Contaminated Sediments and Dredging Program

Directory of Program Elements

Problem Definition

For more than 100 years, people have released toxic compounds into the waters and sediments of Puget Sound. When these toxic compounds contaminate sediments, they enter the food web and cause harm to a wide variety of habitats including salmon, flatfish and marine mammals.

Contaminants can reach Puget Sound's waters and sediments from various sources, but mainly from unpermitted discharges, stormwater runoff, raw sewage discharges (e.g., combined sewer overflows) and from permitted point-source discharges (e.g. industrial and municipal outfalls). Air pollution appears to be another large contributor of contaminants into Puget Sound. Airborne contaminants can enter the water directly or through runoff. In addition, dredging and disposing sediments (such as for navigation purposes) can disturb and redistribute contaminants.

Although contaminant levels in surface sediment have decreased in some areas since pollution controls were established, contamination levels in the deep central Puget Sound basin remain significantly higher than estimated pre-industrial levels. In urban areas, levels of contamination are much higher—up to 100 times the levels in the cleanest rural bay. As a result, accumulation of contaminants in sediments and the resulting damage to natural populations are recognized as serious threats to marine and estuarine ecosystems.

As of 1999, the Department of Ecology had compiled sufficient data to characterize more than 15,000 acres of Puget Sound's urban embayments. According to Ecology's records, 38 percent of this area, or 5,750 acres, was identified as contaminated above the state's sediment quality standards. Eighty-six of the most highly contaminated areas (estimated at 3,200 acres) within these urban embayments were identified as contaminated sediment sites, requiring cleanup directed by either state or federal cleanup laws. Currently, these sites are in various stages of cleanup—15 have been cleaned up since 1996—and the rest are being investigated. Sediment cleanups remain controversial because of disagreements about appropriate methods of disposal, treatment or reuse of the sediments.

What does "shall" mean?

The Action Team has determined that the actions in this plan are needed to protect and restore Puget Sound. Consistent with the importance of these actions, this plan says that appropriate implementers "shall" perform the actions. However, implementation of many of these actions is a long-term process. The Action Team's work plans will identify the actions that need to be taken each biennium to implement this management plan. Implementation of actions in the work plans is subject to the availability of funds and public input into the decision-making processes of implementing entities. When an action is included in a biennial work plan, the Action Team expects that it will be implemented in accordance with the relevant provisions of the Puget Sound management plan, in accordance with Chapter 90.71 RCW.

Institutional Framework

Dredging and disposing of dredged material are regulated through state and federal permit systems. The U.S. Army Corps of Engineers regulates dredging, filling and construction in U.S. waters under the federal Clean Water Act and the Rivers and Harbors Act. The U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration review permits issued by the Army Corps of Engineers. Ecology administers the state's Shoreline Management Act, regulating coastal development. The Department of Natural Resources is the state's trustee for submerged and intertidal lands. The federal Fish and Wildlife Coordination Act and the National Environmental Policy Act require agency coordination and environmental review of proposed activities in the above-named areas.

Dredged material with low levels of contamination may be disposed of at open-water sites, while material with higher levels must be treated or disposed of at confined-disposal sites. The Puget Sound Dredged Disposal Analysis (a cooperative effort by the Army Corps of Engineers, the EPA, Ecology and Natural Resources) has developed evaluation procedures and established new sites for unconfined open-water disposal. However, disposing of sediments that are too contaminated for unconfined open-water sites is still being evaluated on a case-by-case basis without uniform standards. Several agencies are currently pursuing the development of a multi-user disposal and/or treatment site for containing sediments with higher levels of contaminants.

Program Goal

To reduce and ultimately eliminate adverse effects on biological resources and humans from sediment contamination throughout the Sound by reducing or eliminating discharges of toxic contaminants and by capping, treating or removing contaminated sediments.

Program Strategy

The strategy for achieving this goal is to:

a. classify sediments that cause adverse biological effects and significant human health risks;
b. implement Soundwide controls on sources of contaminants causing sediments to fail the sediment standards;
c. provide rules and sites for disposal of dredged materials; and
d. expand the urban bay program to provide for additional source control and consideration of cleanup actions for existing areas of high sediment contamination levels.

S-1. Sediment Program Policies

The following policies shall be followed by all state and local agencies in actions affecting sediment quality, including rule making, setting priorities for funding and actions, and developing permit programs:

a. All government actions will lead toward eliminating the presence of sediments in the Puget Sound basin that cause adverse effects to biological resources or pose a significant health risk to humans.
b. Programs for managing the dredging and disposal of sediments should result in a net reduction in the exposure of organisms to adverse effects.
c. Sediment cleanup programs (which may include capping in place) shall be undertaken when reasonable to reduce, with the intent of eliminating, the exposure of aquatic organisms to sediments having adverse effects on those organisms. As methods become available, treatment shall be the preferred method of cleaning up contaminated sediments.

S-2. Program for Unconfined Open-Water Disposal

The U. S. Army Corps of Engineers, the Environmental Protection Agency and the state departments of Ecology and Natural Resources will continue to manage the Dredged Material Management Program (DMMP) for unconfined open-water disposal of dredged material. The DMMP will include:

a. criteria for selecting unconfined open-water disposal sites;
b. testing criteria and standards for allowing material to be disposed of at open-water sites;

c. management plans, including monitoring, for the open-water sites; and
d. an annual review process to update the program as new information becomes available.

Each federal and state agency, local and tribal government, and port is required to manage the disposal of dredged material in open water according to the DMMP and the goals of the *Puget Sound Management Plan*.

S-3. Confined-Disposal Standards for Sediments

The Department of Ecology shall develop an approval process and technical manual of standards for confined disposal or treatment of dredged material. Ecology shall adopt regulations necessary to implement the approval process and use of these standards. The standards shall address reuse, treatment or disposal of dredged material that exceeds the sediment management standards and that will not be disposed of at unconfined open-water disposal sites established by the DMMP. These standards for confined disposal will be used by Ecology, state and federal agencies, shoreline jurisdictions and local health departments in approving or denying permits for the use or disposal of dredged material that exceeds sediment management standards, and for choosing remedial actions for contaminated sediment sites. The decision to take a remedial action will be based on the guidelines called for in element S-5. The objective of these disposal standards is to prevent the exposure of aquatic or terrestrial organisms, including humans, to adverse effects from the contaminants in the sediments. The standards shall address treatment as well as in-water and upland confined-disposal methods.

Target Date for S-3: Ongoing.

S-4. Multi-User Disposal or Treatment of Contaminated Sediments

Completed portions of this element have been deleted.

The departments of Fish and Wildlife, Ecology and Natural Resources, the Puget Sound Water Quality Action Team, the Army Corps of Engineers, EPA, the U. S. Fish and Wildlife Service and other appropriate agencies will continue to pursue multi-user disposal or treatment of contaminated sediments consistent with the *Puget Sound Confined Disposal Site Study Final Environmental Impact Statement* published in October 1999. The agencies will:

a. detail the treatment or disposal siting process;
b. define the means for managing liabilities;
c. include provisions for evaluating human health considerations;
d. provide a management agreement listing institutional responsibilities;
e. define stakeholder and public participation roles;
f. identify funding sources and mechanisms for future siting and construction steps; and
g. pursue implementation of the preferred option.

Target Date for S-4: Implement preferred option by 2005.

S-5. Guidelines for Sediment Cleanup Decisions

To establish a uniform decision process concerning sediment contamination, Ecology shall periodically review and update its guidelines for deciding whether existing sediments that exceed the sediment management standards should be remediated by capping or excavating with off-site treatment or confined disposal, or whether no action should be taken. In updating the guidelines, Ecology shall consult with agencies and parties with expertise in these issues and provide a public education and public involvement program. The guidelines shall include consideration of deadlines for making decisions on cleanup actions. As a guide in deciding whether to wait for natural processes to cap or dilute the sediments or to undertake cleanup actions, the guidelines shall also include consideration of a time by which surface sediments should no longer have adverse effects. Because of the high cost of treatment or removal of contaminated sediments, the guidelines shall include a process and criteria for establishing priorities for such actions, including consideration of the cost of cleanup. The guidelines should include a process for ranking sediments with high levels of contamination by the relative potential risk they pose to human health and the environment.

Target Dates for S-5: Ongoing.

S-6. Investigations and Cleanup of Contaminated Sediments

This element deals with cleaning up existing sediment contamination. In S-6.1, specific sample locations that exceed sediment standards are inventoried. In S-6.2, Ecology uses the inventory and other information to identify bays or other similarly sized areas for further investigation under S-6.3 and S-6.4. Specific sites that should be considered for cleanup actions are discussed in S-6.5 and S-6.6.

Although this element contains specific directives and assignments, the Action Team intends that the EPA, Ecology and other agencies and local governments shall exercise flexibility in resolving contaminated sediment problems. To organize and coordinate the program, Ecology, in cooperation with the EPA and other state and federal agencies, shall undertake an integrated program consisting of the guidelines called for in element S-5 and the following components:

S-6.1. Inventory of Sediment Contamination

To provide information to the Puget Sound Council, the Action Team and the public and to allow for tracking of increases or decreases in the extent of sediment contamination, Ecology shall maintain an inventory of points or locations in the basin where sediment samples have been taken that violate the sediment management standards. The inventory should consist of graphic displays with locations of contamination indicated. All available sources of data, including monitoring, permit applications and published research studies, should be used in developing the inventory. The inventory shall be integrated into a geographic information system (GIS) and used to update the Puget Sound Environmental Atlas if possible. The inventory shall be updated every two years and made available in digital form. The Action Team support staff shall assist in distributing the inventory and include a summary of the inventory in the State of the Sound Report. As an aid in targeting pollution source-control activities, Ecology's inventory shall identify the chemicals or other characteristics for each location that causes it to be on the inventory.

Target Date for S-6.1: Ongoing.

S-6.2. Contaminated Sediment Area Priority List and Investigation Schedule

Ecology shall establish a priority list of areas to be investigated. Every effort should be made to investigate each area on this priority list within five years of its first appearance on the list. Ecology shall reevaluate both the area priority list and the investigation schedule every two years.

Target Date for S-6.2: Ongoing.

S-6.3. Investigations of Contaminated Sediment Areas

Ecology, in cooperation with federal and state agencies and local and tribal governments, shall carry out investigations of contaminated sediment areas identified and listed under S-6.2. Investigations shall be designed on a case-by-case basis using Elliott Bay and the Bellingham Bay pilot studies as models. The investigations shall include reviews of existing information on contamination and sources as well as field investigations designed to refine information on levels and distribution of contamination and probable sources.

S-6.4. Site Investigations and Baywide Plans

For each contaminated sediment area being investigated, Ecology, the EPA, local governments and other appropriate agencies will form a team of investigators to work on source control, habitat restoration and sediment cleanup. Members of the public should be given the opportunity to participate. Baywide planning is encouraged as a tool to balance cleanup, habitat restoration and other water dependent activities.

Baywide planning teams shall carry out various source control, cleanup and investigative actions including:

a. Review and comply with existing discharge permits;

b. Reopen and modify discharge permits for sources in the vicinity to control toxicants identified at problem levels in the sediments;

c. Search for unpermitted discharges and take enforcement actions;

d. Investigate contamination in storm drains or groundwater and search for sources of such contamination;

e. Take other actions to control sources of sediment contamination by seeking to achieve full compliance with applicable laws and reg-

ulations in locations that drain into the contaminated area.

f. Identify sites within the area that should be considered for cleanup;

g. Develop appropriate cleanup actions.

h. Develop baywide plans for each urban bay which include identification of habitat restoration needs and address future shoreline uses; and

i. Coordinate with applicable watershed-planning efforts.

Baywide planning teams should consider developing total daily maximum loads (TMDLs) as source control strategies for bays when appropriate.

S-6.5. Sediment Site-Cleanup Actions

Following the guidelines developed under element S-5, when sites with high levels of sediment contamination are identified, Ecology shall consider the feasibility and reasonableness of sediment cleanup actions and coordinate with Department of Natural Resources on actions that affect state-owned aquatic lands. Ecology, as part of this element, shall develop decision criteria for determining when sediment cleanup actions should be taken pursuant to laws regulating water quality and discharge permits (sediment restoration activities) and when cleanup actions should be taken pursuant to the Model Toxics Control Act (sediment remedial actions). If sediment cleanup actions are necessary, funds for such actions will be sought first from responsible parties and then from public sources. All cleanup actions shall be consistent with the guidelines that were developed under element S-5 and the confined disposal standards in S-3. Ecology shall maintain a priority list of specific sediment sites at which cleanup will be considered.

Target Date for S-6.5: Ongoing.

S-6.6. Responsible Parties

Where capping, treatment or removal of contaminated sediments is recommended, Ecology shall attempt to have such cleanup actions, including investigations and feasibility studies, undertaken and paid for by responsible parties, whether they are dischargers under water quality laws or liable persons pursuant to the Model Toxics Control Act. Natural Resources shall utilize state proprietary authority to secure, to the extent possible, site cleanup, natural resource damages, and cost recovery from responsible parties whose contamination is located on state-owned aquatic lands. Every reasonable attempt will be made to recover cleanup costs from responsible parties, including study costs.

Target Date for S-6.6: Ongoing.

S-6.7. Public Involvement, Education and Technical Assistance

State and federal agencies involved in contaminated sediment management will provide for adequate public involvement, education and technical assistance for sediment program issues including sediment management standards.

Target Date for S-6.7: Ongoing.

S-7. Measuring Program Effectiveness

The Puget Sound Action Team support staff shall evaluate program results through use of program and environmental performance measures. This supports the adaptive management approach described in the Estuary Management Program of the *Puget Sound Management Plan*. At a minimum, these evaluations should incorporate information from the following monitoring and assessment sources:

a. Program measures that track implementation of this program:
   - Progress towards establishing multi-user disposal or treatment of contaminated sediments.
   - Completion of baywide plans and remedial investigations.

b. Case studies that assess the effectiveness of program actions:
   - Environmental outcome of sediment treatment and disposal actions.

c. Performance of environmental conditions for which this program is a major or important determinant (recognizing that these measures may be affected by several plan programs):
   - Area of sediments in Puget Sound that exceed the sediment management standards.
   - Area of contaminated sediments that have been cleaned up.
   - Trends in measures of toxic contamination of marine animals.