Chemistry</td>
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<td>Moderate</td>
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<td>Copper, Lead, Mercury, Zinc, TBT, ppDDE, PCBs, PAHs, Chlorpyrifos, Chlordane, Dieldrin, Mirex</td>
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<td>DDE</td>
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<td>Low</td>
<td>Bolsa Chica Ecological Reserve</td>
<td>Sediment toxicity</td>
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<td>Sediment toxicity</td>
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<td>Seal Beach NWR Middle Reach</td>
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<tr>
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<td>Huntington Harbor Upper Reach</td>
<td>Sediment toxicity</td>
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<td>Chlordane, DDE, Chlorpyrifos</td>
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</tbody>
</table>
FIGURE 1: HIGH, MODERATE, AND LOW PRIORITY TOXIC HOT SPOTS

Humboldt Bay

Bodega Bay

San Francisco Bay

Delta Estuary
High, Moderate, and Low Priority
Known Toxic Hot Spots

Monterey Bay
- Moss Landing Harbor/Tributaries (High)
- Monterey Harbor (Moderate)

Canada de la Huerta
- Point Conception
- Santa Barbara Harbor

McGrath Lake/Mugu Lagoon
- McGrath Lake (High)
- Mugu Lagoon/Calleguas Creek Tidal Prism (High)

Marina del Rey/ Ballona Creek
- Marina del Rey (Moderate)
- Ballona Creek (Moderate)

Los Angeles/Long Beach Harbor/ Palos Verdes Shelf
- Palos Verdes Shelf (High)
- Cabrillo Pier (High)
- Consolidated Slip/Dominguez Channel (High)
- Los Angeles River Estuary (Moderate)
High, Moderate, and Low Priority Known Toxic Hot Spots

Newport Bay
- Narrows (Moderate)
- Newport Island (Moderate)
- Lido Is.
- Balboa Is.
- Rhine Channel (High)

Huntington Harbor/Anaheim Bay
- Seal Beach Left Reach (Low)
- Seal Beach Middle Reach (Low)
- Seal Beach Bolsa Avenue (Low)
- Seal Beach Naval Reserve (Moderate)
- Bolsa Chica Ecological Reserve (Low)
- Huntington Harbor Upper Reach (Low)

San Diego Bay
- B Street & Broadway Piers (Moderate)
- Switzer Creek (Moderate)
- Evans & Sampson Streets (Moderate)
- Chollas Creek (Moderate)
- Seventh Street Channel (High)
<table>
<thead>
<tr>
<th><strong>Site</strong></th>
<th><strong>Source</strong></th>
<th><strong>Alternative Remedial Actions</strong></th>
<th><strong>Estimated Costs to RemEDIATE Site</strong></th>
<th><strong>Benefits of Remediation</strong></th>
</tr>
</thead>
</table>
| Cañada de la Huerta, Shell Hercules Site | Environmental release of PCBs laden fluid used in plant heat transfer treatment process | Continue post-remediation monitoring program plus possible additional excavation and offsite disposal of polluted sediment Monitoring  
Site Assessment  
Amended RAP  
Implementation  
Total | $300,000  
$250,000  
$50,000  
$2,000,000  
$2,600,000 | COMM (SPORT FISHING), AQUA, WILD, COLD, WARM, RARE |
| Delta Estuary, Cache Creek | Exports from Placer gold mining regions of the Sierra Nevada; Mercury mining in the Coast Range; Resuspension of estuarine sediment; Effluent from municipal and industrial discharges to surface waters. | Studies to develop mercury control strategy:  
1. Fish eating bird & egg studies plus OEHHA coordination.  
2. Mercury monitoring in Cache Creek/year (multi year)  
3. Mine remediation feasibility studies  
4. Estuarine mercury monitoring studies (multi year) |  
|                           |                                                                                                                                             |                                                                                                 | $335,000  
$1,120,000  
$150,000  
$1,500,000  
$3,105,000 | COMM and WILD |
<table>
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<tr>
<th>Site, Source</th>
<th>Alternative Remedial Actions</th>
<th>Estimated Costs to Remediate Site</th>
<th>Benefits of Remediation</th>
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<tr>
<td>Delta Estuary, Entire Delta, Application of Diazinon as a dormant orchard spray in the agricultural areas of the Central Valley</td>
<td>The RWQCB determined that the pattern of pesticide detections observed from dormant spray applications is frequent and merits consideration as a high priority THS. The RWQCB will regulate pesticides under 303(d) of the Clean Water Act and develop a load reduction program by the year 2005.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta Estuary, Morrison Creek, Mosher, 5-Mile, Mormon Slough &amp; Calaveras River, Urban runoff</td>
<td>The RWQCB determined that the pattern of pesticide detections observed from dormant spray applications is frequent and merits consideration as a high priority THS. The RWQCB will regulate pesticides under 303(d) of the Clean Water Act and develop a load reduction program by the year 2005.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta Estuary, Ulatis Creek, Paradise Cut, French Camp &amp; Duck Slough, Agricultural use</td>
<td>The RWQCB determined that the pattern of pesticide detections observed from dormant spray applications is frequent and merits consideration as a high priority THS. The RWQCB will regulate pesticides under 303(d) of the Clean Water Act and develop a</td>
<td></td>
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<table>
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<th>Site</th>
<th>Source</th>
<th>Alternative Remedial Actions</th>
<th>Estimated Costs to RemEDIATE Site</th>
<th>Benefits of Remediation</th>
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<tbody>
<tr>
<td>Humboldt Bay, Eureka Waterfront H Street</td>
<td>Scrap metal facility including disassembly, incineration, and crushing of autos. Storage of metals, batteries, radiators, metal reclamation from electrical transformers and misc. refuse.</td>
<td><em>Load reduction program by the year 2005</em> Removal of polluted soils and capping of the site</td>
<td>$500,000 - $5,000,000</td>
<td>NAV, REC 1, REC 2, COMM (SPORT FISHING), WILD, RARE, MAR, MIGR, SPWN, SHELL, EST, AQUA</td>
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<tr>
<td>Los Angeles/Inner Harbor, Dominguez Channel/Consolidated Slip</td>
<td>Historical discharges of DDTs, PCBs Metals. Nonpoint sources such as spills, vessel discharges, anti fouling paints and storm drains. Waste streams from refineries may also be contributing.</td>
<td>Dredging and offsite disposal of polluted sediments if suitable disposal site is identified Treatment of polluted sediments</td>
<td>$1,000,000-$5,000,000 $5,000,000-50,000,000</td>
<td>EST (and possible improvements in other Beneficial Uses)</td>
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<tr>
<td>Los Angeles Outer Harbor, Cabrillo Pier</td>
<td>Historical discharge of DDTs, PCBs. Discharge of wastewater effluent from Terminal Is. Treat. Plant may contribute. Nonpoint sources include ship spills, industrial facilities and stormwater runoff.</td>
<td>Dredging and offsite disposal of polluted sediments if suitable disposal site is identified Capping Treatment of polluted sediments</td>
<td>$500,000-$5,000,000 $500,000-$1,000,000 $2,500,000-50,000,000</td>
<td>REC 1, REC 2, MAR and EST-</td>
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| Lower Newport Bay, Rhine Channel    | Boat yard operations                                                  | Dredging & off-site removal
Sediment removal
Offsite transport
Disposal in a Class I facility | $231,800
$4,600,000
$5,750,000

Total $10,581,800 | NAV, REC 1, REC 2, COMM, WILD, RARE, SPWN, MAR, SHEL |
| McGrath Lake                        | Past and present agricultural activities                              | Dredging
Treatment of sediments
Source control measures | $3,000,000-30,000,000
$15,000,000-300,000,000 | EST |
| Moss Landing Harbor and Tributaries  | Past and present agricultural activities, River and Stream maintenance activities, ship maintenance and urban runoff. | RWQCB Program Management
Control of harbor pollutants
Urban runoff action plan.
BMPs to reduce pollution from agriculture.
Monitoring | 5 Yr projected expenditures $925,000
$348,334
$1,052,750
$6,790,000
$678,000
5 Yr Total - $9,794,084 | NAV, SHEL, COMM, AQUA, WILD, WARM, COLD, EST BIOL, RARE, IND. |
| Mugu Lagoon east arm, Main Lagoon, western arm Calleguas Creek Tidal Prism | Agricultural runoff, nonpoint source runoff | In situ treatment of polluted sediment
Dredging and removal of polluted sediments | Approximately: - $72,500,000
$1,000,000-$5,000,000 | EST, WILD, MIGR |
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<th>Estimated Costs to Remediate Site</th>
<th>Benefits of Remediation</th>
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<tbody>
<tr>
<td>San Diego Bay, Seventh St. Channel Naval Station</td>
<td>Industrial Activities, pesticides from lawns, streets and buildings (urban runoff), runoff from pest control operations, and atmospheric fallout.</td>
<td>Dredging &amp; upland disposal. Dredging $ Contained Aquatic Disposal.</td>
<td>$3,384,800-$7,405,200 $145,520-$275,880</td>
<td>MAR</td>
</tr>
<tr>
<td>San Francisco Bay, Castro Cove</td>
<td>Refinery operations</td>
<td>Site investigation &amp; feasibility study. Dredging &amp; capping. RWQCB staff cost</td>
<td>$2,000,000 $1,000,000-20,000,000 $200,000</td>
<td>EST</td>
</tr>
<tr>
<td>San Francisco Bay, Entire Bay</td>
<td>Mercury mining runoff and use in placer and hydraulic gold mining operations. Historic industrial use of PCBs.</td>
<td>Complete cleanup New Almaden Mine Point Potrero cleanup TMDLs adoption &amp; Mercury strategy Watershed investigations to identify sources Regional Monitoring Plan studies Public education Education on source control and product substitution Total</td>
<td>$10,000,000 $800,000-3,000,000 $10-20,000,000 $4,000,000/5 Yrs $75,000/yr and $150,000/2 yrs, then $50,000/yr $50,000 $25-$45,000,000</td>
<td>COMM, MAR, EST, REC 1, REC 2, WILD, SHEL.</td>
</tr>
<tr>
<td>Site</td>
<td>Source</td>
<td>Alternative Remedial Actions</td>
<td>Estimated Costs to Remediate Site</td>
<td>Benefits of Remediation</td>
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</tbody>
</table>
| San Francisco Bay, Islais Creek      | Storm water or urban runoff entering directly or through combined sewer overflows operated by the City and County of San Francisco. Sheet runoff or past discharge from auto dismantlers and metal recycling facilities. Deposition of air emissions from I-280. | Site investigation & feasibility study  
Remediation including dredging with follow-up monitoring  
Changing operation or increase storage and treatment capacity of the current system  
RWQCB Staff costs | $1,000,000  
$800,000-$5,200,000  
$75,000,000  
$100,000-$200,000 | EST, REC 2 |
| San Francisco Bay, Mission Creek    | Historic sources or storm water directly or entering by infrequent combined sewer overflows operated by the City and County of San Francisco. Deposition of air emissions from I-280. | Site investigation & feasibility study  
Remediation including dredging/capping or off site disposal & follow-up monitoring  
Increase storage & structural changes  
RWQCB Staff costs | $1,000,000  
$800,000-$1,800,000  
$75,000,000  
$100,000-$200,000 | EST, REC 1, REC 2 |
| San Francisco Bay, Peyton Slough     | Historical industrial activity associated with the creation of cinder/slag piles | Dredging, disposal and capping  
Follow-up monitoring  
RWQCB Staff costs | $400,000 to $1,200,000  
$5,000-$10,000/yr  
$10,000 - $50,000 | EST |
| San Francisco Bay, Point Potrero/ Richmond Harbor | Historical ship building and scrapping operations and metal scrap recycling operations | Remedial Action Plan Recommendations.  
No action  
Sheetpile Bulkhead, capping and institutional controls  
Rock Dike Bulkhead capping and institutional controls | $0  
$792,000  
$1,344,000 | COMM, MAR, EST, WILD, REC 1, REC 2 |
<table>
<thead>
<tr>
<th>Site</th>
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<th>Alternative Remedial Actions</th>
<th>Estimated Costs to Remediate Site</th>
<th>Benefits of Remediation</th>
</tr>
</thead>
</table>
| San Francisco Bay, Stege Marsh    | Oxidation of pyrite cinders in the presence of sulfides produced during industrial process. Pollutants may have also entered via urban runoff or from upland industrial facilities. | Excavation and off-site disposal  
Excavation reuse or disposal on site  
RWQCB costs | $3,010,000  
$881,000  
$30,000/3 yrs | EST, WILD, RARE |
| San Joaquin River, City of Stockton | Low Dissolved Oxygen caused by Ammonia and BOD from the Stockton Wastewater Control Facility and surrounding point and nonpoint discharges. | TMDL development studies to achieve full compliance with water quality objectives as follows:  
1. Steering committee facilitation & coordination  
2. Summarize and compile data  
3. Source analysis  
4. Monitoring to evaluate load reduction | $1,500,000 to $10,000,000  
$100,000-$200,000 | COMM, EST, REC 1, REC 2, WILD |
| Santa Monica Bay, Palos Verdes Shelf | Historical wastewater discharges from manufacturing operations and wastewater treatment plant discharges. | 1. Capping 7.6 Sq. Km with 45 cm isolation cap  
2. Capping 7.6 Sq. Km with 15 cm isolation cap  
3. Capping most polluted area 4.9 Sq. Km with 15 cm. isolation cap | $44-$67,000,000  
$18-$30,000,000  
$13-$19,000,000 | MAR, COMM |
<table>
<thead>
<tr>
<th>Type of Remediation Activity</th>
<th>Environmental Factor</th>
<th>Potentially Significant Impact</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Air Quality</td>
<td>Emissions from dredging, excavation; transport, disposal, and capping equipment</td>
<td>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.</td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Potential for increased odors if dredged material is reused.</td>
<td>Design and locate reuse facility or other facility to remove impact.</td>
<td></td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Surface Water</td>
<td>Short-term impact on aquatic resources from high concentrations of chemical concentrations or turbidity</td>
<td>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 is stays within disposal area or is transported out of the disposal area.</td>
</tr>
<tr>
<td>Dredging, Disposal</td>
<td>Runoff from excavation or disposal above sea level</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Capping, Confined Aquatic</td>
<td>Leaching of pollutants from capped area into</td>
<td>Require a monitoring program to ensure polluted sediments are placed as intended, cap material is placed correctly and the cap is</td>
<td></td>
</tr>
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<tr>
<td>Disposal</td>
<td></td>
<td>surface sediments and water.</td>
<td>effective in isolating polluted sediments.</td>
</tr>
<tr>
<td>Capping, Confined Aquatic Disposal</td>
<td></td>
<td>Changes in currents or course/direction of water movements</td>
<td>Removal and placement will attempt to retain regional bottom depth and contour, except where bathymetry is planned for environmental improvement.</td>
</tr>
<tr>
<td>Dredging, Disposal</td>
<td>Geology and groundwater</td>
<td>Destabilizing channel slopes and undermining pilings</td>
<td>Use BMPs or standard building practices to reduce instability of pilings and wharves.</td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Biological resources</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td></td>
<td>Sensitive species may be displaced by removing habitat or threat or burial or</td>
<td>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.</td>
</tr>
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</tr>
<tr>
<td>Disposal</td>
<td></td>
<td>contamination of sensitive habitats due to excessive turbidity caused by dredging operation.</td>
<td></td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Transportation</td>
<td>Access to berths by ships or recreational boating could be altered.</td>
<td>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.</td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Noise</td>
<td>Operation of dredging operations may cause noise impacts.</td>
<td>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.</td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Hazards and Polluted wastes</td>
<td>Accidental spills/releases from dredging operations</td>
<td>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.</td>
</tr>
<tr>
<td>Disposal</td>
<td></td>
<td>Leaching of pollutants into groundwater.</td>
<td>Dry sediments in areas where impermeable liner or membrane blocks leaching.</td>
</tr>
<tr>
<td>Disposal</td>
<td></td>
<td>Disposal of polluted</td>
<td>The areal extent and volume of sediment should be characterized so</td>
</tr>
<tr>
<td>Type of Remediation Activity</td>
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</tr>
<tr>
<td>Dredging</td>
<td></td>
<td>sediments may exceed landfill capacities or acceptance criteria.</td>
<td>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.</td>
</tr>
<tr>
<td>Dredging, Disposal, Capping, Confined Aquatic Disposal</td>
<td>Dredging near former explosives disposal area - danger of injury to people, equipment, and wildlife at dredge site; danger to public due at disposal site.</td>
<td>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.</td>
<td>Selection of feasible alternative mitigation measure such as capping, or in-situ or ex-situ treatment near dredge site.</td>
</tr>
</tbody>
</table>
Findings

Known toxic hot spots

Twenty-two high priority known toxic hot spots have been identified in the enclosed bays, estuaries and ocean waters of the State.

Planning for the remediation of these sites has been completed and incorporated into the Consolidated Plan.

Twenty-six moderate and low priority known toxic hot spots have been identified.

Scope of actions and costs

The RWQCBs have identified a number of actions to address the problems identified at each high priority known toxic hot spot. Depending on the source and areal extent of the known toxic hot spot, the actions to remediate the sites include:

- Institutional controls/education
- Better characterization of the sites and problem
- Dredging
- Capping
- A combination of dredging and capping
- Source control
- Watershed management
- Implementation of a no-action alternative

Several of the actions only work to characterize the problem at a toxic hot spot. The costs identified in these study-oriented actions do not include all actions necessary to fully remediate the toxic hot spot. Additional funds would be required to remediate these toxic hot spots after characterization studies are complete.

The estimated total cost to implement the Consolidated Plan ranges from $72 million to $812 million. Much of this amount is recoverable from responsible dischargers. The unfunded portion of the cost to implement the
Consolidated Plan ranges from approximately $40 million to $529 million.

**Implementation/Funding Programs**

Much of the Consolidated Plan can be implemented through existing Water Code authorities. However, no funding is identified to implement the Consolidated Plan for several high priority known toxic hot spots.

A variety of potential funding sources exist that could be used to fund portions of the cleanup plan. These funding sources include: nonpoint source grants, wetland grants, the State Revolving Fund, CALFED, Agricultural Drainage Management Loan Program, and the Cleanup and Abatement Fund. The Consolidated Plan could also be implemented by redirecting funding using Supplemental Environmental Projects or trading credits.

None of these funds or approaches, singly or in combination, can provide sufficient funding to implement the remedial actions recommended for the high priority known toxic hot spots.

**Need for a program to fund remediation**

The SWRCB recommends that the California Legislature consider augmenting the SWRCB budget with funds to begin implementation of the actions identified for high priority known toxic hot spots. The Legislature need not establish a new program to implement toxic hot spot cleanup.

Additional funding is needed to support prevention of toxic hot spots caused by or contributed to by point and nonpoint dischargers. The SWRCB and RWQCBs need additional funds to support the revision of WDRs, enforcement, compliance, storm water activities and the nonpoint source activities to adequately implement watershed management.
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