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Puget Sound Estuary Program

BUDD INLET
URBAN BAY ACTION PROGRAM:

1991 Action Plan

July 1991

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BUDD INLET URBAN BAY ACTION PROGRAM: 1991 Action Plan

By

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List of Acronyms and Abbreviations

AET	apparent effects threshold
Authority	Puget Sound Water Quality Authority
BMP	best management practice
CCMP	comprehensive conservation and management plan
CED	City of Tumwater Department of Community and Economic Development
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
Corps	U.S. Army Corps of Engineers
CSO	combined sewer overflow
CWA	Clean Water Act
DNR	Department of Natural Resources
DOH	Washington Department of Health
DOT	Washington Department of Transportation
Ecology	Washington Department of Ecology
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FWS	U.S. Fish and Wildlife Service
GIS	geographic information system
LOTT	Lacey, Olympia, Tumwater, and Thurston County Wastewater Treatment Program
MGD	million gallons per day
MOA	Memorandum of Agreement
MTCA	Model Toxics Control Act
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbon
PIE	Public Involvement and Education
ppb	part per billion
ppm	part per million
PSAMP	Puget Sound Ambient Monitoring Program
PSDDA	Puget Sound Dredged Disposal Analysis
PSEP	Puget Sound Estuary Program
PSWQMP	Puget Sound Water Quality Management Plan
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
TSCA	Toxic Substances Control Act
WARM	Washington Ranking Method
WDF	Washington Department of Fisheries
WWTP	wastewater treatment plant

Acknowledgments

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The Budd Inlet Urban Bay Action Program has benefitted from the participation of members of an interagency work group and a citizen advisory committee. Duties of the work group and advisory committee members include 1) reviewing program documents, agency policies, and proposed actions; 2) providing data reports and other technical information to EPA; and 3) disseminating action program information to constituencies or interest groups. The past and continuing efforts of the Budd Inlet Interagency Work Group and Citizen Advisory Committee are greatly appreciated. Special thanks are extended to Ms. Melany Vorass, the Budd Inlet Action Program coordinator, for chairing the work group activities. Members of the Budd Inlet Interagency Work Group and Citizen Advisory Committee and other contributors are listed below.

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Executive Summary

Previous studies of Budd Inlet have revealed widespread bacterial contamination, low levels of dissolved oxygen (resulting from eutrophication) in the water, and chemical contamination of sediment and marine organisms. Eutrophication and chemical contamination pose hazards to the aquatic ecosystem. For example, toxic contamination may decrease the abundance and diversity of benthic invertebrate organisms, increase the prevalence of tissue disorders such as liver tumors in fish, and result in the accumulation of chemicals in the tissue of fish and shellfish. Further, chemical and bacterial contamination may result in human health problems when contaminated fish and shellfish are eaten. Chemical and bacterial contamination may also reduce commercial and recreational shellfish harvesting due to beach closures.

The U.S. Environmental Protection Agency and the Washington Department of Ecology, working with the Lacey, Olympia, Tumwater, and Thurston County Wastewater Treatment Program, the cities of Olympia and Tumwater, Thurston County, the Squaxin Island Tribe, the Port of Olympia, and others, developed the Budd Inlet Action Plan to reduce water quality problems in the Budd Inlet system. A Citizen Advisory Committee, composed of interest group representatives and citizens, aided in setting goals and developing the plan. The Urban Bay Action Program 1) identifies priority problem areas of contamination; 2) identifies current, historical, and potential sources of contaminants; 3) establishes schedules to take corrective actions to eliminate existing problems and to investigate potential problems; and 4) identifies appropriate agencies for implementing corrective actions. Ongoing coordination among participating agencies and citizens will be provided by the Washington Department of Ecology, which funds a full-time coordinator for the Budd Inlet Action Program. Authority for implementation of the 1991 Action Plan is derived from various federal, state, and local environmental regulations and is specified under the industrial and municipal discharge control element (P-13) in the Puget Sound Water Quality Management Plan.

In 1988, the U.S. Environmental Protection Agency analyzed available data on eutrophication, bacterial and chemical contamination, and related adverse biological effects. Priority problem areas were identified in Budd Inlet based on these data. For example, areas received a high priority ranking for action if they exhibited

particularly high levels of contamination or adverse biological effects such as high mortality rates of organisms in sediment toxicity tests. The regulatory and management efforts of the 1991 Action Plan focus on sources that are most directly related to priority problem areas. The highest priority problem areas for eutrophication are all located in southern Budd Inlet. Priority problem areas for microbial contamination exist throughout Budd Inlet and include areas near Moxlie Creek, Boston Harbor, Ellis Creek, and Tykle Cove. Priority problem areas for sediment contamination are located in the southern portion of the inlet and include areas near the McFarland/Cascade Pole Company, the West Bay drain, and Fiddlehead Marina.

Actions to correct problems may include remedial (cleanup) activities such as source control and sediment cleanup activities. Controlling individual sources may be accomplished by revising permits, licensing currently unpermitted discharges, and developing specific contaminant control techniques. Source control efforts include reducing concentrations or volumes of discharges to prevent further environmental problems. Sediment remedial actions, such as removal or capping of contaminated sediments, correct existing environmental problems.

The action plan specifies a broad array of actions proposed to improve the environmental quality of Budd Inlet, including:

- **Planning and Program Development Actions**—The Urban Bay Action Program, via the *Initial Data Summaries* and *1991 Action Plan* reports, integrates local planning activities, ensures consistency among the various environmental programs, and provides a mechanism for public review to ensure accountability for implementation of agency activities
- **Contaminant Control Actions**—The Port of Olympia will complete a log yard storm water management project by paving log storage areas and constructing and maintaining detention swales
- **Remedial Investigation Actions**—The Washington Department of Ecology will conduct initial investigations of 30 industrial and commercial facilities, including Dunlap Towing and Reliable Steel
- **Monitoring Actions**—The Squaxin Island Tribe plans to conduct habitat surveys in Indian, Moxlie, Percival, Ellis, and Mission creeks

- **Resource Protection Actions**—The Washington Departments of Fisheries, Ecology, and Natural Resources will evaluate the impacts of nutrient loading from salmon rearing pens
- **Educational Actions**—The Budd Inlet Action Plan Citizen Advisory Committee will educate the public on cleanup activities at the McFarland/Cascade Pole hazardous waste site.

The 1991 Action Plan is a working document that will be refined as new data are made available. An interagency urban bay action team, comprising technical and planning staff from local, state, tribal, and federal agencies, will meet two to four times per year to coordinate action plan implementation, review progress made on implementation, resolve any problems, and refine the plan to reflect new information and activities. The Washington Department of Ecology's Action Program Coordinator has responsibility for the long-term coordination of the action plan and implementation of source control actions.

Introduction

In response to widespread concern over the environmental health of Puget Sound, several agencies with regulatory, resource management, and research responsibilities initiated the Puget Sound Estuary Program (PSEP) in 1985. The primary objectives of PSEP are to protect the sound and its living resources and to improve the condition of contaminated areas. As a primary element of PSEP, the Urban Bay Action Program was established to address the most severe contamination problems in Puget Sound, which occur in embayments near urban areas.

The Urban Bay Action Program focuses on identifying and reducing eutrophication and bacterial and chemical contamination through a series of coordinated actions by government agencies and responsible parties (e.g., owners and operators of the facilities that are sources of contamination). Contaminant control activities may include improving drainage or treatment systems for storm water and sewage, developing stricter permit conditions for wastewater dischargers, enforcing hazardous materials regulations, and initiating best management practices (BMPs) or cleanup measures at sites of concern. A guidance document, *The Urban Bay Action Program Approach: A Focused Toxics Control Strategy* (PTI 1990) describes the overall goals and details of the Urban Bay Action Program in more detail.

Under the Urban Bay Action Program, Budd Inlet was identified in 1986 as a priority area for problem identification and corrective action planning. Budd Inlet is an embayment in southern Puget Sound; the city of Olympia is located at its southern extremity (see Figure 1). In April 1988, existing data were collected and analyzed to identify and prioritize problem areas (Tetra Tech 1988). The 1991 Action Plan is based on this data summary report and on extensive discussions with the government entities that have responsibility for protecting the environmental quality of Puget Sound.

The 1991 Action Plan describes the comprehensive plans and programs that address contaminant sources and problem areas on an areawide basis and the individual corrective actions developed for specific sites and sources within the Budd Inlet project area. Corrective actions are described for each priority problem area and potential contaminant source. Problem areas and sources were identified by Tetra Tech (1988) and participating agencies during

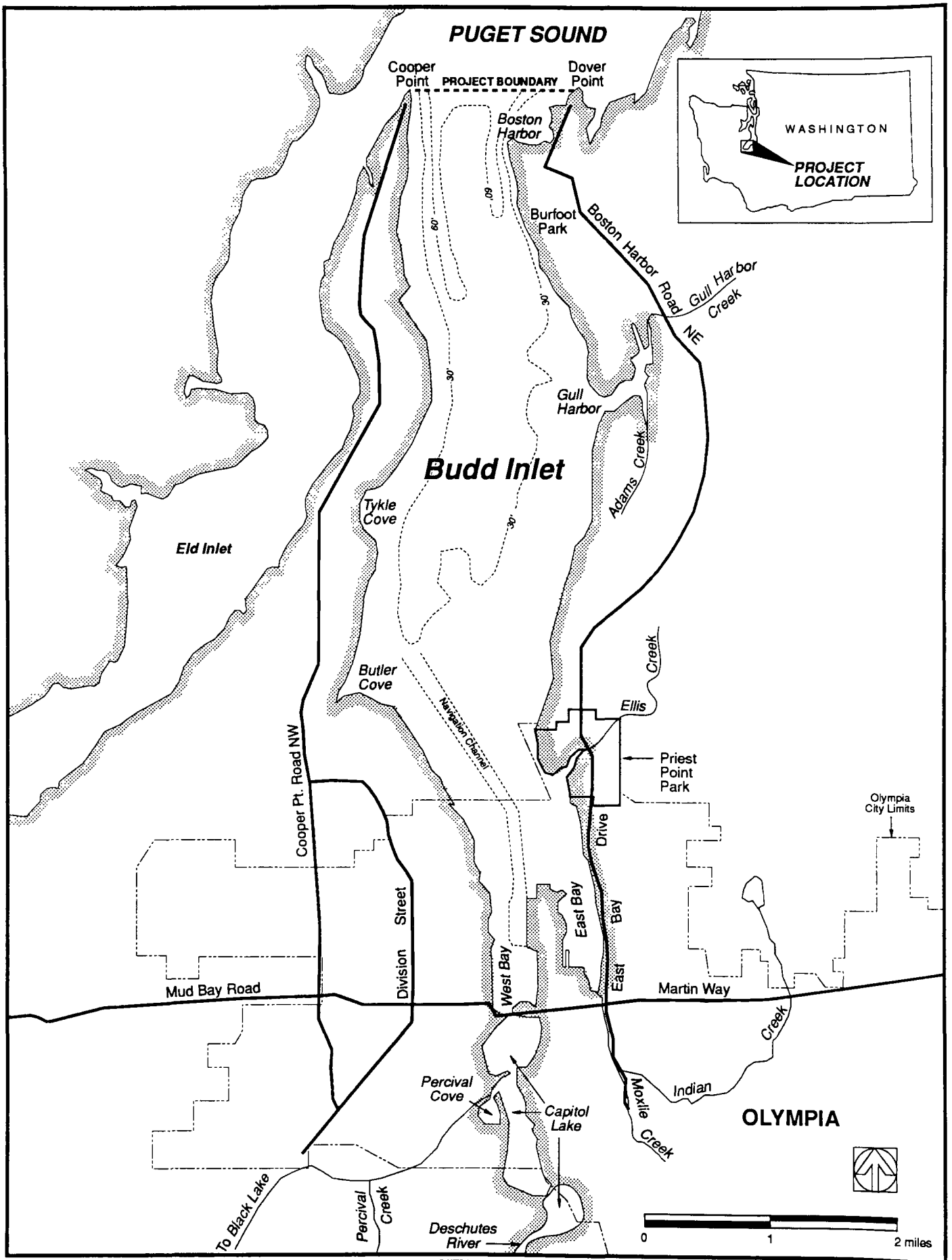

Figure 1. Project location of the Budd Inlet Action Program

the development of the 1991 Action Plan. For each priority problem area and associated contaminant sources, the plan specifies the first steps toward corrective actions, the agencies responsible for implementing those actions, targeted implementation schedules, and any factors that may limit effective implementation of a given task. The remainder of this introduction provides a description of the Urban Bay Action Program and an overview of Budd Inlet and its associated contamination problems.

Budd Inlet Action Program

In July 1986, PSEP co-managing agencies initiated the Budd Inlet Action Program. The PSEP co-managing agencies are the U.S. Environmental Protection Agency (EPA), the Washington Department of Ecology (Ecology), and the Puget Sound Water Quality Authority (the Authority). Through a process of interagency coordination, local government support, and public participation, the Budd Inlet Action Program has focused new and continuing efforts to control contaminants in the priority problem areas within the inlet. The objectives of the action program are to:

- Identify specific areas of concern based on levels of eutrophication, bacterial and chemical contamination, and associated adverse biological effects and natural resource impacts
- Identify historical and ongoing sources of eutrophication and contamination
- Rank contaminated areas and sources to set priorities for development of corrective actions
- Implement corrective actions to reduce or eliminate eutrophication and sources of bacterial and chemical contamination and restore contaminated areas to support natural resources and beneficial uses.

The major decision points and programmatic elements of the Budd Inlet Action Program are presented in Figure 2.

The Budd Inlet Action Program has followed a process in which cooperative efforts by federal, tribal, state, and local officials have helped to define problem areas, focus environmental monitoring efforts, and plan and implement corrective actions. Interagency coordination is fostered through an Interagency Work Group. The

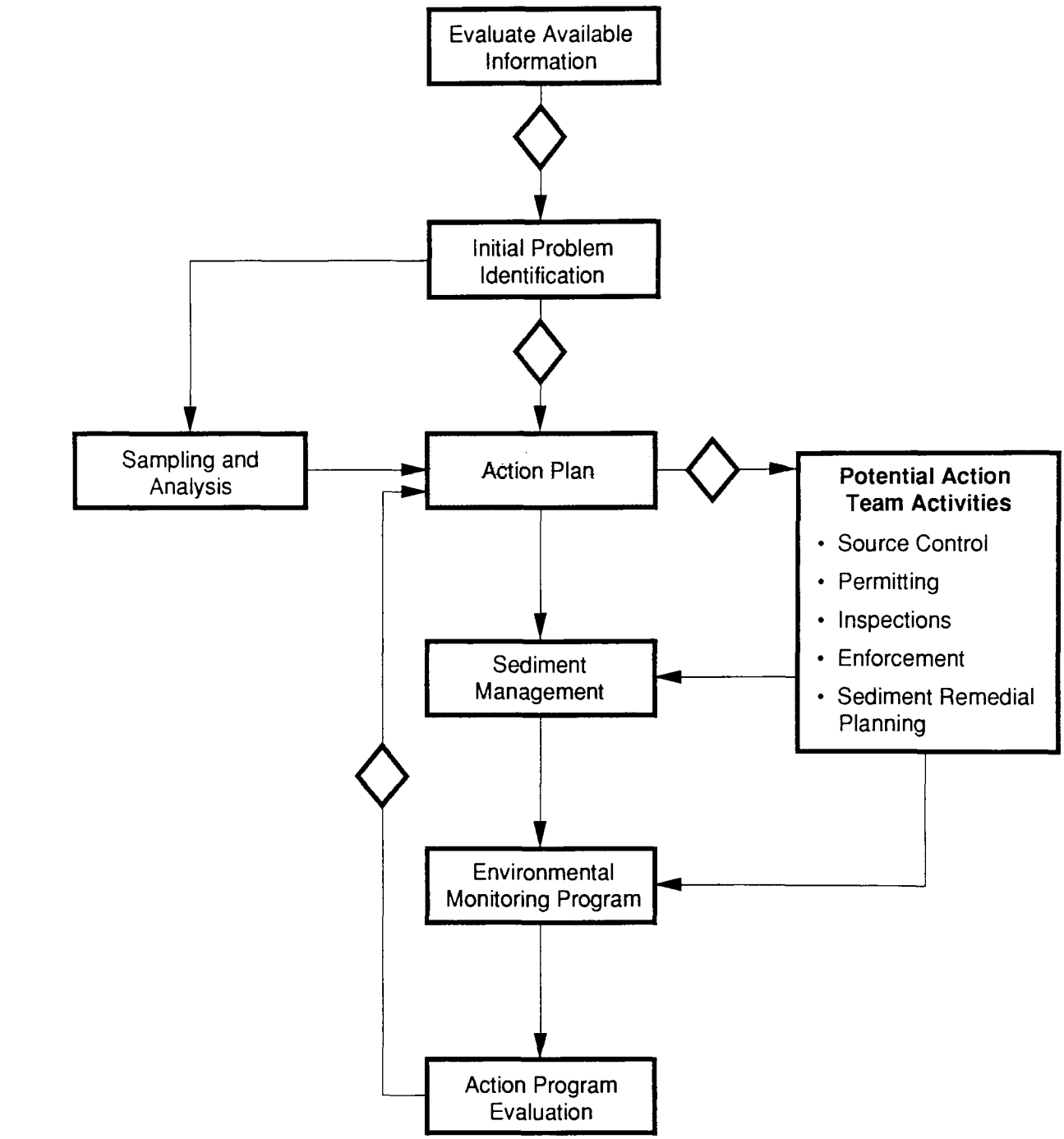

Figure 2. Decision points and elements of the Budd Inlet Action Program.

work group is composed of representatives from federal, state, and local agencies and the Squaxin Island Tribe. Environmental groups and other interest groups, neighborhood associations, area business organizations, and interested citizens were invited to participate in the Citizen Advisory Committee (see *Acknowledgments* section for full membership list of the work group and advisory committee). The work group and the advisory committee are responsible for reviewing documents, suggesting actions, and providing input to the planning process.

The planning process for development of the 1991 Action Plan was completed in several stages. First, an initial data summary and problem identification report was completed (Tetra Tech 1988). Next, individual meetings were held with representatives from agencies with jurisdiction or responsibilities pertaining to environmental quality within the study area. These meetings provided information concerning the current and planned activities of each agency. Following the meetings, a *source-action matrix* was developed and presented to the work group and members of the advisory committee. The matrix presented the types of environmental problems and associated actions that agencies were implementing to address contamination problems. In addition, the matrix served to identify gaps in management programs, contaminant source control, and data collection efforts.

Following presentation of the matrix, agency representatives were again consulted to cooperatively negotiate how each agency would commit resources to help implement additional preventative or corrective actions or gather information to fill data gaps. Letters were sent by Ecology to confirm agency commitments. These letters and agency replies constitute the administrative record for the action plan and are contained in Appendix A. A second work group meeting was held to review and discuss the combined commitments of each agency and to further enhance interagency communication and coordination. The 1991 Action Plan and the status of its implementation will be continually reviewed as new data become available to refine the definition of environmental problem areas and contaminant sources and as agency action agendas evolve.

The 1991 Action Plan focuses on source control to minimize contaminant inputs and serves as a blueprint for source control activities, including field investigations and permit reviews. Other corrective actions may also be specified, including alternatives for cleaning up contaminated sediments and environmental monitoring to evaluate the success of source control. Examples of sediment

cleanup activities include capping contaminated sediments with uncontaminated materials and removing the contaminated sediments by dredging. Because sediment cleanup actions are most likely to be implemented only after significant source control (to minimize the probability of future recontamination and additional cleanup), sediment cleanup is likely to be a long-term rather than short-term component of the Budd Inlet Action Program. Monitoring is also a long-term component of the action program. Existing monitoring programs will be coordinated and the data will be used to evaluate the effectiveness of source control and sediment remediation efforts (see Figure 2).

Implementation of the 1991 Action Plan

In 1988, EPA formally designated Puget Sound as an estuary of national significance under the federal Clean Water Act (CWA). Section 320 of the CWA requires the development of a comprehensive conservation and management plan (CCMP) for each designated estuary. The 1987, 1989, and 1991 Puget Sound Water Quality Management Plan (PSWQMP), developed by the Authority, meet all the requirements of a CCMP. Development of the PSWQMP is conducted under Section 90.70 of the Revised Code of Washington (RCW). Element P-13 of the draft 1991 PSWQMP states that the "urban bay approach" is an essential part of a comprehensive strategy to control sources of toxic contamination. Implementation of the Budd Inlet Action Plan and other urban bay action plans is part of the overall implementation of the PSWQMP.

Regulatory Authority

Ecology, EPA, and many other agencies have regulatory authority to implement specific elements of the 1991 Action Plan. This regulatory authority stems from discharge permit programs and inspection requirements under federal and state water quality regulations such as the CWA and the state Water Pollution Control Act. Additional authority is derived from hazardous substance control regulations, such as the federal Comprehensive Environmental Response, Compensation and Liability Act [CERCLA (also known as Superfund)], federal Resource Conservation and Recovery Act (RCRA), federal Toxic Substances Control Act (TSCA), state Model Toxics Control Act (MTCA), county regulations for solid waste and hazardous waste, and health department regulations. Other important laws include the state combined sewer overflow (CSO) control regulation, the state Shoreline Management Act, the State Environmental Policy Act (SEPA), and the National Environmental Policy Act (NEPA).

Under the above regulations, Ecology is the agency responsible for issuing and revising wastewater and industrial waste discharge permits, conducting site inspections, and overseeing cleanup plans for contaminated sites. Ecology also has regulatory authority over storm drains that discharge to state waters.

Ecology can implement formal compliance procedures such as warning letters, notices of violation, penalties, consent orders, and administrative orders. However, the preferred approach to implementing the 1991 Action Plan is to work cooperatively with all involved parties. Voluntary commitment to perform the actions set forth in the action plan is the most efficient and cost-effective approach to addressing point and nonpoint contaminant sources in Budd Inlet. Successful implementation of the action plan will require the cooperation of all parties within the Budd Inlet watershed.

Funding

Successful implementation of the action plan also depends on adequate funding. The Washington State legislature and U.S. Congress have passed major legislation designed to protect water resources that includes provisions for funding. This legislation includes the CWA, the state Centennial Clean Water Fund, the Aquatic Lands Enhancement Account, and the Coastal Zone Management Program. Various grants and low-interest loans are available through programs administered through the above-mentioned legislation. (See Appendix B for a more thorough discussion of potential funding sources.)

Action Team Development

As part of the Budd Inlet Action Program, Ecology will establish and lead an interagency action team to guide the implementation of the action plan. The Budd Inlet Action Team is a subset of the Interagency Work Group and will include technical staff from local, state, tribal, and federal agencies. Agencies represented may include the City of Olympia Department of Public Works; the Lacey, Olympia, Tumwater, and Thurston County Wastewater Treatment Program (LOTT); the Thurston County departments of Health and Public Works; the Thurston County Office of Water Quality; the Washington Department of Health (DOH); the Squaxin Island Tribe; and EPA. The action team will meet two to four times per year to advise and assist in carrying out specific actions, solve any problems that arise, evaluate the effectiveness of the various implementation strategies, and maximize interagency coordination. As new data are obtained about Budd Inlet and as the initial results

of implementation efforts are evaluated, the action plan will be revised and updated. It is anticipated that revisions and updates to the action plan will be produced annually.

Ecology will continue to involve representatives from environmental, business, recreational, civic, educational, and neighborhood groups through the Citizen Advisory Committee. This advisory committee will: 1) identify public concerns and issues relevant to agency actions set forth in the action plan, 2) disseminate action plan information to members of organizations represented on the committee, 3) review work products and attend scoping meetings, and 4) help ensure that agencies perform the remedial actions or investigations for which they are responsible.

Other agencies in addition to Ecology that have participated in development of the 1991 Action Plan have specific implementation responsibilities. Local governments are key participants in carrying out the actions of the action plan. City and county agencies responsible for source control and remedial activities include: LOTT, City of Olympia Department of Public Works, City of Tumwater, Thurston County departments of Health and Public Works, and the Thurston County Office of Water Quality. These agencies are responsible for a wide variety of activities that are essential for the implementation of the action plan. Controlling municipal and industrial wastewater effluent and untreated storm water are only some of the important activities to be conducted by these agencies. Other agencies (e.g., the Port of Olympia) and private industries are responsible for contaminant prevention and control related to their property and activities.

Coordination with Other Areawide Plans and Programs

Coordination of the Budd Inlet Action Program with other planning and management programs is essential for efficient and effective implementation. The PSWQMP and the watershed management planning process are areawide programs that must be coordinated with the Budd Inlet Action Program.

Puget Sound Water Quality Management Plan

The Authority developed the PSWQMP, which is implemented by state agencies, local governments, and other parties. The urban bay approach is also explicitly supported by the PSWQMP. Activities described in the areawide plans and programs of the 1991 Action Plan are consistent with the PSWQMP. The Authority has an oversight and coordination role in implementing the PSWQMP. Coordination of Authority-directed activities with the urban bay program occurs through the Budd Inlet Interagency Work Group

meetings. The Authority will actively participate as an Interagency Work Group member through work group and action team meetings.

Watershed Management

The watershed management planning process is also coordinated with the Budd Inlet Action Program. Under a program administered by Ecology, counties have ranked priority watersheds for nonpoint contaminant management. Grants are given to counties to develop management plans for controlling nonpoint contaminant sources in these priority watersheds. Thurston County was given a grant to conduct monitoring in the Budd Inlet and Deschutes River watershed. The data collected during the monitoring will be used for watershed management planning. A watershed management committee, composed of personnel from planning and implementing agencies and other interested and affected parties, will be formed to develop the management plan and implement the specific actions. Coordination of this program with the urban bay program occurs via the Budd Inlet Interagency Work Group. Representatives from both Ecology and the Thurston County Health Department (the lead planning agency for the watershed monitoring efforts) are work group members. In addition, Ecology representatives are on the watershed planning technical advisory committee.

Local Plans and Programs

In addition to the areawide plans and programs discussed above, there are several more localized or subject-specific plans and programs that may have an impact on Budd Inlet. These plans and programs will benefit by coordinating with the Budd Inlet Action Program. Of particular importance are the Olympia Urban Waterfront Plan, Thurston Regional Shoreline Master Program, City of Olympia's basin plans, and Capitol Lake Restoration Plan. Activities associated with these plans and programs will be coordinated with the Budd Inlet Action Program through the Budd Inlet Action Program Coordinator and staff members of the various agencies involved. The Budd Inlet Action Program Coordinator will attend some meetings and will review the minutes of the other meetings. The coordinator will also review and comment on draft plans developed through the above programs. In addition, some agencies will have representatives on the Budd Inlet Action Team. (See the *Comprehensive Plans and Programs* section for a more detailed discussion of these plans and programs.)

Technical Approach for Identifying and Ranking Problem Areas

The Urban Bay Action Program relies on a "preponderance-of-evidence" approach to identify and rank contaminated problem areas and contaminant sources. Selected chemical, biological, and toxicological indices are used to compare conditions at contaminated sites to conditions in relatively uncontaminated embayments. The contaminated sites then receive a priority ranking. The rankings are used to determine the order in which problem areas will be evaluated for contaminant sources and possible remedial actions. Study areas that exhibit high levels of contamination and adverse biological effects receive a ranking of *high priority*. The following types of environmental indicators are generally used to identify and rank problem areas (see also Figure 3):

- **Sediment Chemistry**
  - Concentrations of metals and organic compounds
  - Conventional sediment variables (e.g., grain size distribution, total organic carbon)
- **Bioaccumulation**
  - Chemical concentrations in clams and fish
- **Sediment Bioassays**
  - Amphipod mortality (10-day bioassay)
  - Oyster larvae abnormality (48-hour bioassay)
- **Benthic Infauna Abundance**
  - Polychaete abundance
  - Pelecypod abundance
  - Gastropod abundance
  - Crustacean abundance
- **Fish Histopathology**
  - Lesion (e.g., tumor) prevalence in livers, kidneys, and gills of English sole
- **Microbial Contamination**
  - Fecal coliform bacteria
- **Conventional Water Quality Variables**
  - Dissolved oxygen
  - Nutrients (i.e., nitrogen, phosphorus).

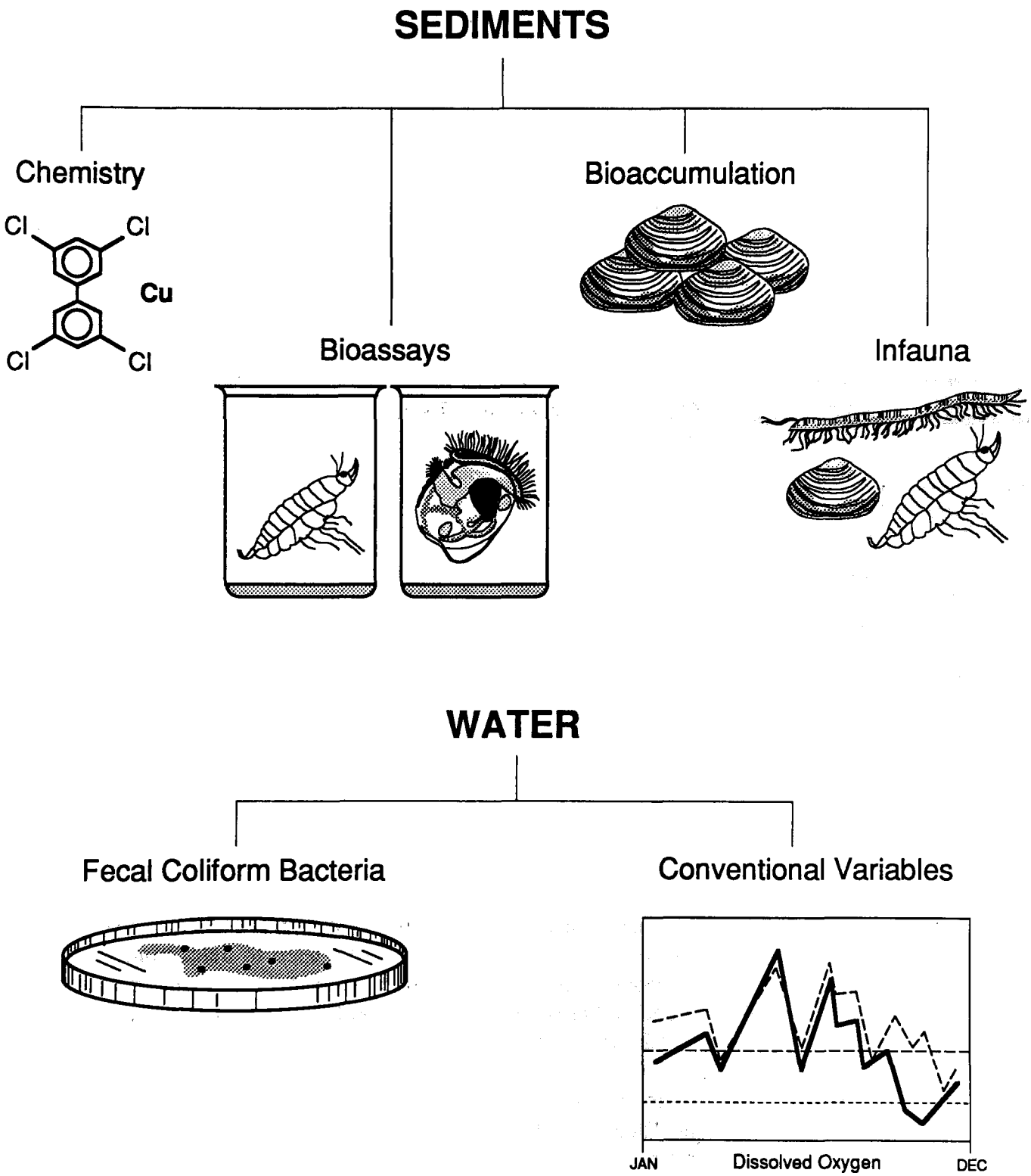

Figure 3. Environmental indicators used to define problem areas of sediment contamination and biological effects

Each of the above indicators is used to assess different environmental impacts. Measurements of contaminant concentrations in sediments are used to characterize the degree of contamination and to trace contaminant sources. Measurements of contaminant concentrations in tissues of aquatic organisms are used to identify large-scale problem areas and potential human health risks. Sediment bioassays and counts of sediment-dwelling organisms are each valuable for characterizing effects of contamination at specific sampling locations. Measurements of lesions in fish are useful for characterizing large-scale problem areas. Measurements of sediment chemistry, bioassays, and benthic community analyses are often used together to characterize toxic problem areas in Puget Sound (Chapman et al. 1985; PTI and Tetra Tech 1988a,b). Bacterial measurements are used to assess microbial contamination of water and shellfish and evaluate human health risks. Measurements of conventional water quality variables are used to assess eutrophication.

The problem area identification and prioritization for Budd Inlet included comparisons of existing data with elevation above reference values, sediment quality criteria [i.e., apparent effects threshold (AET)], and regulatory standards. Elevation above reference values are generated by dividing the measured value by reference values from non-urban embayments. In addition to the use of elevation above reference values, Puget Sound AET values were used as sediment quality values to evaluate chemical data relative to predicted biological effects. AET values are chemical-specific sediment concentrations above which a particular adverse biological effect is always found to be statistically significant ($P \leq 0.05$) for a given data set. Because AET values are predictive, they are especially useful in interpreting historical data on sediment contaminant levels where biological data are not available. In the future, sediment management standards (Chapter 173-204 of the Washington Administrative Code) will be used to determine areas of sediment contamination. Microbial and water quality parameters were evaluated and compared with established state and federal standards to rank problem areas for microbial contamination.

Criteria that were used in determining problem areas are presented in Table 1. All of the available indicators of eutrophication, microbial contamination, and chemical contamination in sediments and biota were integrated to identify problem areas in Budd Inlet. Because there were few data on benthic infauna abundance and fish histopathology, these two types of indicators were not used to identify problem areas in Budd Inlet. These and other data gaps hindered identification of problem areas in some portions of the inlet

TABLE 1. CRITERIA FOR PRIORITIZING PROBLEM AREAS IN BUDD INLET

Data Category	Primary Problem Area	Secondary Problem Area	No Immediate Action
Eutrophication[a]	Minimum dissolved oxygen <3.0 mg/L	Minimum dissolved oxygen 3.0-5.0 mg/L	Minimum dissolved oxygen >5.0 mg/L
Chemical contamination[b]			
Sediment chemistry	Metals: EAR[c] >50 Organics: EAR >100	Metals: EAR 10-50 Organics: EAR 10-100	Metals: EAR <10 Organics: EAR <10
Bioassays	Amphipod >50% mortality Oyster >50% mortality	Amphipod 25-50% mortality Oyster 25-50% mortality	Amphipod <25% mortality Oyster <25% mortality
Microbial contamination[d]	Fecal coliform bacteria EAR >10	Fecal coliform bacteria EAR 1-10	Fecal coliform bacteria EAR <1

[a] 5.0 mg/L is the Class B water quality standard for marine waters.

[b] Criteria for water column chemistry, bioaccumulation, benthic infaunal communities, and fish histopathology were not established because of the lack of data for Budd Inlet.

[c] EAR - elevation above reference.

[d] Fecal coliform bacteria EAR value of 1 corresponds to the appropriate water quality standard for Class A or Class B marine waters.

Source: Tetra Tech (1988)

and prioritization of problem areas throughout the bay. Limited data were available for all categories of data evaluated in the *Initial Data Summaries and Problem Identification* document (Tetra Tech 1988). For example, the geographic extent and temporal variability of low oxygen conditions is not well understood, the temporal variability of microbial contamination is unknown, and limited data exist concerning the spatial extent of sediment contamination or bioaccumulation. As a result of the scarcity of data, problem areas in Budd Inlet were not ranked numerically but were classified as *primary problem areas*, *secondary problem areas*, or *no immediate action areas*. Numerical ranking or prioritization of problem areas would be possible with more data. The results of the problem area identification are presented in the *Description of Priority Problem Areas* section.

Overview of Budd Inlet and Associated Contamination Problems

This section describes the project area and summarizes information about the eutrophication and contamination problems in Budd Inlet.

General Description of Area

Budd Inlet is a shallow estuary located at the extreme southern end of Puget Sound (Figure 1). The project area includes all of Budd Inlet up to a line connecting Dover Point and Cooper Point. The inlet is 11.1 kilometers long, with an average width of 2.4 kilometers and a maximum width of 2.6 kilometers. The average depth of the inlet is approximately 9 meters at mean lower low water, and the maximum depth is approximately 34 meters near the mouth. The Deschutes River serves as the major source of fresh water to Budd Inlet. The freshwater inflow from the Deschutes [ranging between 60–100 $feet^3$/second (1.7–2.8 $meters^3$/second) in the fall to 5,000 $feet^3$/second (141.4 $meters^3$/second) in the winter] helps to develop a weakly stratified, two-layer circulation pattern. The upper water layer, consisting of lower-salinity water from the Deschutes River, flows northward to the mouth of the inlet; the lower water layer, consisting of higher-salinity, colder water from southern Puget Sound, flows south towards the head of the inlet. Water in Budd Inlet is estimated to take approximately 4 days to travel from the head of the inlet to the mouth and to have a maximum residence time of 14 days and an average residence time of approximately 8 days. Stratification of the water column (i.e., layering that reduces vertical mixing), reduced flushing rates, and algal blooms all contribute to low oxygen levels near the head of the inlet in the late summer.

Sediment input to the inlet comes largely from the Deschutes River. The river carries approximately 18,300 tons of sediment per year to Budd Inlet, and 80 to 85 percent of this sediment is transported in November and December. The sediment load derives from natural erosion process and land use practices in the Deschutes watershed (e.g., agriculture, logging, road construction). Capitol Lake acts as a settling basin for sediments transported by the river, but sedimentation is a problem in Budd Inlet at the Capitol Lake outfall and in East Bay.

Fish and shellfish resources in the project area include chinook, coho, and chum salmon; sea-run cutthroat and steelhead trout; cod; surf perch; sole; flounder; herring; surf smelt; and geoduck. Budd Inlet also serves as habitat for a wide variety of waterfowl, especially during the winter.

The watershed of Budd Inlet (excluding the Deschutes River) encompasses approximately 153 km^2. The drainage basin of the project area is rural except in and near the city of Olympia, which contains the bulk of residential, commercial, and industrial activity. Industrial facilities located in Lacey and Tumwater use the LOTT wastewater treatment plant (WWTP) for processing waste discharges. The Deschutes River drainage basin includes approximately 430 km^2 of forested, agricultural, and rural lands.

As a result of urban and industrial influences, localized areas of Budd Inlet are contaminated with bacteria and toxic chemicals. The inlet is also subject to eutrophication. Studies have shown that the Budd Inlet ecosystem is being stressed and that beneficial uses in the inlet are restricted because of low oxygen levels and bacterial and chemical contamination.

Low oxygen levels, often below 3.0 mg/L, occur throughout the southern portion of the inlet in the late summer. Oxygen levels below 5.0 mg/L can be fatal to fish and invertebrates. The full temporal and spatial extent of eutrophication and oxygen depletion in Budd Inlet is unknown and constitutes a significant data gap (Tetra Tech 1988).

Bacterial contamination has resulted in the closure of the inlet to commercial and recreational shellfish harvesting. Concentrations of fecal coliform bacteria, used as an indicator of other disease-causing organisms, were found to exceed Washington State Class B water quality standards in four areas in the inlet. At least nine other areas had highly elevated concentrations of these bacteria. In

addition, data collected on bacterial contamination in intertidal sediments in East Bay showed elevated levels of fecal coliform bacteria.

Chemical contamination of sediment and biota is also known to occur in Budd Inlet. Levels of polycyclic aromatic hydrocarbons (PAHs) found in sediment near the McFarland/Cascade Pole site (1,745,000 ppb) are among the highest concentrations of PAHs found in Puget Sound. Levels of PAHs in clams (938 ppb) near the McFarland/Cascade Pole site are comparable to the high levels of PAHs found in clams near Eagle Harbor (a federal Superfund site). Elevated levels of copper, lead, zinc, and cadmium were found in sediment near Fiddlehead Marina in West Bay. Intertidal sediment sampling for toxic chemicals in East Bay indicated elevated levels of nickel and PAHs. Some indicators of sediment toxicity and biota contamination have recently been investigated but do not indicate significant toxicity or potential human health problems (PTI 1991).

Description of Priority Problem Areas

This section provides a description of the known problem areas associated with eutrophication and bacterial and chemical contamination and identifies potential sources of the contaminants. Based on the limited data available, PAHs, cadmium, copper, lead, zinc, and fecal coliform bacteria have been identified as problem contaminants for Budd Inlet. Contaminants are considered a problem if concentration levels are elevated more than 10 times above contaminant levels at reference areas located throughout Puget Sound. Reference areas are identified in the *Initial Data Summaries and Problem Identification* report (Tetra Tech 1988). Eutrophication is considered significant if dissolved oxygen levels fall below the state standard of 5.0 mg/L.

Based on the *Initial Data Summaries and Problem Identification* report (Tetra Tech 1988) and on information provided by work group members and citizens during the plan development process, the problem areas for each category of contaminant (i.e., eutrophication and bacterial and chemical contamination) were prioritized as primary or secondary using the technique explained in the *Technical Approach for Identifying and Ranking Problem Areas* section. The 9 primary and 10 secondary problem areas identified under this process are shown in Figure 4. Primary problem areas are those where further source control and remedial action evaluations are strongly recommended. More studies are recommended in secondary problem areas to better define the extent and severity of existing problems.

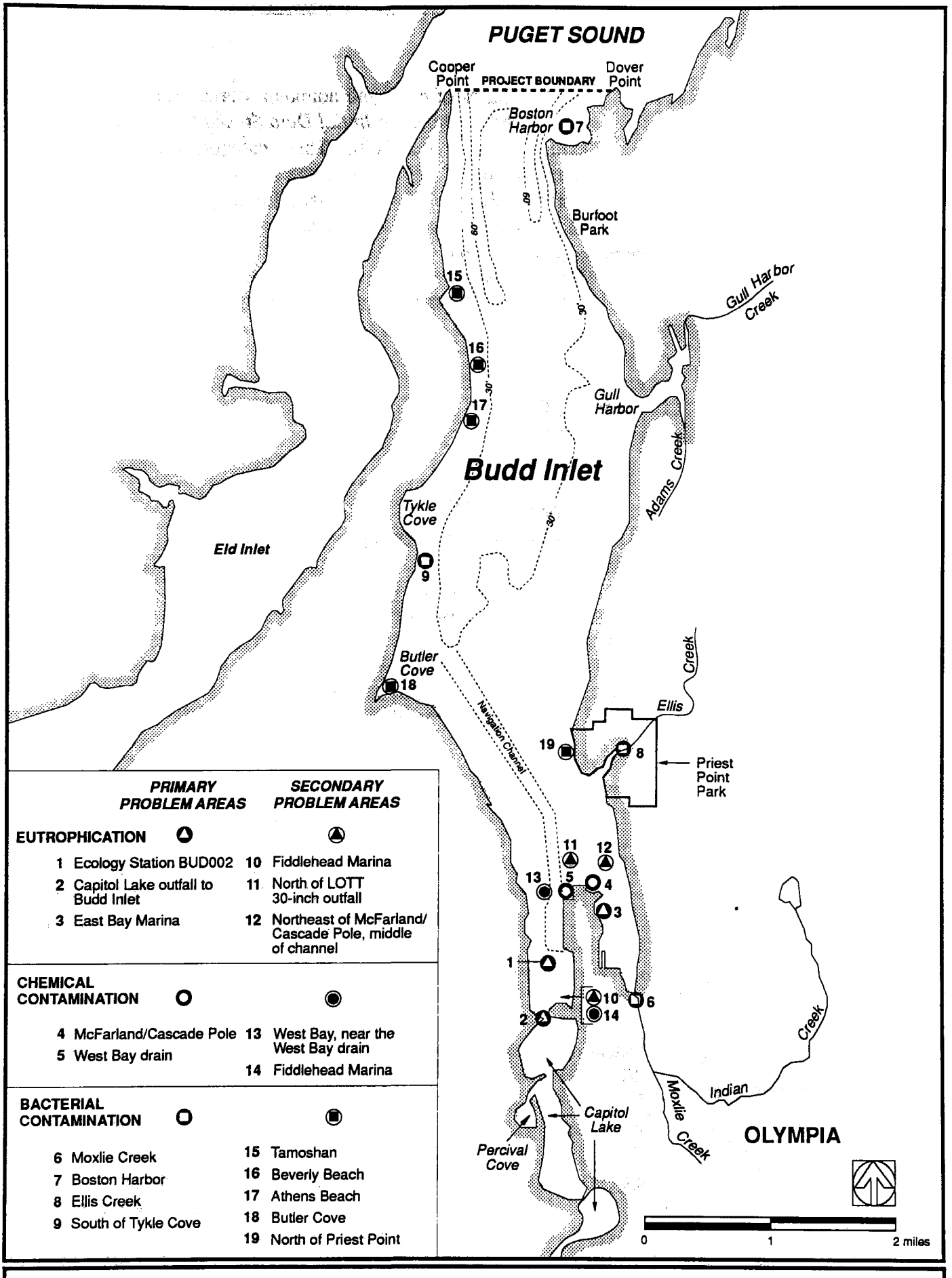

Figure 4. Primary and secondary problem areas in Budd Inlet.

Six major categories of point and nonpoint sources of contaminants to Budd Inlet were identified in *Initial Data Summaries and Problem Identification* (Tetra Tech 1988). These categories are WWTPs, CSOs, surface runoff, industrial sources, groundwater, and accidental spills. The LOTT, Tamoshan, Beverly Beach, Seashore Villa, and Boston Harbor WWTPs discharge to Budd Inlet and have been issued National Pollutant Discharge Elimination System (NPDES) permits. The City of Olympia currently has one CSO that discharges to West Bay and one CSO that discharges to East Bay via Moxlie Creek. These CSOs are reported to flow infrequently. Over 50 City of Olympia storm drain outfalls discharge to Budd Inlet. Except for the West Bay drain on Port of Olympia property, CSOs and storm drains have not been investigated for annual flow estimates or chemical composition. In addition to the five WWTPs, one NPDES permit has been issued to the Pabst/Olympia Brewery. Until recently, NPDES permits were also in place for Chevron U.S.A. and Delson Lumber Company/Olympia Forest Products. Chevron has discontinued operations and the Delson building burned down. Major commercial point and nonpoint sources include the McFarland/Cascade Pole site and the four marinas located in East and West bays. Other individual potential sources have been identified since 1988 by the Interagency Work Group and the Citizens Advisory Committee. All known and potential point and nonpoint sources identified to date are shown in Figure 5 (see Table 1 for additional discussion of these sources).

Eutrophication

Three primary and three secondary problem areas were identified for eutrophication problems. The primary problem areas are Ecology Station BUD002 in West Bay, the City of Olympia monitoring station at the Capitol Lake outfall, and the Port of Olympia monitoring stations in the East Bay Marina (numbers 1, 2, and 3, respectively, on Figure 4). Dissolved oxygen levels in late summer are typically less than 3.0 mg/L in the bottom water of the primary problem areas.

Secondary problem areas for eutrophication are the City of Olympia monitoring station at Fiddlehead Marina, the area north of the LOTT 30-inch outfall, and the navigation channel located northeast of McFarland/Cascade Pole (numbers 10, 11, and 12, respectively, on Figure 4). No problem areas were identified north of East and West bays, but there is only one sampling station for dissolved oxygen in this area (Ecology Station BUD005, just south of Olympia Shoals). Secondary problem areas have dissolved oxygen levels between 3.0 and 5.0 mg/L in the bottom water.

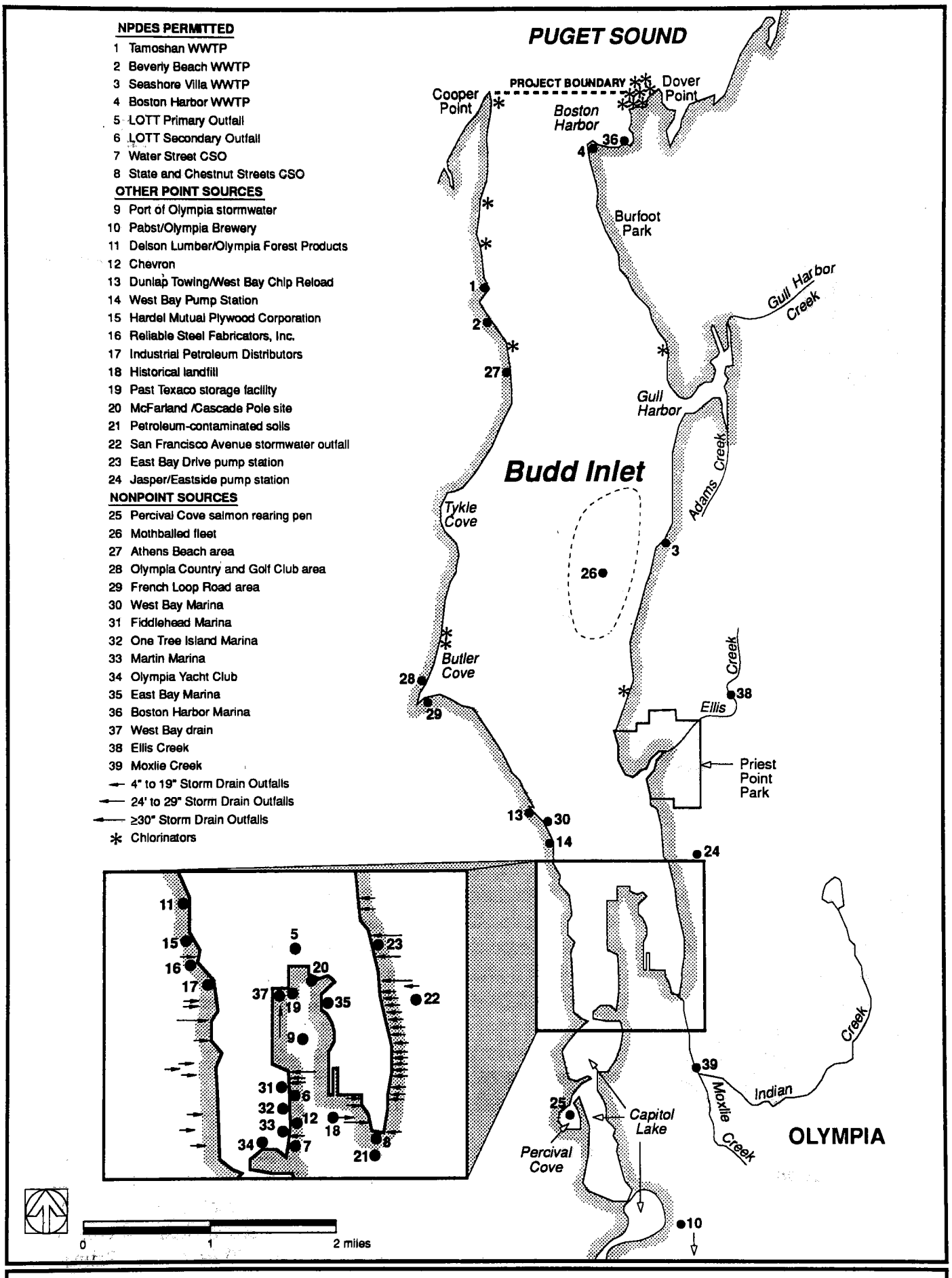

Figure 5. Locations of known and potential point and nonpoint sources of contaminants in Budd Inlet.

Potential sources of contaminants that contribute to eutrophication include WWTPs, CSOs, marinas, and surface runoff. Actions that have been taken to control these sources include upgrading of the LOTT WWTP and construction of the Boston Harbor WWTP. Other actions being taken include the development of watershed basin management plans, new storm water regulations, and a highway runoff ordinance. These general actions and other specific actions are discussed in the *Comprehensive Plans and Programs* section.

Bacterial Contamination

Four primary and five secondary problem areas were identified for bacterial contamination. Elevation above reference values for areas within Class A waters were calculated using the Class A water quality criteria of 14 organisms/100 mL as reference. Similarly, the elevation above reference values for areas within Class B waters were calculated using the Class B water quality criteria of 100 organisms/100 mL. The four primary areas are Moxlie Creek, Boston Harbor, Ellis Creek, and the area south of Tykle Cove where monitoring was done. Fecal coliform bacteria values in these areas were more than 10 times higher than Class A or B water quality standards.

Secondary problem areas for bacterial contamination include the Tamoshan, Beverly Beach, and Athens Beach WWTPs; Butler Cove; and north of Priest Point. The Thurston County Health Department has been conducting routine monitoring at Priest Point and has found consistently high levels of bacterial contamination. These secondary priority areas had fecal coliform bacteria values between 1 and 10 times the Class A or B water quality standards.

Potential sources of bacterial contamination include WWTPs, CSOs, and nonpoint sources such as septic tanks. Actions that have been taken to control these sources include the upgrading of the LOTT WWTP and the construction of the Boston Harbor WWTP. Other actions being taken include the development of watershed basin management plans and new storm water regulations. These general actions and other specific actions are discussed in the *Comprehensive Plans and Programs* section.

Chemical Contamination

Two primary problem areas for chemical contamination are the McFarland/Cascade Pole site and the West Bay storm drain (numbers 4 and 5, respectively, on Figure 4). Concentrations of organic chemical compounds at these stations exceeded chemical concentrations at reference areas by a factor of 100 or more. Primary

problem areas are those where metals concentrations are more than 50 times higher than reference areas and organic chemical concentrations are more than 100 times higher than the reference areas.

Secondary problem areas for chemical contamination are located in the Fiddlehead Marina and in West Bay offshore from the West Bay storm drain (numbers 13 and 14, respectively, on Figure 4). Fiddlehead Marina had metals concentrations elevated between 10 and 50 times above reference values, and the offshore area in West Bay had organic compounds at levels that are 10 to 100 times above reference values. Secondary problem areas are those where metals concentrations are between 10 and 50 times higher than in reference areas and organic chemical concentrations are between 10 and 100 times higher than in reference areas.

In addition to data collected for the *Initial Data Summaries and Problem Identification* report (Tetra Tech 1988), EPA has completed a recent study of Budd Inlet, *Reconnaissance Survey of Chemical Contamination and Biological Effects in Southern Puget Sound* (PTI 1991). The executive summary of this report and maps showing sampling stations are presented in Appendix C. While data from the report have not been statistically integrated with the data from the initial data summaries, the new data indicate that there are several additional areas with chemical contamination of sediments and associated potential adverse biological effects. However, none of the chemicals found in either clams or fish pose a potential human health problem, based on a qualitative health risk evaluation.

Sources of chemical contamination in Budd Inlet include the McFarland/Cascade Pole site, marinas, the West Bay storm drain, and storm water from urban streets and industrial facilities. Other sources include permitted discharges, contaminated groundwater seeps, accidental spills, and contaminated discharges from past activities. Actions that are being taken to help control these sources include cleanup actions being conducted by the Port of Olympia at the McFarland/Cascade Pole property, issuing storm water discharge permits to industrial operations, education programs aimed at industries and the general public, and the development of storm water regulations. These actions and other specific actions are discussed in the *Comprehensive Plans and Programs* section.

1991 Action Plan for Budd Inlet

Many planned or ongoing actions to control eutrophication and contaminant inputs to the project area are part of comprehensive programs or planning activities of federal, state, and local government agencies. The first part of this section provides a brief summary of the programs affecting Budd Inlet and the agencies involved. The second part of this section, which consists of Tables 2-8, presents a detailed action plan for controlling eutrophication and contaminant discharges to problem areas and implementing other relevant actions.

Comprehensive Plans and Programs

Comprehensive plans and programs apply to a large portion of the study area (e.g., basin plans or the geographic area within a local government body's jurisdiction) or a category or grouping of sources or activities (e.g., storm water management programs or development of BMPs for an industrial category). The following programs and plans are described in terms of actions that can be taken to identify or control ongoing sources of eutrophication and contamination in the project area. Programs and plans are discussed according to major implementing agency, local government body, or tribe.

U.S. Environmental Protection Agency

EPA, in conjunction with Ecology and the Authority, co-manages the Puget Sound Estuary Program. EPA oversees state-delegated programs and ensures that federal minimum standards are attained. EPA also provides technical support to state and local agencies in the planning and development of environmental protection programs. EPA has initiated several technical studies in support of Urban Bay Action Programs in Puget Sound. These studies are listed in Appendix D.

Storm Water Regulations

In November 1990, EPA issued the final rule for permit application requirements for storm water discharges under the NPDES program of the CWA. Under this rule, EPA will regulate both individual industrial facilities that discharge storm water to storm sewer systems and municipalities (with populations greater than 100,000)

that have separate municipal storm sewer systems. Storm water discharges from municipalities such as Olympia and Thurston County, as well as other cities whose populations are under 100,000, will be covered by rules that are expected to be issued by October 1992.

Under the storm water rule, facilities discharging storm water from industrial areas into storm sewer systems or waters of the state will be required to obtain NPDES permits from EPA or an NPDES-authorized state agency (i.e., Ecology). Permits will be phased in under a four-tiered system. General permits will be developed that cover many facilities at once in the initial stage. General permits will be followed by watershed-, industry-, and/or facility-specific permits. Industrial facilities must submit a permit application for discharges covered by the rule to the regulating agency within 1 year after promulgation of the rule (December 1991). There are three ways of becoming covered under a permit. A facility may apply for an individual permit, apply as part of a group (or industry-wide permit), or submit a Notice of Intent to be covered by an agency-issued permit. The first two methods are used if general or industry-specific permits have not yet been initiated by the agencies or if the discharge(s) in question would not be adequately addressed by the more general permit.

These regulations are in addition to rules Ecology is preparing for minimum requirements for storm water management programs for Puget Sound (see *Comprehensive Plans and Programs, Washington Department of Ecology*). The cities of Olympia, Tumwater, and Lacey and the surrounding unincorporated areas will be affected by these Ecology storm water regulations and requirements.

Permit Review

EPA reviews and comments on all significant permits for dredging and fill operations in navigable waters under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. While the programs are implemented by the U.S. Army Corps of Engineers (Corps), modifications suggested by EPA concerning environmental protection and wetlands impacts may be included as stipulations of the final permits.

U.S. Army Corps of Engineers

The Corps issues and enforces Sections 10 and 404 permits. The Corps is the lead agency for the potential navigation improvement project in West Bay.

Navigation Improvement Project

The Corps is evaluating potential improvements to the existing navigation channel in West Bay. Because of the findings of an economic feasibility study, expansion of the turning basin next to the navigation channel is no longer being considered. Plans to widen the channel are still being considered, but will be postponed until the improvements are economically necessary. The Port of Olympia and the Corps will meet during the summer of 1991 to evaluate the project and make a decision. The final feasibility report for possible improvements was completed in April 1991, but if dredging occurs, it will not begin before 1993.

East Bay Marina

Pursuant to the conditions of a Section 404 permit, aerators in East Bay are to be turned on when the dissolved oxygen concentration in the water at the marina falls below 5 parts per million (ppm). The Corps has data on dissolved oxygen conditions in East Bay from 1984 to the present. Dissolved oxygen is measured on a daily or weekly basis in August and September, depending on conditions.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (FWS) is responsible for the protection of fish and wildlife resources. FWS reviews and provides recommendations on projects that require federal permits or involve federal funding and that may affect fish and wildlife resources.

East Bay Marina

FWS has recommended to the Corps that funding be provided to mitigate impacts on fish and wildlife caused by the East Bay Marina construction. FWS would support measures such as the replacement of monitoring and aerating equipment (if the existing equipment is inadequate) through available funding from the Water Resources Development Act. FWS believes it is inappropriate to use former intertidal areas of East Bay that were filled during the construction of the project for non-water-dependent purposes and is opposed to any additional filling of wetlands and intertidal and shallow subtidal habitats. FWS has requested clarification from the Corps on what type of developments are appropriate on the fill areas originally created for water-dependent uses (i.e., cargo handling and storage).

Navigation Improvement Project

FWS has been reviewing the Port of Olympia's navigation improvement project for possible impacts to fish and wildlife resources, specifically the anadromous fish runs in the Deschutes River.

Because the project has a federal lead (i.e., the Corps), FWS can request studies to determine potential impacts. The Corps has the final approval on whether or not the studies will be conducted.

FWS will continue to have input to the project through planning aid letters submitted to the Corps. During fiscal year 1992, FWS will negotiate with the Corps to determine how many planning aid letters and what additional studies the FWS will require. FWS may determine that the risks to resources are great enough to recommend that the project not be approved by the Corps.

Log Raft Storage

FWS is concerned about storing log rafts over intertidal habitats along West Bay. During low tidal periods, the log rafts lay on the intertidal zone and probably crush or smother benthic and epibenthic invertebrates. The decomposition of bark and leaching from the stored logs may also adversely impact water quality (e.g., result in low dissolved oxygen levels and increased chemical toxicity) and eliminate important rearing and acclimation areas for juvenile salmonids. FWS plans to initiate discussions with the Port of Olympia concerning log storage practices.

Squaxin Island Tribe

The Squaxin Island Tribe has usual and accustomed fishing areas supported by treaty rights in Budd Inlet and manages several fish resource enhancement projects. The tribe reviews plans and permits for development projects that could affect the tribe's usual and accustomed fishing areas.

Resource Management

The tribe operates salmon incubation facilities on Adams Creek and Gull Harbor and co-manages [with the Washington Department of Fisheries (WDF)] salmon fisheries located in the Deschutes River and Capitol Lake. The tribe is very concerned about eutrophication and supports the need for a study to assess the effects of a nutrient abatement program at LOTT. Additionally, the tribe is concerned about how the problems in Black Lake, such as high nutrient levels, low dissolved oxygen, algae blooms, and flooding, will affect fish production in the Capitol Lake and Budd Inlet systems. The tribe is also concerned about sediment loading into the Deschutes River and Capitol Lake.

Planning

The Squaxin Island Tribe is involved in many local, state, and federal planning processes related to shoreline development and environmental degradation (e.g., LOTT outfall placement, McFar-

land/Cascade Pole negotiations, and Port of Olympia dredging projects). The tribe provides technical and policy support to various agencies on fisheries, water quality, sediment loading, and water resource-related issues.

Monitoring

The tribe monitors stream and habitat quality in the Deschutes River watershed as part of the state Timber/Fish/Wildlife agreement. This monitoring information is contained in the tribe's geographic information system. The tribe, in conjunction with Thurston County, is also conducting sampling in the Deschutes watershed under the watershed management process. Sample parameters are limited to conventional analyses (e.g., nutrients, fecal coliform bacteria, and pH).

The tribe has also worked with the City of Olympia in the city's basin planning process by surveying fish habitat in Indian, Moxlie, Percival, Ellis, and Mission creeks and an unnamed stream.

Washington Department of Ecology

In addition to the Budd Inlet Action Program, Ecology has numerous ongoing programs and planning activities related to eutrophication, bacterial and chemical contamination, and nonpoint contamination in the project area.

National Pollutant Discharge Elimination System

EPA has delegated authority to Ecology to issue and enforce NPDES permits for nonfederal facilities. Ecology generally issues NPDES permits on a site-by-site basis, and a permit for one site may include more than one discharge or source of contaminants. Permits for municipal WWTPs authorize discharges throughout the plant's service area, including CSOs. Industrial permits may include a storm drain component for surface runoff as well as the wastewater discharge component. NPDES permits may require effluent limitations (concentration or total loading) for toxic contaminants and may include provisions for instituting BMPs to reduce nonpoint contaminant inputs. EPA's new NPDES regulations for storm water require property owners and tenants in certain industrial categories to submit data to Ecology regarding surface water runoff (see *U.S. Environmental Protection Agency* section).

The Efficiency Commission, formed by the governor's office to review programs of state agencies, evaluated Ecology's wastewater discharge permit program. The commission released a final report in late 1990 that recommended an increase in permit fees and improvements to the program's efficiency.

Ecology currently maintains six NPDES discharge permits in the Budd Inlet project area. These permits are for the LOTT, Tamoshan, Seashore, Boston Harbor, and Beverly Beach WWTPs and the Pabst/Olympia Brewery. Former NPDES-permitted facilities in the Budd Inlet watershed that may be potential contaminant sources include Delson Lumber and a Chevron bulk petroleum storage facility. The Port of Olympia is part of a group application to EPA for a storm water NPDES permit for its six outfalls on the peninsula between East Bay and West Bay. Ecology has inspected some facilities that lack permits and will continue to conduct inspections and sampling, issue permits, enforce NPDES regulations, and require the implementation of BMPs in the Budd Inlet project area.

Watershed Planning for Nonpoint Source Pollution

Under the state nonpoint source pollution planning rule (WAC 400-12), Ecology is administering a grant program that enables local agencies to develop plans for controlling nonpoint source contamination on a watershed basis. The first part of a three-phase watershed management program for Budd Inlet and Deschutes River was funded by Ecology's Water Quality Financial Assistance Program in 1990. The Thurston County Health Department is the lead agency for Phase One of the watershed management program. This phase involves water quality monitoring and watershed characterization. A watershed management committee made up of local entities will be the lead group for Phase Two. During this phase, a nonpoint source pollution action plan will be developed. The Ecology Coordinator for the Budd Inlet Action Program will attend watershed management committee meetings to coordinate the Budd Inlet Action Program with the watershed management program. In addition, the Ecology program manager for the watershed grants will receive all written materials distributed to the Interagency Work Group and the Citizen Advisory Committee of the Budd Inlet Action Program, including meeting minutes and draft documents. The watershed management program is discussed in detail in the *Thurston County Health Department* section.

Monitoring

As part of its ambient monitoring program, Ecology is currently monitoring two water quality stations in Budd Inlet. These stations are BUD005, located east of the Olympia shoal just north of Butler Cove, and BUD002, located in West Bay near the south end of the port dock. Data are provided to the Puget Sound Ambient Monitoring Program (PSAMP). *Puget Sound Ambient Monitoring Program 1989: Marine Sediment Monitoring* (Tetra Tech 1990) includes data from two sediment ambient monitoring stations in

Budd Inlet (one station mid-channel near Priest Point Park and one station 1 nautical mile south of Cooper Point). Through these two ambient monitoring programs, data from marine water column sampling have been collected on toxic contaminants in marine sediments and conventional constituents. Ecology also conducts short-term monitoring during critical times (e.g., summer), when necessary. The Ambient Monitoring Section monitors conventional constituents (e.g., nutrients and oxygen) at two stations in the Deschutes River. These stations are located on Highway 507 between the towns of Tenino and Rainier and at the "E" Street Bridge in Tumwater. Metals are also monitored at the "E" Street Bridge station.

Storm Water Management

As part of the PSWQMP, Ecology's Water Quality Program Stormwater Unit is developing a basic storm water program that focuses on prevention and a long-term comprehensive urban storm water program that focuses on controlling storm water quality and quantity. The basic storm water program will apply to all counties and cities in the Puget Sound watershed. The long-term comprehensive urban storm water program will apply first to the six largest cities and four other urbanized areas in the Puget Sound region by November 1991 and then to all cities and urbanized areas by the year 2000. Based on the 1990 census, Olympia is not likely to be one of the six largest cities. In support of both the basic storm water program and the long-term urban storm water program, Ecology will issue rules, guidelines, and model ordinances for storm water management programs by November 1991. Ecology will also produce a technical manual for use in storm water management planning. The manual will include BMPs for the control of erosion and sedimentation from construction sites, design operation and maintenance standards for public and private retention/detention facilities, and techniques for the reduction or elimination of contaminants in runoff from problem land uses. An interim review draft of the manual will be available in 1991 for public review. The final manual will be released concurrently with Ecology's storm water rule. In addition to requirements for municipal storm water programs, Ecology is working with the Washington Department of Transportation (DOT) and other interested parties to draft an administrative rule that will require DOT to control the quality and quantity of highway runoff in the Puget Sound basin. The rule is currently undergoing public review and will be finalized by July 1991.

Pretreatment

Ecology's Water Quality Division is delegating the management of sewage pretreatment programs to local jurisdictions. The LOTT jurisdictions have submitted a proposal for a pretreatment program to Ecology. It is anticipated that the program will be approved and be implemented by the end of 1991.

Combined Sewer Overflows

In 1988, Ecology required the City of Olympia to develop a CSO reduction plan. Olympia is currently complying with the plan, and an additional plan showing how the city will maintain compliance has been submitted to Ecology for review and comments.

Shellfish Protection

Ecology's Shorelands Program Shellfish Unit is co-chairing, with DOH, an interagency committee that is producing a recreational shellfish plan for Puget Sound. A draft of the plan is under review and should be finalized by the fall of 1991. The plan addresses the protection of shellfish resources and human health issues. The plan focuses on 146 recreational beaches throughout Puget Sound and includes provisions for site-specific monitoring, public notification, public involvement and education, community outreach, and beach restoration actions. Monitoring actions will be conducted by DOH and will include sampling shellfish for paralytic shellfish poisoning and fecal coliform bacteria, conducting water quality sampling for fecal coliform bacteria, and conducting upland surveys to identify probable contaminant sources. If any potential chemical sources are identified during the upland surveys, shellfish will also be tested for the chemicals of concern at the particular site. Responsibilities of Ecology's Shellfish Unit include 1) implementing public involvement and education actions, 2) administering grants for beach restoration and cleanup activities, and 3) coordinating with urban bay action teams on recreational shellfish issues.

As a result of the development and findings of the recreational shellfish plan, it is likely that the southwest end of Budd Inlet and Burfoot County Park will be closed to recreational shellfish harvesting.

Hazardous Waste Sites

Ecology inspects state hazardous waste sites and negotiates cleanup plans under MTCA. Ecology, McFarland/Cascade Pole, and the Port of Olympia signed a negotiated consent decree for the cleanup of the contaminated McFarland/Cascade Pole site on Port of Olympia property. Under the consent decree, a final cleanup plan s[illegible]

be completed by mid-1992. Ecology has provided an $856,000 grant to the port to pay for about 50 percent of its project costs over the next 2 years.

McFarland/Cascade Pole and the port have initiated a series of activities that will be used to identify and begin eliminating contaminants in the groundwater, soils, and tideflats on and near the 13-acre McFarland/Cascade Pole site. The first phase was completed during the summer of 1990 and entailed disposal of more than 100 barrels of wood-preserving sludges and 45 cubic yards of heavily contaminated dirt and sludges recovered from beneath the plant. In addition, approximately 1 million pounds of equipment were decontaminated and dismantled.

Pumping and treatment of contaminated groundwater located beneath the site is scheduled to begin in December 1991. All water discharged from this operation to Budd Inlet must meet state water quality standards or other criteria established by Ecology, whichever are more stringent.

The Unocal/Hulco site near Percival Landing in Olympia has also been identified as a contaminated site through the MTCA process. The site received a score of 4 according to the Washington Ranking Method (WARM) and was placed on the Hazardous Sites List in March 1991. Sites with WARM scores of 1 and 2 usually receive first priority for cleanup through Ecology's Toxics Cleanup section. A site may be reevaluated and receive a new rank if new information is received or additional risks are identified. Private parties may also initiate site cleanup.

Shoreline Development

Ecology's Shorelands Division is responsible for reviewing shoreline master plans for consistency with the state Shoreline Management Act. In addition, Ecology reviews shoreline master permits and SEPA documents. Ecology will be adding requirements to all new shoreline master permits for marine sewage pumpout facilities throughout Puget Sound.

Sediment Standards Development

Ecology has been a lead agency or key participant in several efforts to develop tools for evaluating and managing contaminated sediments in Puget Sound. These efforts have included the Commencement Bay Superfund project, the Puget Sound Dredged Disposal Analysis (PSDDA), the Urban Bay Action Program, and the PSWQMP. Ecology has developed sediment quality standards, a process for managing sources of sediment contamination, a sedi-

ment cleanup decision process, and criteria for confined disposal of dredged material. In addition, guidelines for unconfined disposal of dredged material have been developed under PSDDA. These sediment standards and guidelines affect sediment remedial actions, wastewater discharges, and dredging operations in Budd Inlet.

Education

Ecology is involved in educational activities for Budd Inlet regarding MTCA and waste reduction and recycling. Activities focus on the general public, industry, and small businesses and include the issuance of MTCA public awareness grants, other public education grants, and the distribution of brochures and educational posters published by each program within Ecology.

Enforcement and Complaint Response

Staff members from Ecology's Southwest Regional Office in Tumwater respond to water quality complaints and work with violators of the state water pollution laws to address water quality problems. Ecology actions include site visits, correspondence, education, notices of violation, administrative orders, penalties, and other enforcement actions.

Washington Department of Fisheries

WDF is primarily responsible for maintaining and enhancing fish resources for commercial and recreational use and enhancing public access to fishing areas. The department reviews and comments on SEPA and NEPA documents and NPDES permits as they pertain to fish habitat. WDF also issues hydraulic permit approvals.

Resource Management

WDF is involved in fish rearing projects to support recreational fisheries. The department is involved in the management and enhancement of chinook, coho, and chum salmon runs in Adams, Ellis, Gull Harbor, Mission, Indian, and Moxlie creeks. WDF and the Squaxin Island Tribe co-manage the chinook salmon fishery in the Deschutes River and Capitol Lake.

Permits

WDF issues hydraulic project approvals for any construction activities in fresh and marine waters under the Hydraulic Code Rules (Chapter 220-110 WAC). WDF is particularly concerned about development activities near herring and surf smelt spawning areas and nearshore juvenile salmonid habitat and will review all proposals on a case-by-case basis to adequately protect these sensitive resources. WDF is also in the process of revising hydraulic permit approval guidelines for storm water.

WDF is a participant in PSAMP. There is one fisheries monitoring station in Budd Inlet located about 1.25 miles north of Gull Harbor. English sole are sampled for metals, pesticides, polychlorinated biphenyls, and other EPA priority pollutants. Fish histopathology is also examined.

Washington Department of General Administration

The Department of General Administration is responsible for the operation and maintenance of the dam at Capitol Lake. The department is also responsible for management of the lake's water level for water quality and flood control purposes. The department coordinates with WDF in regulating the water level of the lake.

Water Quality

During the summer, the bottom water in the northern basin of Capitol Lake sometimes reaches very low oxygen levels (below 3 ppm). The department installed a siphon to move water to Budd Inlet from a deep area behind the Capitol Lake dam where low dissolved oxygen conditions were most likely to occur. The siphon system appears to effectively prevent anoxic conditions in this problem area. The department monitors oxygen and hydrogen sulfide levels in the lake from June to September to ensure adequate water quality.

Wetlands and Erosion Studies

The department recently conducted a wetlands feasibility study for the middle and south basins of Capitol Lake. The study evaluated the feasibility of developing wetlands in the basins in order to minimize the need to dredge sediments transported by the Deschutes River. The study was presented to the state legislature during the 1991 session. The legislature decided not to pursue the wetlands option and subsequently appropriated funds to dredge the lake. The department will begin planning the dredging project this year and dredging is expected to occur in the winter of 1993-1994.

Also included in the appropriation from the legislature is $200,000 to fund stream bank stabilization projects in the Deschutes basin to reduce the need for future dredging. The department also conducted an erosion study for the north basin of Capitol Lake and determined that bank stabilization is needed in some areas. Bank stabilization projects are expected to be completed by the end of 1991.

Petroleum Storage Tanks

The department manages a bulk diesel storage tank and a 1,000-gallon underground storage tank on the state capitol campus. The department will be upgrading the bulk diesel storage tank at the

powerhouse facility by installing an oil separator system in the enclosure perimeter, thus prohibiting oil from entering Capitol Lake. A Spill Prevention, Control, and Countermeasure Plan will be developed in conjunction with the oil separator project. These projects are expected to be completed by 1992. The contents of the 1,000-gallon underground storage tank adjacent to the powerhouse facility have been removed, and the department plans to remove the tank in March 1993.

Washington Department of Transportation

DOT is responsible for highway runoff management.

Storage Site

DOT, until recently, maintained a highway construction storage area at the south end of Capitol Lake's middle basin. The area is located in a wetland and may have contaminated soils. DOT is interested in conducting a joint effort with Ecology to minimize contamination at the storage site. However, DOT cannot commit resources for mitigation efforts until liability for the contamination has been determined. If it is determined that DOT's contractors are liable, DOT will seek restitution for damages and/or costs incurred in cleaning up the site.

Highway Runoff Program

The 1991 PSWQMP directs DOT to develop a program to control runoff from highways in the Puget Sound basin. Ecology has drafted guidelines for the program that will be adopted as an administrative rule by July 1991. Under this program, DOT will draft and adopt a storm water management manual, develop a vegetation management program, and institute other measures to control the quality and quantity of runoff from highways in the Puget Sound basin. The administrative rule will govern the runoff program and includes a requirement that the department shall comply with standards identified in watershed actions plans, even if they are more stringent than DOT's manual.

Washington Department of Health

The DOH, formerly part of the Department of Social and Health Services, is responsible for regulating commercial shellfish harvesting and is also involved in regulating recreational shellfish harvesting. Currently, there are no areas certified for the commercial harvesting of intertidal shellfish in Budd Inlet, and all public beaches in inner Budd Inlet should be posted to prevent recreational harvesting.

Recreational Shellfish Program

As described in the *Washington Department of Ecology Shellfish Protection* section above, the recreational shellfish program is currently under development. A draft program plan has been developed and is currently under review. A final plan should be issued by the fall of 1991. The plan addresses the protection of shellfish resources and human health and includes proposed water quality and shellfish tissue monitoring at major recreational shellfish harvesting locations throughout Puget Sound. Another element of the program is to develop maps with information on recommended harvesting classifications for recreational areas. Major recreational harvesting areas in the vicinity of Budd Inlet are Priest Point Park and Burfoot County Park south of Boston Harbor. The Thurston County Health Department has closed Priest Point Park to shellfish harvesting. Some shellfish harvesting occurs in inner Budd Inlet, possibly for use as bait. Shellfish are also harvested in several areas of Budd Inlet by waterfront property owners. Specific DOH responsibilities for shellfish protection are discussed below.

Recreational Shellfish Regulations

On 13 September 1989, the Washington State Board of Health approved new regulations for recreational shellfish harvesting. These regulations give DOH and local health departments the authority to monitor and classify beaches as open or closed for recreational shellfish harvesting based on bacterial counts, concentrations of toxic contaminants, and surveys of bacterial contaminant sources. Recreational harvesting of shellfish could be prohibited on beaches that have conditions that would pose unacceptable health hazards.

In response to the regulations on recreational shellfish harvesting, DOH will develop a Memorandum of Agreement (MOA) with the Thurston County Health Department. The MOA will specify guidelines for implementing and enforcing the proposed regulations, including provisions for ambient water and shellfish monitoring and ensuring laboratory reliability. The MOA will also establish a procedure and criteria for defining areas in which the county health department must post health warnings regarding shellfish consumption. DOH will also provide assistance to the county health department in conducting shoreline and watershed sanitary surveys to identify sources of bacterial and chemical contamination.

Monitoring

DOH is scheduled to perform annual tissue chemistry sampling at Priest Point Park under PSAMP. DOH samples water and shellfish from Burfoot County Park for fecal coliform bacteria under the recreational shellfish program. Once a sufficient number of water

samples have been collected (i.e., 15 samples at 5 stations) to classify the Burfoot County Park area, ambient monitoring for fecal coliform bacteria will be conducted annually.

Washington Parks and Recreation Commission

The Washington Parks and Recreation Commission has a Boater Environmental Education Program to provide information and services to the recreational boating community. The education program addresses boater waste disposal and boater environmental education.

Sewage Pumpouts

The Parks and Recreation Commission established the Boaters Task Force to help educate boaters regarding waste issues and to sponsor legislation to fund new sewage pumpouts. The task force sponsored legislation that was passed in 1989 to fund sewage pumpouts and environmental education efforts. As a result of the new legislation, between $100,000 and $300,000 per year will be set aside from the watercraft excise tax for purchasing and installing pumpout stations in Washington State over the next 5 years. Up to 100 percent of the money may be used to purchase and install pumpout facilities. Twelve new pumpout facilities were funded in 1990. The City of Olympia Parks and Recreation Department received a grant for installing a new pumpout facility at Percival Landing. The Port of Olympia did not receive a grant during the last round of funding. The current application period will end in October 1991. The Parks and Recreation Commission notifies all marina and boat launch owners and operators of the availability of grant funds.

The Parks and Recreation Commission conducted a survey regarding the use of sewage pumpouts. The commission will be conducting another survey of boaters regarding the availability and use of pumpout facilities in approximately 1 year.

Education

The Boater Environmental Education Program will provide three educational signs to the marinas in Budd Inlet that have pumpout stations. These signs consist of a logo for the pumpout station, an instructional sign for pumpout use, and an interpretive sign concerning the environmental impacts of improper waste disposal.

The Parks and Recreation Commission is participating in an EPA-sponsored high school video contest called Video Visions. Students from selected schools in the Puget Sound area produced educational

videos on the environmental impacts of boating. These videos were judged in early 1990 and are available from the Parks and Recreation Commission for group presentations.

Puget Sound Water Quality Authority

The Authority is responsible for developing the PSWQMP for water quality protection in Puget Sound. A comprehensive plan was developed in 1987, revised in 1989, and was finalized in 1991. The PSWQMP is currently being implemented by state agencies and local governments.

Public Involvement and Education Fund

The Public Involvement and Education (PIE) Fund was created by the Washington State legislature in 1987 to sponsor model projects for public involvement and education, community cleanup activities, and environmental monitoring by members of the general public. An initial $1,000,000 was distributed in January 1988 and June 1988. The 1988 legislature appropriated another $1,000,000 to sponsor two more rounds of funding in 1989 and 1990. Approximately $700,000 was granted in the third round in October 1989 and another $300,000 was distributed in the fourth round in April 1990. The Thurston County Resource Fair, City of Olympia, and the Conservation Commission (Moxlie Creek) were all recipients of 1988 PIE fund grants. Trout Unlimited was a recipient of a 1989 PIE fund grant to restore salmon habitat on Indian Creek and educate local businesses about BMPs and habitat restoration.

Puget Sound Ambient Monitoring Program

Staff at the Authority provide technical and administrative support to PSAMP. PSAMP provides a comprehensive, long-term monitoring program for Puget Sound. PSAMP was designed to 1) assist agencies in their pollution control efforts by characterizing and interpreting spatial and temporal trends and identifying problem areas, 2) take measurements to support specific program elements and measure the success of the Puget Sound plan by providing a permanent record of significant natural and human-caused changes in key environmental indicators over time, and 3) provide an ongoing assessment of the health of Puget sound and the risk to human health from consuming seafood from the sound.

The management structure of PSAMP includes the PSAMP Steering Committee, the Monitoring Management Committee, and the Authority. The Authority will act as the chair for the steering committee and the Monitoring Management Committee and will facilitate agency cooperation among the state agencies implementing PSAMP. Other functions the Authority will carry out include

providing arbitration for interagency disagreements concerning PSAMP, providing and housing staff members, managing data, and distributing reports of PSAMP results.

Washington Department of Natural Resources

The Department of Natural Resources (DNR) is responsible for managing state-owned aquatic lands.

Leasing Program

DNR leases state-owned aquatic lands in Budd Inlet (and throughout the state) for periods ranging from 5 to 30 years. The aquatic lands leasing program is being evaluated to incorporate procedures for addressing contaminated sediment liability issues, including site identification, investigation, and remediation. New and recently signed leases include provisions concerning lessee liability for contaminated sediments. DNR attorneys hold the opinion that if a facility or activity is affecting state-owned lands, DNR can sue for damages (e.g., cleanup costs and natural resource damages) on behalf of the people of the State of Washington.

Contaminated Sediments

DNR established the Sediments Management Section in the Division of Aquatic Lands in January 1991. The new section will encourage DNR leaseholders to investigate and remediate contaminated sediments on state-owned aquatic lands. The sediments section will also represent DNR when the agency is identified as a potentially liable party for sites containing contaminated sediments.

With funding from EPA, DNR has developed a screening process to identify state-owned aquatic lands in Puget Sound (including Budd Inlet) that may contain contaminated sediments. The screening process includes the evaluation of existing uses on both leased and unleased lands to determine the potential for sediment contamination. If time and resources are adequate, historical uses of these lands will also be assessed during the screening process.

A Puget Sound-wide list of sites that require further investigation and possible cleanup was prepared by DNR. If a site contains sediments that may be contaminated, it will be scored, ranked, and placed on the list. Further investigation of these sites will determine if they need to be added to the state hazardous sites list.

DNR and Ecology are developing a MOA regarding contaminated sediments on state-owned aquatic lands under which DNR will carry out provisions of the MTCA (e.g., remedial investigations and cleanups).

DNR has also been involved with developing guidelines for identifying sediments too contaminated for unconfined, open-water disposal under PSDDA. While no disposal sites are located within the Budd Inlet project area, any sediments requiring disposal would be subject to PSDDA guidelines.

Wastewater Treatment Plant Outfalls

DNR is involved with the surface water regulations of local jurisdictions when sewage outfall structures lie on DNR lands. DNR regulates the placement of structures that may contaminate or affect state-owned lands (e.g., the LOTT WWTP outfall pipe).

Resource Management

DNR is responsible for issuing leases for geoduck harvesting. DNR has been conducting experimental planting of juvenile geoducks in commercial beds in Budd Inlet, but will discontinue the planting if natural recruitment (i.e., larval development and maturation) appears to be occurring at the site.

DNR manages the Aquatic Lands Enhancement Account. This account has money available for funding projects to acquire land for public recreational access and public education. Account funds are not available for cleaning up contaminated sediments or improving water quality.

Habitat Mapping

DNR is involved in a project to inventory nearshore habitat using remote sensing techniques (e.g., aerial and satellite photographs). Habitat information has been gathered and will be entered into a geographic information system (GIS) by December 1991. New data will be collected every 3 years by the EPA and will be added to the GIS. When the project is complete, comprehensive habitat maps for Budd Inlet will be available.

City of Olympia Planning Department

The planning department manages shoreline development and issues shoreline permits, develops land use regulations, and reviews projects to be conducted within the city limits for compliance with SEPA.

Shoreline Management

The planning department has added stricter environmental protection standards for new marinas to its Shoreline Master Program. The new standards include a requirement for installing sewage pumpouts in all new marinas and existing marinas that are to be

expanded. In addition, the city recently received a $5,500 grant from the Washington Parks and Recreation Commission to replace the marine sewage pumpout facility located at Percival Landing.

The planning department is a member of the Urban Waterfront Task Force. The task force is responsible for determining requirements for over-water building (e.g., piers and buildings on pilings) on the nonresidential marine shorelines within the city of Olympia and for implementing revisions to the Thurston Regional Shoreline Master Program, the Olympia Comprehensive Plan, and the Port of Olympia Comprehensive Plan. The draft Olympia Urban Waterfront Plan was jointly prepared by the planning department and the Port of Olympia in August 1990 under the direction of the task force. The goal of the plan is to designate locations and standards for urban waterfront development. In addition, a series of recommendations for changes to the Olympia Comprehensive Plan, the Port of Olympia Comprehensive Plan, and the Shoreline Master Program for Thurston County are included in the plan. Specific actions that can be taken by the City Council, Port Commission, and other jurisdictions are also identified. The Budd Inlet Action Plan Coordinator will attend meetings and hearings and review the draft urban waterfront plan to help ensure coordination with the Budd Inlet Action Plan. The plan is currently under review by the Olympia Planning Commission and the Port Commission. The Olympia City Council and the port will review and adopt the plan in the summer of 1991 after joint public hearings are held.

City of Olympia Public Works Department

The public works department, in conjunction with Thurston County and the City of Tumwater, is involved in regional storm water management.

Water Quality Policies and Ordinances

The public works department supports adopting stricter standards for aboveground storage tanks. If Ecology provides background information that justifies the need for stricter standards, the city will commit resources from within its water resources program to pursue adoption of the standards by the Olympia City Council.

The city enforces an ordinance to protect environmentally sensitive areas. The ordinance was amended in May 1989 to incorporate policy recommendations from the Thurston County Regional Planning Council concerning wetlands and stream corridors.

Storm Water Management

The public works department, in conjunction with the City of Tumwater and Thurston County, produced a regional drainage manual that was adopted as a city ordinance. The city has been implementing various aspects of the manual since June 1990, including enhanced storm water storage and treatment requirements and improved erosion and sediment control practices. The manual addresses operations and maintenance requirements for both private and public facilities. In addition, the city has developed a new Storm and Surface Water Management Program that includes an enhanced operations and maintenance program for storm water facilities (e.g., drains and culverts). A staff person will be hired to enforce storm water ordinances, develop standards and policies, and inspect public and private facilities.

The City of Olympia has combined sewers for sanitary sewage and storm water in some older areas of the city. The storm water from these areas is routed to the LOTT WWTP for treatment. In addition, excessive infiltration of groundwater in the sanitary sewer lines can occur during wet weather. This water is also routed to the LOTT WWTP for treatment. When the combined volume of storm water, sewage, and groundwater exceeds the capacity of the LOTT WWTP, the combined sewers can overflow into Budd Inlet. When this happens, the storm water, sewage, and groundwater flow into Budd Inlet untreated. The public works department is in the process of separating the combined sewers where possible (e.g., disconnecting roof drains and catch basins from the sanitary sewer lines). The department is also working to eliminate infiltration and inflow into sanitary sewer lines. By eliminating storm water and groundwater going to the WWTP, these measures will allow more sewage to be treated at the LOTT WWTP and decrease the frequency of combined sewer overflows.

The public works department does not plan to separate the large combined storm and sanitary sewers located in the urban area, and the combined wastewater will continue to be routed to the LOTT WWTP.

The department is developing plans for storm water control and pollution abatement in the Indian/Moxlie creeks and Percival Creek drainage basins. The basin planning process includes public participation, basin characterization, problem identification, development of a water quality monitoring plan, and production of a basin storm water management plan. In addition to the two basin plans currently underway, the City of Olympia intends to conduct basin planning for the East and West bay drainages if money becomes available. The Budd Inlet Action Program and basin planning

activities are coordinated through the involvement of the City of Olympia Water Resources Program staff on the Budd Inlet Action Team.

The city is currently working on an interlocal agreement with the City of Tumwater and Thurston County to maintain permanent flow and water quality monitoring stations in the Indian/Moxlie creeks and Percival Creek drainage basins.

Sediment Sampling

The city conducted intertidal sediment sampling northwest of the Moxlie Creek outfall for an environmental impact statement for the proposed Olympic Academy project. It has recently been decided that this project will not be pursued. Sediments were analyzed for priority pollutants, and sediments and surface water were analyzed for fecal coliform bacteria. Levels of nickel and PAHs in samples from some locations were found to exceed AETs (Entranco 1990). Fecal coliform bacteria concentrations were considered high; however, there is no standard for fecal coliform bacteria in sediments.

Capitol Lake Restoration

The city participated in the development of the Capitol Lake Restoration Committee Report and Proposed Action Plan and currently hosts an interagency committee to implement the proposed action plan. The action plan includes proposed restoration actions related to lake management and point and nonpoint contaminant sources. The purposes of the committee are 1) to provide a forum to track the activities of the jurisdictions and agencies involved in Capitol Lake, 2) to coordinate actions affecting Capitol Lake, and 3) to ensure implementation of the Capitol Lake Restoration Plan. Current members of the interagency committee include the Governor's Office; the Washington departments of General Administration, Fisheries, and Transportation; the cities of Olympia and Tumwater; Thurston County; and the Squaxin Tribe. A staff member from Ecology's Water Quality Financial Assistance Program is also on the committee. The committee's activities will be coordinated with the Budd Inlet Action Plan through the following means:

- Communication between the Ecology staff member who is on the committee and the Ecology Budd Inlet Action Plan Coordinator
- Attendance by the Ecology Budd Inlet Action Plan Coordinator at committee meetings, or review of meeting minutes

- Involvement by the City of Olympia on the Budd Inlet Action Team.

Education

The department recently received funding from Ecology to carry out a 2-year storm water education project targeting local businesses and the construction industry. The city has recently hired a staff person who will conduct site visits, hold educational workshops, and inform business operators about storm water and erosion regulations. These activities will be coordinated with the Thurston County Moderate Risk Waste Program and the Budd Inlet Action Plan. Ecology's Budd Inlet Action Plan Coordinator will attend the city's steering committee meetings for the storm water project, and the Water Resources Program supervisor will be involved in the Budd Inlet Action Team.

The city will be developing informational brochures covering its storm water policies, BMPs, storm water facility design standards, water quality educational programs, and other topics. The flyers will be distributed to staff, private developers (e.g., construction companies), and others. The city is also developing a storm drain stenciling program to label drains that discharge to streams so that pollutants are not put in the drains. Twelve stenciling kits and training materials are available through the city for use by interested groups. Through its Stream Team Program, the city is working with neighborhood groups interested in specific stream restoration and cleanup activities.

The city is considering televising a city council meeting during which environmental issues regarding Budd Inlet will be discussed. Potential issues include general water quality and watershed management efforts.

Thurston County Office of Water Quality and Resource Management

The Office of Water Quality has coordination and management responsibility for storm water and groundwater programs, watershed planning, and other environmental programs.

The Office of Water Quality is responsible for implementing the regional drainage requirements, as specified in the regional drainage manual (discussed in the *City of Olympia Public Works Department* section), in areas under county jurisdiction. The manual will be adopted as an ordinance by Thurston County and will be in use by mid-1991.

Water Quality Policies and Ordinances

An erosion control ordinance is expected to be adopted by the county commissioners by August 1991. The ordinance will provide enforcement authority to the county for controlling erosion problems. Funding for the enforcement activities has not been secured and sources are currently being examined.

Groundwater

The county administers the groundwater program and is in the process of characterizing aquifers located in northern Thurston County. The characterization includes location, flow, depth, and water quality information. Over 350 wells have been sampled. A final report, detailing the results of the groundwater characterization, is to be completed by July 1991. A North Thurston County Groundwater Management Plan will be developed as a product of the groundwater management program and groundwater characterization study. A draft plan will be completed by August 1991, and the final plan will be adopted by January 1992.

Sewage Plan

The Office of Water Quality has developed a sewage plan for the unincorporated area around the cities of Lacey, Olympia, and Tumwater. The plan details how additional sewer facilities will be developed in the future.

Education

The Office of Water Quality has a Centennial Clean Water Fund grant to implement a water quality education program. The program will fund a water quality agent to educate citizens about BMPs, expand the stream rehabilitation program by using more volunteers, and establish a water quality educators' network for sharing education resources and information. A quarterly newsletter addressing water quality activities and programs will also be produced.

Thurston County Health Department

The Thurston County Health Department is the lead agency for conducting an information assessment for the Budd Inlet and Deschutes River watershed. The county health department is also involved in environmental monitoring, solid and hazardous waste programs, and health-related programs.

Watershed Management

In support of watershed planning activities, the county health department received a $315,000 grant from Ecology to conduct monitoring, data gathering and evaluation, and an information assessment in the Budd Inlet and Deschutes River watershed. Existing water quality data were analyzed and are being used to develop a work plan for additional data collection and analysis. The

county is now collecting conventional data (i.e., temperature) at water quality stations and chemical data at selected sediment quality stations. Throughout all data collection activities, the county plans to identify upland sources of contamination.

Monitoring

The county health department has been conducting a limited sampling program for shellfish and marine water quality along private property and Priest Point and Burfoot County parks in Budd Inlet. The sampling has occurred each year from June through August since 1987. Sample locations and analytical results are published yearly. Under this program, marine water at Priest Point Park was repeatedly found to have high fecal coliform bacteria levels. Consequently, the health department and the City of Olympia posted the beach off-limits for shellfish harvesting. Marine water at Burfoot County Park was found to have high bacterial counts during one sampling event; however, these results could not be reproduced with subsequent sampling. Therefore, the health department did not limit recreational shellfish harvesting in this area.

In addition, the county health department will encourage citizens to collect shellfish to be sampled for fecal coliform bacteria, specifically targeting residents living near small WWTPs. The county health department and DOH will conduct the bacteriological analyses.

Nonpoint Pollution Ordinance

The Thurston County Health Department is currently developing an ordinance that will help control pollution from nonpoint sources. The ordinance is presently in the scoping stage and categories of nonpoint sources and operating practices of concern have been identified. Nonpoint sources include animal waste, marinas, moderate risk wastes (i.e., household wastes), and hazardous wastes. Operating practices include ongoing activities and specific incidents that cause pollution. This ordinance is unique to the Thurston County Health Department and is primarily concerned with public health.

Moderate Risk Waste

The Thurston County Moderate Risk Waste Plan was developed by the health department as a response to requirements of the 1985 amendments to the state Hazardous Waste Management Act. The plan addresses potential human health and environmental problems associated with household hazardous waste and generators of small quantities of hazardous waste. Health department staff will provide recommendations on how to reduce hazardous waste after conduct-

ing surveys of existing waste generating activities. In addition, staff from this program will be invited to participate in the Budd Inlet Action Plan. The Budd Inlet Action Plan Coordinator will coordinate, where appropriate, site visits and inspections with the moderate risk waste program's surveys.

Sewer Systems

The health department is currently revising the health code and policies regarding onsite sewage systems. The revisions will include a provision for issuing renewable or revokable sewage system permits, a management and maintenance program, a certification system, and education regarding onsite sewage system maintenance.

Thurston County Public Works

The Thurston County Public Works Department is responsible for storm water management in the unincorporated county and for public works construction projects.

Storm Water Management

The public works department has developed a storm water utility. The Thurston County commissioners agreed to establish a surface water utility charge to fund storm and surface water activities in northern Thurston County. Activities of the storm water utility include contributing to the Budd Inlet and Deschutes River monitoring effort and developing basin plans.

The department is also responsible for implementing the regional drainage requirements as specified in the regional drainage manual (discussed in the *City of Olympia Public Works Department* section) in areas under its jurisdiction. The manual will be adopted as an ordinance by Thurston County and will be in use by mid-1991.

Boston Harbor Wastewater Treatment Plant

Construction of the Boston Harbor WWTP was recently completed by the county public works department. The plant has been on-line since August 1990. This plant provides secondary sewage treatment and has a capacity of 60,000 gallons per day.

Port of Olympia

The Port of Olympia operates the East Bay marina, which includes a boat sewage pumpout facility. The port maintains log storage areas on the peninsula located between East Bay and West Bay. Shipping activity in this area is predominantly log loading. The port also leases land for other commercial and industrial development.

Storm Water

The port has paved the southwest corner of the property on the peninsula that is used for log storage, and the remaining log storage areas will be paved as funds permit. The paving of the log storage areas allows storm water to be collected and treated before being discharged to Budd Inlet. The port is applying, as part of a group application, to EPA for an NPDES permit for six storm water outfalls that are located on the port's peninsula property. The application will be submitted by September 1991. Phase 1 of the permit will include monitoring information on storm water quality. The port has hired a contractor to prepare a sampling and analysis plan and conduct sampling during the winter of 1991-1992. The sampling plan will be submitted to EPA for review. The sampling results will be used to determine the long-term permit limitations.

East Bay Water Quality

The port's application in 1990 to the Washington State Parks and Recreation Commission for a grant to replace the existing East Bay Marina sewage pumpout facility was not funded. The port has taken interim measures (e.g., adding a booster pump) to improve the performance of the existing facility until it can be replaced. The port will reapply to the Parks and Recreation Commission for grant funds to be awarded in 1991. The deadline for application is October 1991.

The port conducts sampling in the East Bay Marina moorage area to monitor dissolved oxygen levels. The port has installed 21 aerators in East Bay that are used when dissolved oxygen levels at the bottom of the bay fall below 5 ppm.

Shoreline Management

As discussed in the *City of Olympia Planning Department* section, the port and the City of Olympia formed an Urban Waterfront Task Force and developed an urban waterfront master plan in August 1990. The plan focuses on regulating waterfront development within the city boundaries. In addition, a series of recommendations for changes to the Olympia Comprehensive Plan, the Port of Olympia Comprehensive Plan, and the Shoreline Master Program for Thurston County are included in the plan. Specific actions that can be taken by the City Council, Port Commission, and other jurisdictions are also identified. The Budd Inlet Action Plan Coordinator will attend meetings and hearings and review the draft urban waterfront plan to help ensure coordination with the Budd Inlet Action Plan. The plan is currently under review by the Olympia Planning Commission and the Port Commission. The Olympia City Council and the port will review and adopt the plan in the summer of 1991, after joint public hearings are held.

The port requires lessees to provide a list to the port of all petroleum, dangerous, toxic, and hazardous materials. The lessees also agree to abide by all applicable environmental laws and cleanup provisions.

Remedial Activities

The port, McFarland/Cascade Pole, and Ecology have signed a consent decree for the cleanup of the McFarland/Cascade Pole site. The consent decree requires preparation of a final cleanup plan by mid-1992.

The port received an $856,000 grant from Ecology to pay for about 50 percent of its project costs over the next 2 years (see discussion under *Washington Department of Ecology*).

The last two underground tanks on port property were removed in September 1990.

Dredging

The port and the Corps are evaluating potential improvements to the existing navigation channel in West Bay. Because of the findings of an economic feasibility study, expansion of the turning basin next to the navigation channel is no longer being considered. Plans to widen the channel are still being considered, but will be postponed until the improvements are economically necessary. The port and the Corps will meet during the summer of 1991 to evaluate the project and make a decision. The final feasibility report for improvements was completed in April 1991, but if dredging occurs, it would not begin before 1993.

The port has also collected sediment chemistry data for Berth 3.

City of Tumwater Public Works Department

The city of Tumwater Public Works Department has responsibility for storm water management.

Storm Water

The Public Works Department is responsible for implementing the regional drainage requirements as specified in the regional drainage manual that was drafted by the cities of Olympia, Tumwater, and Lacey and by Thurston County. The city will adopt the manual by ordinance.

The department, in conjunction with the City of Olympia, conducted a storm drain study for Percival Creek that focused on water quality. The study was completed at the end of 1990. The data will be used to prioritize capital improvement needs. High-priority capital improvements will be addressed beginning in 1992.

The department has also prepared storm drainage master plans for the north and south Tumwater Hill areas. These master plans evaluate and recommend plans for conveying, detaining/retaining, treating, and discharging storm water in these two rapidly developing basins. Both plans focus on improving water quality.

Education

The Public Works Department will help to educate citizens about the hazards of dumping wastes in storm drains that connect to waterways. The department will begin storm drain stencilling in 1991.

City of Tumwater Department of Community and Economic Development

The City of Tumwater Department of Community and Economic Development (CED) processes shoreline permits and reviews development projects for consistency with construction codes, land use and environmental regulations, and SEPA. CED is also responsible for the construction and maintenance of parks.

CED will be examining potential funding sources that could be used to increase inspection and enforcement activities related to SEPA conditions, building codes, and erosion and sedimentation requirements.

LOTT Wastewater Treatment Program

The LOTT WWTP treats wastewater from the cities of Lacey, Olympia, and Tumwater and Thurston County. LOTT is responsible for plant maintenance and improvements, CSOs, and industrial discharges.

Plant Improvement

Under a current NPDES permit and enforcement order from Ecology, the LOTT WWTP must increase its capacity and make other improvements by 1993. LOTT WWTP jurisdictions will construct a nitrogen-removal facility that will significantly decrease the amount of nitrogen being discharged to Budd Inlet and will switch from a chlorination disinfection system to an ultraviolet disinfection system.

The current combined average flow for all outfalls at the WWTP is 13 MGD in the winter and 9 - 10 MGD in the summer. The highest recorded flow in any 24-hour period was 65 MGD during a 100-year storm. Improvements required by Ecology will increase the overall plant treatment capacity for peak flows from 35 to 55 MGD. The monthly average for peak flows during wet weather will be 22 MGD.

The WWTP currently operates two outfalls (see Figure 5). The primary outfall has a capacity of 9-13 MGD and is located north of the peninsula owned by the Port of Olympia. The secondary outfall (48-inch pipe) is located near Fiddlehead Marina and discharges to West Bay. A portion of the WWTP's effluent is discharged daily through this secondary outfall. The primary outfall will be upgraded, and the use of the secondary outfall will be discontinued. The upgrade will include a new above-ground section of pipe that will follow the perimeter of the McFarland/Cascade Pole site to reach the outfall location. The new pipe outfall location will be near the current outfall location. When cleanup activities at the McFarland/Cascade site are completed, the above-ground pipe will be buried.

All improvements required under Ecology's enforcement order must be completed by April 1993 or a general construction moratorium within the LOTT service area (i.e., the Urban Growth Management Area) will be imposed. This deadline may be revised to accommodate mitigation requirements for impacts to a small wetland that the new above-ground outfall pipe will cross.

Combined Sewer Overflows

The plant has an average of less than one CSO event per year. Urban storm water from some parts of the existing system will not be processed separately and will probably always pass through the plant. In its service areas, LOTT is trying to reduce storm water inflow and infiltration of groundwater to sewer lines, to increase plant capacity during wet weather.

As required by its NPDES permit, LOTT recently installed locked valves on the overflow structures at the East and West bay pump/lift stations. When an overflow occurs, LOTT personnel must manually open these valves and report the overflow event to Ecology.

Industrial Discharges

A proposed pretreatment program for industries that discharge to LOTT has been submitted to Ecology for comment and approval. The program is expected to be approved and in place by December

1991. The pretreatment program will include facility inspections, a permitting system, and enforcement activities (e.g., fines). LOTT jurisdictions jointly established a uniform program enforceable by each jurisdiction (i.e., Lacey, Olympia, Tumwater, and Thurston County) and coordinated and directed by LOTT. After Ecology approves the program, it will be adopted individually by each jurisdiction. Two major industries that discharge to LOTT are planning pretreatment activities. The Pabst/Olympia Brewery plans to reduce the quantity of nitrogen in its effluent to limit surcharges imposed by LOTT. The Weyerhaeuser plant will be pretreating its effluent when it connects to LOTT within the next year.

LOTT has completed an industrial survey of the service area. Plant influent is occasionally sampled for organic and metal contaminants. Plant personnel perform regular inspections and spot checks at most industries that discharge to the plant.

Monitoring

LOTT monitors five sites in Budd Inlet for dissolved oxygen and chlorine in water and metals in sediments. LOTT will also conduct ambient baseline and routine monitoring at the north end of Budd Inlet peninsula due to placement of the new outfall.

Site-Specific Action Plan

The site-specific action plan addresses areas with known eutrophication, known bacterial and chemical contamination, and potential contaminant sources. The site-specific action plan is intended to prioritize source identification, source control, and remedial activities according to priority problem areas. Source-specific actions, presented in Table 2, identify specific contaminant sources and source-specific control actions that will be taken to improve environmental conditions in Budd Inlet. Sources listed in Table 2 are those identified in Tetra Tech (1988) and by the members of the Interagency Work Group and Citizen Advisory Committee (see also Figure 5). Source characteristics and status were identified in the data summaries document and by work group members. Actions are those activities specifically related to source control or contaminant remediation that have been agreed upon by the individual agencies in the work group. The implementation date lists actual and projected start and finish dates for each action. Limiting factors represent requirements needed by agencies to implement specific actions. Blank areas indicate gaps in knowledge of the source characteristics or actions to limit or remediate contamination

problems. One of the ongoing tasks of the work group is to further refine priorities and secure commitments from participating agencies to perform additional source identification and implement source control measures.

Tables 3 through 8 summarize general programmatic actions that will be taken to improve environmental conditions in Budd Inlet. There is some overlap among the programmatic action tables (Tables 3 through 8) and between the programmatic action tables and the source-specific action table (Table 2). Table 3 lists areawide planning and program development actions; Table 4 lists contaminant control actions; Table 5 lists remedial (cleanup) investigations; Table 6 lists monitoring activities occurring in the project area; Table 7 lists resource protection actions; and Table 8 presents the various educational activities and programs that will be implemented. Each of these tables gives a brief description of the action, lists the agencies involved, and notes the starting or ending target dates when known. More detail concerning activities in the action column can be found in the *Comprehensive Plans and Programs* section of this report.

TABLE 2. SOURCE-SPECIFIC ACTIONS[a]

Potential Source	Source Characteristics and Status	Action	Agencies Involved	Target Date[b]	Limiting Factors
Tamoshan wastewater treatment plant (WWTP)	Secondary WWTP; limitations include 0.035 MGD, 30 mg/L (916 lb/day) BOD, 30 mg/L (916 lb/day) SS, 200 colonies fecal coliform bacteria per 100 mL effluent; NPDES permit expires 10/91	Review and reissue permit	Washington Department of Ecology (Ecology)	5/91 (to begin)	Implementation of recommendations by Efficiency Commission
Beverly Beach WWTP	Secondary WWTP; average flow ≤3,000 gallons/day; limitations include 30 mg/L (1.25 lb/day) BOD, 30 mg/L (1.25 lb/day) SS, 200 colonies fecal coliform bacteria per 100 mL effluent; NPDES permit expires 3/96	Review and reissue permit	Ecology	3/91 (completed)	Implementation of recommendations by Efficiency Commission
Seashore Villa WWTP	Secondary WWTP; average flow ≤3,600 gallons/day; limitations include 30 mg/L (3.8 lb/day) BOD, 30 mg/L (3.8 lb/day) SS, 200 colonies fecal coliform bacteria per 100 mL effluent; NPDES permit redraft in process	Review and reissue permit	Ecology	5/91	Implementation of recommendations by Efficiency Commission
Boston Harbor WWTP	Secondary WWTP; average flow (see permit); NPDES permit expires 3/95	Set permit limits and issue permit	Ecology	3/95	Implementation of recommendations by Efficiency Commission
LOTT outfalls; primary and secondary	Secondary WWTP; 16.3 MGD; limitations include 30 mg/L (4,000 lb/day) SS and BOD, 200 colonies fecal coliform bacteria per 100 mL effluent; NPDES permit expires 9/92	Review and reissue permit Comply with administrative order amending current permit	Ecology LOTT	9/92 Ongoing	Implementation of recommendations by Efficiency Commission
Water Street Combined Sewer Overflow (CSO)	Untreated sewage and stormwater runoff; limitations for LOTT WWTP apply (see above); inflow and infiltration (I&I) to be addressed as required by permit; covered under NPDES permit for LOTT	LOTT-Ecology meeting to reach agreement on any further CSO and I&I reduction plans	LOTT	To be determined (TBD)	
State and Chestnut streets CSO	Untreated sewage and stormwater runoff; limitations for LOTT WWTP apply (see above); I&I to be addressed as required by permit; covered under NPDES permit for LOTT	LOTT-Ecology meeting to reach agreement on any further CSO and I&I reduction plans	LOTT	TBD	

TABLE 2. SOURCE-SPECIFIC ACTIONS (Continued)

Potential Source	Source Characteristics and Status	Action	Agencies Involved	Target Date[b]	Limiting Factors
Port of Olympia	Stormwater runoff	Complete group application for stormwater NPDES permit	Port of Olympia	9/91	
		Conduct runoff sampling	Port of Olympia	Winter 1991-92	
		Issue permit	Ecology or EPA	TBD	
Pabst/Olympia Brewery	Stormwater runoff; NPDES permit administratively extended to 12/99	Incorporate storm water runoff limits into revised permit	Ecology	TBD	
Delson Lumber/ Olympia Forest Products	Stormwater runoff; potential soil and sediment contamination from past activities; facility burned in 1990, NPDES permit canceled	Evaluate sediment and water sample data gathered 9/90; WARM ranking if necessary	Ecology	6/91	
Chevron	Potential soil and groundwater contamination from past activities	TBD; WARM ranking if necessary	Ecology	9/91	
Dunlap Towing/West Bay Chip Reload	Stormwater runoff	Require stormwater NPDES permit application or Notice of Intent (NOI)	Ecology	11/91	
West Bay Pump/Lift Station	Untreated sewage and stormwater runoff	CSO/I&I reduction plan	Ecology LOTT	Ongoing	
Hardel Mutual Plywood Corporation	Stormwater runoff	Require stormwater NPDES permit application or NOI	Ecology	11/91	
Reliable Steel Fabricators Inc.	Stormwater runoff	Require stormwater NPDES permit application or NOI	Ecology	11/91	
Industrial Petroleum Distributors	Stormwater runoff	Require stormwater NPDES permit application or NOI	Ecology	11/91	
Historical landfill	Effluent characteristics unknown; closed prior to regulations for landfill closure	Sampling	Ecology	TBD	
Past Texaco storage facility	Petroleum-contaminated soils	WARM ranking	Ecology	6/91	

TABLE 2. SOURCE-SPECIFIC ACTIONS (Continued)

Potential Source	Source Characteristics and Status	Action	Agencies Involved	Target Date[b]	Limiting Factors
McFarland/Cascade Pole site	Soil and sediment contaminated with creosote; state-listed hazardous waste site; cleanup under consent decree	Conduct remedial investigation and feasibility study	McFarland/Cascade Pole Port of Olympia	Ongoing	
		Enforce consent decree requirements	Ecology	Ongoing	
Petroleum-contaminated soils at south end of East Bay	Petroleum-contaminated soils	Initial investigation	Ecology	9/91	
		WARM ranking	Ecology	TBD	
San Francisco Avenue stormwater outfall	Untreated stormwater runoff	Sample runoff	City of Olympia	TBD	
East Bay Drive pump/lift station	Untreated sewage and stormwater runoff	CSO/I&I reduction plan	Ecology LOTT	Ongoing	
Jasper/Eastside pump/lift station	Untreated sewage and stormwater runoff	CSO/I&I reduction plan	Ecology LOTT	Ongoing	
Percival Cove salmon rearing pen	Nutrient loading, BOD	Determine amount of nutrient loading to Capitol Lake	Ecology Fisheries Washington Department of General Administration	TBD	
Mothballed fleet	Former site of mothballed Navy fleet; potential contaminants include solvents, waste oils, and metals	Characterized sediments and rank for cleanup	Ecology	TBD	
Athens Beach area	Fecal coliform bacteria; specific sources unknown	Monitor water quality; identify sources	TBD	TBD	
Olympia Country & Golf Club area	Fecal coliform bacteria, nutrient loading, pesticides; specific sources unknown	Require runoff sampling	Ecology	12/92	
		Conduct sediment sampling	Thurston County Health Department	10/91	
French Loop Road and Butler Cove area	Fecal coliform bacteria, nutrients; specific sources unknown.	Monitor water quality and identify sources	Thurston County Health Department	12/91	

TABLE 2. SOURCE-SPECIFIC ACTIONS (Continued)

Potential Source	Source Characteristics and Status	Action	Agencies Involved	Target Date[b]	Limiting Factors
West Bay Marina	Fecal coliform bacteria from boat sewage; boat repair and painting activities at upland boatyard; no sewage pumpout	Sample runoff/sediments	Thurston County Health Department	TBD	
		Follow up on water quality inspection	Ecology	6/91	
		If marina is expanded, require pumpout	City of Olympia	12/92	
		Require stormwater NPDES permit or NOI	Ecology	11/91	
Fiddlehead Marina	Fecal coliform bacteria from boat sewage; no sewage pumpout; boat repair and painting activities	Require implementation of best management practices	Ecology	12/92	
		If marina is expanded, require pumpout	City of Olympia	TBD	
One Tree Island Marina	Fecal coliform bacteria from boat sewage; boat repair and painting activities; no sewage pumpout	Require implementation of best management practices	Ecology	12/92	
		If marina is expanded, require pumpout	City of Olympia	12/92	
	Capped contaminated sediments site	Monitor effectiveness of cap	TBD	TBD	
Martin Marina	Fecal coliform bacteria from boat sewage; no sewage pumpout; boat repair and painting activities	Require implementation of best management practices	Ecology	12/92	
		If marina is expanded, require pumpout	City of Olympia		
Olympia Yacht Club	Fecal coliform bacteria from boat sewage; boat repair and painting activities; no sewage pumpout	Require implementation of best management practices	Ecology	12/92	
		If marina is expanded, require pumpout	Olympia	12/92	
	Painting and scraping in intertidal area at low tide (tide grid)	Require implementation of best management practices	Ecology		

TABLE 2. SOURCE-SPECIFIC ACTIONS (Continued)

Potential Source	Source Characteristics and Status	Action	Agencies Involved	Target Date[b]	Limiting Factors
East Bay Marina	Fecal coliform bacteria from boat sewage; boat repair and painting activities	Repair/replace pumpout	Port of Olympia	Completed	
	Low dissolved oxygen	Conduct regular dissolved oxygen monitoring	Port of Olympia	Ongoing during critical periods	
		Repair/replace dissolved oxygen monitoring equipment	U.S. Army Corps of Engineers	TBD	
		Place signs on aerators to discourage boaters from turning them off	Port of Olympia	TBD	
Boston Harbor Marina	Fecal coliform bacteria from boat sewage; boat repair and painting activities; no sewage pumpout	Require implementation of best management practices	Ecology	12/92	
		Supply pumpout grant information and encourage application	Washington Parks and Recreation Commission	TBD	
West Bay drain	Untreated stormwater runoff and contaminants from McFarland/Cascade Pole site	Sample runoff	Port of Olympia	Winter 1991-92	
		Identify sources	Ecology	TBD	
Ellis Creek drainage	Fecal coliform bacteria; specific sources unknown	Develop basin plan, conduct monitoring, and identify sources	Ecology	TBD	
			City of Olympia Public Works	1992	Basin planning funding
Moxlie Creek drainage	Fecal coliform bacteria; specific sources unknown	Develop basin plan, conduct monitoring, and identify sources	City of Olympia Public Works	TBD	
Small drainages flowing into East and West bays	Fecal coliform bacteria, nutrients; specific sources unknown	Develop basin plan, conduct monitoring, and identify sources	City of Olympia Public Works	1992	Basin planning funding
Tumwater Valley Golf Club area (Deschutes)	Pesticides, nutrient loading; specific sources unknown	Require runoff sampling	Ecology	12/92	

TABLE 2. SOURCE-SPECIFIC ACTIONS (Continued)

Potential Source	Source Characteristics and Status	Action	Agencies Involved	Target Date[b]	Limiting Factors
Other industrial and commercial businesses in the Budd Inlet/Deschutes River Basin[c]	Stormwater runoff	Prioritize inspections and sampling efforts	Ecology	8/91	
		Conduct inspections and sampling	Ecology	Ongoing	
		Require stormwater NPDES permit application or NOI	Ecology	11/91	
		Require implementation of best management practices	Ecology	Ongoing	
Industrial and commercial businesses located on Olympia's west side	Stormwater runoff	Prioritize inspections and sampling efforts	Ecology	8/91	
		Conduct inspections and sampling	Ecology	Ongoing	
		Require stormwater NPDES permit application or NOI	Ecology	11/91	
		Require implementation of best management practices	Ecology	Ongoing	
Industrial and commercial businesses located in East Olympia/Indian Creek drainage basin	Stormwater runoff	Prioritize inspections and sampling efforts	Ecology	8/91	
		Conduct inspections and sampling	Ecology	Ongoing	
		Require stormwater NPDES permit application or NOI	Ecology	11/91	
		Require implementation of best management practices	Ecology	Ongoing	
Industrial and commercial businesses located in the City of Olympia	Stormwater runoff	Conduct site visits; enforce local stormwater policies; educate local businesses	City of Olympia Public Works	6/91 (begin)	
Industrial and commercial businesses located in Thurston County	Improper storage and disposal of moderate-risk wastes	Conduct site visits; survey waste-generating activities; recommendations to reduce waste	Thurston County Public Works	Ongoing	

TABLE 2. SOURCE-SPECIFIC ACTIONS (Continued)

[a] BOD - biochemical oxygen demand
MGD - million gallons per day
SS - suspended solids
WARM - Washington Ranking Method (for hazardous waste investigations)
NPDES - National Pollutant Discharge Elimination System
LOTT - Lacey, Olympia, Tumwater, and Thurston County

[b] End date for action, except where noted.

[c] Industrial and commercial businesses in the Budd Inlet/Deschutes River Basin include:

A1 Rentals
Advanced Automotive
Allen's Wrecking Yard
AM/PM Minimart and Gas Station
Amick Martin 4 x 4
Arco Gas Station
ARO Glass
Automotive Specialties Service Center
B&B Auto Repair
Bernie's Garage
Betschart Electric
The Boat Company
Bob's Automotive
BP Gas Station
Budget Car & Truck Rental
Buffalo Signs
Capital Marine
Capitol Body & Fender
Capitol City Press
Delson Lumber/Olympia Forest Products (former)
Dunlap Towing/West Bay Chip Reload
Earl Sheib Auto Painting
Eric's Automotive
Fast Fuel
Gordon's Radiator
Hardel Builder's Center
Hardel Mutual Plywood
Howard's 76 Station
Hoy Sign Company
Industrial Petroleum Distributors
Intercity Transit Station - Columbia St.
Ken's Tire
Lassen Electric
Pete Lea Automotive Medical Center
Les Schwab Tires
Lloyd's Transmission
NW Limo Auto Detailing
Olympia Auto Service
Olympia Autobody
Olympia Electric
Olympia Glass
D.G. Parrott & Sons - Machinists and Manufacturers
Port of Olympia (including all lessees)
Puget Power parking lot
Quality Muffler & Brakes
Raudenbush
Reliable Steel Fabricators
Safelite Auto Glass
Solid Wood Inc.
Stop & Go Auto Repair
Superior Linen Service
Tom's Outboards
Unocal
Walt's Muffler & Brakes
West Bay Marina Boatyard
Western Sheet Metal
Whit Reading Motor Sales
York Air Conditioning & Refrigeration
Zeigler's Welding

TABLE 3. PLANNING AND PROGRAM DEVELOPMENT ACTIONS

Action	Agencies Involved	Target Date[a]	Limiting Factors
Implement Budd Inlet/Deschutes River watershed management program for nonpoint source contaminant control	Thurston County Washington Department of Ecology (Ecology)		
Phase 1:			
– Data collection and analysis plan	Thurston County	Completed	
– Water quality data collection and analysis	Thurston County	12/91	
– Upper Deschutes Channel characterization (data collection and continuing development of geographic information system)	Thurston County Squaxin Island Tribe	9/91	
Phase 2:			
– Development of nonpoint source watershed action plan for Budd Inlet/Deschutes River basin	Thurston County	1992-93	Centennial Clean Water Fund (CCWF) grant
– Continue water quality monitoring	Thurston County	1993-94	CCWF grant
Phase 3:			
– Implement watershed action plan	Implementing agencies	1993 onward	Development of watershed action plan
Adopt stormwater management operation and maintenance, storm drain sediment disposal, and complaint response policies	Thurston County	7/91	
Increase funding for enforcement of Shoreline Master Program, State Environmental Policy Act (SEPA), building codes, erosion policies	Thurston County	TBD	County Commission approval
Develop erosion control ordinance (including enforcement provisions and funding mechanisms)	Thurston County	8/91	County Commission approval
Administer volunteer recreational shellfish tissue sampling and followup sampling	Thurston County	Ongoing	Funding
– Target residents in areas of concern		TBD	
Administer Storm and Surface Water Management Program (including funding for enforcement and education elements)	City of Olympia	Ongoing	
Develop Indian/Moxlie Drainage Basin Plan	City of Olympia (Thurston County)		
– Phase 1 (data collection)		12/90	Completed
– Phase 2 (capital improvement plan)		12/91	City Council adoption

TABLE 3. PLANNING AND PROGRAM DEVELOPMENT ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Hire staff to enforce erosion and sediment requirements of Stormwater Management Program	City of Olympia	4/91	
Revise shoreline master plan and City Comprehensive Plan (to reflect Urban Waterfront Plan recommendations and other changes)	City of Olympia	TBD	City Council adoption
Develop basin plans for East and West bays	City of Olympia	12/91 (begin)	CCWF grant
Identify funding sources to increase inspection and enforcement activities related to Shoreline Master Program, SEPA, building code, and erosion/sedimentation requirements	City of Tumwater	TBD	
Schedule meeting to reach concurrence on requirements of Combined Sewer Overflow/Infiltration and Inflow Reduction Plan	Lacey, Olympia, Tumwater, and Thurston County (LOTT) Ecology	12/90	
Submit Combined Sewer Overflow/Infiltration and Inflow Reduction Plan if required	LOTT	TBD	
Administer pretreatment program; issue industrial discharge permits	LOTT	1/92	Ecology comments and approval of local proposal
Revise Port Comprehensive Plan (to reflect Urban Waterfront Plan recommendations)	Port of Olympia	TBD	Port Commission adoption
Develop, adopt, and implement Regional Drainage Design and Erosion Control Manual (adoption by ordinance)	Thurston County City of Olympia City of Tumwater	4/91	County Commission adoption City Council adoption City Council adoption
Ensure funding for implementation of Regional Drainage Design and Erosion Control Manual, including enforcement and education elements	Thurston County City of Olympia City of Tumwater	TBD	Separate utility budget processes
Develop nonpoint source control ordinance	Thurston County Health Department	TBD	In scoping stage
Develop regional geographic information system for basin planning and other projects	Thurston County Squaxin Island Tribe	Underway	County and tribe systems not compatible
Develop Percival Creek Drainage Basin Plan	City of Olympia City of Tumwater Thurston County	12/91	
Develop interlocal agreement to jointly fund permanent water quantity and quality monitoring stations in Indian, Moxlie, and Percival drainage basins	City of Olympia City of Tumwater Thurston County	6/92	

TABLE 3. PLANNING AND PROGRAM DEVELOPMENT ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Propose adoption of stricter standards for aboveground storage tanks (ASTs)	City of Tumwater City of Olympia	TBD 6/92	City Council approval
Document existing problem ASTs	Ecology	12/91	
Develop and approve local Comprehensive Habitat Management Plan	Washington Departments of General Administration; Ecology; Fisheries City of Olympia City of Tumwater Squaxin Island Tribe	TBD	Approval of Urban Waterfront Plan by local jurisdictions
Begin planning process for 1993 Capitol Lake dredging project	Washington Department of General Administration	1991	
Complete study of erosion in Capitol Lake's North Basin; complete bank stabilization projects	Washington Department of General Administration	12/91	Legislative budget process
Develop rules, guidelines, and model ordinances for stormwater management in Puget Sound	Ecology	11/91	
Develop best management practices manual for stormwater management in Puget Sound	Ecology	11/91	
Develop sediment quality standards, dredge disposal criteria, and remedial action criteria	Ecology	Completed	
Develop memorandum of agreement between Thurston County Health Department and the Washington Department of Health to sample shellfish and post signs at contaminated recreational shellfish beaches	Washington Department of Health Thurston County Health Department	TBD	Funding for local participation
Implement interim policy for stormwater management guidelines (for use in hydraulic project approval issuance)	Washington Department of Fisheries	Ongoing	
Administer boat sewage pumpout grants	Washington Parks and Recreation Commission	Ongoing	
Develop marine sewage disposal requirements and enforcement strategy	Washington Parks and Recreation Commission	7/91-7/92	
Finalize Puget Sound Water Quality Management Plan	Puget Sound Water Quality Authority	Completed	
Develop, adopt, and implement companion stormwater rule in conjunction with Ecology adoption of stormwater standards	Puget Sound Water Quality Authority	11/91	
Enhance coordination of review of urban bay National Pollutant Discharge Elimination System permits	Puget Sound Water Quality Authority Ecology U.S. Environmental Protection Agency	Ongoing	Implementation of Efficiency Commission report

TABLE 3. PLANNING AND PROGRAM DEVELOPMENT ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Adopt stormwater management requirements for cities with populations less than 100,000	U.S. Environmental Protection Agency	1992	
Provide Port of Olympia and City of Olympia with policy interpretation defining appropriate uses of Clean Water Act Section 404 dredged sediment fills	U.S. Army Corps of Engineers		

[a] End date for action, except where noted.

TABLE 4. CONTAMINANT CONTROL ACTIONS

Action	Agencies Involved	Target Date[a]	Limiting Factors
Implement Storm and Surface Water Management Program operating and maintenance procedures; hire inspection and enforcement staff	City of Olympia	Ongoing	
Replace failing marine sewage pumpout facility at Percival Landing	City of Olympia	To be determined (TBD)	
Implement Indian/Moxlie Drainage Basin Plan Phase 2 (capital improvement plan)	City of Olympia	12/91	
Implement Percival Creek Drainage Basin Plan (capital improvement plan)	City of Olympia City of Tumwater	12/91	
Adopt and implement Regional Drainage Design and Erosion Control Manual (adopt by ordinance)	Thurston County City of Olympia City of Tumwater	8/91 4/91 4/91	County Commission adoption City Council adoption City Council adoption
Maintain oil/water separators, catch basins, and stormwater systems	City of Olympia City of Tumwater Thurston County	Ongoing	
Build regional catch basin sediment disposal facility	Thurston County	1991	
Require construction and maintenance of retention/detention basins and oil/water separators for all new permitted construction	City of Olympia City of Tumwater Thurston County	Ongoing	Adoption of regional drainage manual; Ecology guidance 12/91
Encourage use of constructed biofiltration swales for processing stormwater runoff in unincorporated areas	City of Olympia City of Tumwater Thurston County	Ongoing	Adoption of regional drainage manual; Ecology guidance 12/91
Begin implementing best management practices for stormwater management	City of Olympia City of Tumwater Thurston County	1/91	
Improve sewers, separate stormwater, reconstruct sewers (per Sanitary Sewer Comprehensive Plan, Phase 1)	City of Olympia	1989-1993	
Correct failed septic systems on north Cooper Point	Thurston County	Areawide strategy by 12/91	
Implement stricter standards for aboveground storage tanks	City of Tumwater City of Olympia	TBD 6/92	

TABLE 4. CONTAMINANT CONTROL ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Conduct enforcement inspections and permitting activities via water quality, dangerous waste and hazardous waste cleanup laws	Ecology	TBD	
Fund purchase of boater sewage pumpout stations	Washington Parks and Recreation Commission	Annually beginning spring 1990	
Implement enforcement program for Marine Sewage Disposal Requirements	Washington Parks and Recreation Commission	7/92	
Initiate discussions with Port of Olympia about log storage practices	U.S. Fish and Wildlife Service	TBD	
Complete log yard stormwater management project (pave yards, construct retention swales)	Port of Olympia	Ongoing	As funds are available
Resurface and regrade port loading dock to eliminate direct runoff to inlet	Port of Olympia	6/91	
Complete and submit permit application	Port of Olympia	9/91	
Conduct sampling for permit application	Port of Olympia	Winter 1991-92	
Remove abandoned underground fuel tanks	Port of Olympia	Complete	
Minimize or remove log rafts over tideflats in West Bay	Port of Olympia Washington Department of Natural Resources	TBD	Jurisdiction depends on ownership of tidelands
Repair or replace marine sewage disposal pumpout at East Bay Marina	Port of Olympia Washington Parks and Recreation Commission	TBD	Repair is complete, replacement depends on funds from Washington State Parks and Recreation Commission
Ensure uninterrupted operation of East Bay Marina aerators during critical periods	Port of Olympia U.S. Army Corps of Engineers	--	
Upgrade bulk diesel storage tank at powerhouse on Capitol Lake (install oil/water separator within containment)	Washington Department of General Administration	1991-1993	
Develop Spill Prevention, Control, and Countermeasure Plan	Washington Department of General Administration	TBD	
Remove regulated 1,000-gallon underground storage tank from Capitol grounds	Washington Department of General Administration	3/93	
Remove unregulated underground storage tanks from Capitol grounds	Washington Department of General Administration	TBD	

TABLE 4. CONTAMINANT CONTROL ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Conduct soil sampling at the Washington Department of Transportation's storage area on the southwest shore of Capitol Lake	Washington Department of Transportation	TBD	
Inspection of Department of Transportation storage area on the southwest shore of Capitol Lake	Ecology	6/91	
Removal of storage area on the southwest shore of Capitol Lake	Washington Department of Transportation	TBD	Determination of liability for possible contamination
Implement Combined Sewer Overflow/Infiltration and Inflow Reduction Plan requirements	Lacey, Olympia, Tumwater, and Thurston County (LOTT) Ecology	Ongoing	Meeting between LOTT and Ecology
Nitrogen Removal Facility completion and other plant improvements	LOTT Ecology	9/93	
Renew expired permit for Pabst/Olympia Brewery	Ecology	TBD	
Clarify regulations about chlorinated sewage systems and develop strategy for homeowner compliance	Thurston County Health Department Ecology	TBD	
Renew expired permit for Tamoshan wastewater treatment plant	Ecology Thurston County	5/91	
Renew expired permit for Seashore Villa	Ecology	5/91	
Renew expired permit for Beverly Beach	Ecology	3/91	
Administer Boston Harbor wastewater treatment plant permit	Ecology	Ongoing	
Review, renew, or terminate expired permit for Olympia Forest Products/WTD	Ecology	TBD	
Issue stormwater NPDES permit for Port of Olympia	Ecology	TBD	
Implement monitoring requirements at One Tree Island capped aquatic disposal site near Fiddlehead Marina	TBD	TBD	
Conduct initial investigations targeting industrial facilities	Ecology	Ongoing	
Encourage implementation of best management practices and issue enforcement actions as source control measures	Ecology	Ongoing	

[a] End date for action, except where noted.

TABLE 5. REMEDIAL INVESTIGATIONS

Action	Agencies Involved	Target Date[a]	Limiting Factors
Characterize sediments beneath historical mothballed naval fleet	U.S. Environmental Protection Agency Washington Department of Ecology (Ecology)	4/91	
Monitor One Tree Island capped sediment disposal site	Ecology	To be determined (TBD)	
Begin cleanup of Unocal/Hulco site	Ecology	TBD	Low WARM ranking
Conduct expedited seep investigation at McFarland/Cascade Pole site	Ecology	TBD	
Identify interim product recovery actions for McFarland/Cascade Pole site	Ecology	Ongoing	Hydraulic project approval and shoreline permits
Design feasibility study and select final cleanup remedy for McFarland/ Cascade Pole site	Ecology	6/92	
Conduct Model Toxics Control Act, water quality, and dangerous waste initial investigations of industrial facilities including, but not limited to : Port of Olympia Hardel Lumber Olympia Forest Products/WTD, Delson Reliable Steel West Bay Marina	Ecology	Ongoing - fiscal year 1992	
Conduct sampling to identify and characterize sources of contaminants to West Bay drain	Ecology Port of Olympia	TBD Winter 1991-92	

[a] End date for action, except where noted.

TABLE 6. MONITORING ACTIONS

Action	Agencies Involved	Target Date[a]	Limiting Factors
Watershed management plan for nonpoint source contaminant control			
Phase 1 monitoring [Centennial Clean Water Fund (CCWF) grant]	Thurston County	12/91	
– Conduct water and sediment data collection and analysis	Thurston County	12/91	
– Conduct upper Deschutes channel characterization (data collection and development of mapping system)	Thurston County Squaxin Island Tribe	9/91	
Administer volunteer recreational shellfish tissue sampling and followup sampling	Thurston County	Ongoing	
– Target residents in areas of concern	Thurston County	To be determined (TBD)	
Conduct stormwater monitoring for fecal coliform bacteria and metals	Thurston County	Ongoing	
Monitor effluent from Lacey, Olympia, Tumwater, and Thurston County (LOTT) Wastewater Treatment Program – Monitor receiving waters (5 stations) – Monitor sediments (2 stations)	LOTT	Ongoing	
Monitor industrial source sewers for conventional contaminants and some toxic chemicals	LOTT	Ongoing	
Sample selected industrial effluent prior to discharge to LOTT	LOTT	Ongoing	
Develop Indian/Moxlie Drainage Basin Plan – Phase 1 (data collection)	City of Olympia Thurston County	12/90	
Develop Percival Creek Drainage Basin Plan – Phase 1 (data collection)	City of Olympia City of Tumwater Thurston County	12/91	
Develop East Bay and West Bay Drainage Basin Plans – Phase 1 (data collection)	City of Olympia	TBD	CCWF grant
Station permanent water quantity and quality monitoring stations in Indian, Moxlie, and Percival creeks	City of Olympia Thurston County City of Tumwater	6/92	
Assess the need to develop and implement enhanced sediment and water sampling program for Budd Inlet receiving waters	LOTT Ecology	1992 (upon permit revision)	
Conduct stormwater sampling off Port of Olympia peninsula	Port of Olympia	11/91	

TABLE 6. MONITORING ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Implement Puget Sound Ambient Monitoring Program (2 annual and 2 triannual sediment sampling stations; 2 annual fish tissue sampling stations)	Washington Department of Fisheries Ecology Puget Sound Water Quality Authority	Ongoing	
Complete study of erosion in Capitol Lake's North Basin	Washington Department of General Administration	1/91	
Develop Memorandum of Agreement for sampling and posting recreational shellfish beaches	Washington Department of Health (DOH) Thurston County	Summer 1990 (not completed)	Funding for local participation
Implement monitoring requirements for One Tree Island capped aquatic disposal site near Fiddlehead Marina	TBD	TBD	
Conduct nutrient loading/abatement study of Budd Inlet	TBD	TBD	Funding
Provide dissolved oxygen monitoring equipment to Port of Olympia	U.S. Army Corps of Engineers	Summer 1991	
Correct dysfunctional East Bay dissolved oxygen monitors; determine efficiency of portable probes	U.S. Army Corps of Engineers Port of Olympia	Summer 1991	
Conduct dissolved oxygen monitoring in East Bay	Port of Olympia	Ongoing (summer months)	
Conduct further sediment sampling prior to dredging navigation channel	U.S. Army Corps of Engineers	TBD	
Monitor McFarland/Cascade Pole site – Sediment sampling – Groundwater sampling – Soil sampling	Ecology	6/91	
Survey streamwalks/habitat and fish populations in Indian/Moxlie, Percival, Ellis, and Mission creeks and unnamed stream	Squaxin Island Tribe City of Olympia	First year done	Ongoing to the extent possible with limited funding
Conduct biological sampling (habitat inventory) in West Bay to determine mitigation for potential dredging/widening of Olympia Harbor turning basin and navigation channel – Benthic infauna – Epifauna – Macroinvertebrates – Demersal fish	U.S. Army Corps of Engineers	5/90	Funding to finalize report

TABLE 6. MONITORING ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Identify existing data and/or need for recent data documenting impacts of lografting over tidelands	Washington Departments of Natural Resources; Fisheries U.S. Fish & Wildlife Service Port of Olympia	TBD	
Develop ranked list of sediment sites requiring further investigation and possible cleanup, including sites in Budd Inlet	Washington Department of Natural Resources	6/91	
Sample water and shellfish for fecal coliform bacteria at Burfoot County Park	DOH	Complete 15 samples to classify recreational shellfish beds, then annually	
Conduct tissue sampling of shellfish from Priest Point Park under the direction of the Puget Sound Ambient Monitoring Program	DOH	Annually (spring)	
Document sandlance spawning habitat for use in developing adequate construction requirements	Washington Department of Fisheries	Ongoing	
Incorporate necessary changes to hydraulic permit approval standards	Washington Department of Fisheries	TBD	
Document nutrient loading/impacts to percival Cove from salmon rearing pens	Ecology Washington Department of General Administration	TBD	
Prioritize inspections and conduct initial investigations, including sampling of water, sediment, and soils at industrial facilities	Ecology	1/90 - 6/92	
Complete South Sound Reconnaissance Survey (triad sediment sampling)	U.S. Environmental Protection Agency	Complete	

[a] End date for action, except where noted.

TABLE 7. RESOURCE PROTECTION ACTIONS

Action	Agencies Involved	Target Date[a]	Limiting Factors
Conduct State Environmental Policy Act reviews	All agencies	Ongoing	
Manage and protect shellfish in Budd Inlet	Washington Departments of Health; Ecology; Natural Resources Thurston County	Ongoing	
Classify recreational shellfish beds in Budd Inlet	Washington Department of Health	To be determined	
Issue hydraulic project approvals	Washington Department of Fisheries	Ongoing	
Protect habitat and maintain salmon enhancement facilities	Washington Department of Fisheries U.S. Fish & Wildlife Service Squaxin Island Tribe	Ongoing	
Construct and operate fishways	Washington Department of Fisheries	Ongoing	
Review Section 10/404 permits	U.S. Environmental Protection Agency U.S. Fish & Wildlife Service Washington Departments of Fisheries; Ecology; Game	Ongoing	
Issue Section 10/404 permits	U.S. Army Corps of Engineers	Ongoing	
Issue shoreline permits, review building and rezoning permits for development projects	Thurston County City of Olympia City of Tumwater Washington Department of Ecology	Ongoing	

[a] End date for action, except where noted.

TABLE 8. EDUCATIONAL ACTIONS

Action	Agencies Involved	Target Date[a]	Limiting Factors
Organize and provide ordinances, policies, educational information, best management practices (best management practices), and building code information	Thurston County City of Olympia	Ongoing	
Televise environmental educations programs focused on Budd Inlet/Deschutes River basin	Thurston County Washington Department of Ecology (Ecology)	To be determined (TBD)	
Post shellfish harvest advisory signs	Thurston County Washington Department of Health	TBD	Under Memorandum of Agreement
Post signs provided by Parks and Recreation Commission at Percival Landing marine sewage pumpout	City of Olympia	TBD	
Hire staff to provide technical assistance/best management practices to ensure erosion and sedimentation requirements are met at construction sites	City of Olympia	9/91	
Implement Stream Team Program	City of Olympia	Ongoing	
Develop information flyers on stormwater policies, best management practices, stormwater facility design standards, water quality educational programs	City of Olympia	Ongoing	
Develop storm drain stencilling program for use by groups within the city	City of Olympia	Ongoing	
Televise discussion by Olympia City Council of key environmental issues in Budd/Deschutes basin	City of Olympia City Energy and Utilities Commission Ecology	8/91	
Develop storm drain stencilling program for use by groups within the city	City of Tumwater	1/91	
Provide best management practices/technical assistance to ensure proper operations and maintenance of public and private stormwater systems	Thurston County City of Tumwater City of Olympia	Ongoing	
Sewage treatment plant tours provided to interested public – Continue to provide information to local schools, colleges, and interested citizens – Increase public education on plant operation and upgrades	Lacey, Olympia, Tumwater, and Thurston County Wastewater Treatment Plant	Ongoing	

TABLE 8. EDUCATIONAL ACTIONS (Continued)

Action	Agencies Involved	Target Date[a]	Limiting Factors
Post interpretive signs provided by Parks and Recreation at East Bay Marina marine sewage pumpout	Port of Olympia	TBD	
Post signs near aerator switch boxes at East Bay Marina to discourage boaters from turning them off	Port of Olympia	TBD	
Support of Port/Cascade Pole Citizen Advisory Committee public education activities	Port of Olympia	Ongoing through cleanup	
Distribute boating survey summary flyers	Port of Olympia Washington Parks and Recreation Commission	TBD; ongoing	
Continue providing spill prevention and response educational programs	Port of Olympia Ecology Olympia Fire Department	Ongoing (continued schedule to be determined)	
Provide educational signs to marinas with pumpout stations	Washington Parks and Recreation Commission	Ongoing	
Present boater education programs	Washington Parks and Recreation Commission	Ongoing	
Develop educational materials on shellfish contamination	Washington Department of Health	1990 (as requested)	
Distribute grants to local agencies for public involvement and education projects	Puget Sound Water Quality Authority	1990; ongoing	
Distribute Aquatic Land Enhancement Account grants to local agencies for public education and interpretive projects	Washington Department of Natural Resources	Ongoing	
Hold workshops to inform agencies of available monies to provide public access to shorelines	Washington Department of Natural Resources	Ongoing	
Distribute grants for public involvement under Model Toxics Control Act	Ecology	Ongoing	
Review activities and educate citizens on McFarland/Cascade Pole cleanup operations	Budd Inlet Action Plan Citizens Advisory Committee	3/91 (begin)	
Carry out Business Education Project under Centennial Clean Water Fund grant	City of Olympia	4/91 (begin)	

[a] End date for action, except where noted.

Data, Planning, and Contaminant Control Needs

The Site-Specific Action Plan tables present a summary of many ongoing and needed activities to improve water quality in Budd Inlet. Several data, planning, and contaminant control needs either are not addressed in the action plan or are found in the action plan but have no committed agency or timeframe for completion. This section of the action plan summarizes these additional water quality needs for Budd Inlet. This section will provide a beginning framework for Interagency Work Group discussions and individual agency actions for addressing unmet needs for data, planning and coordination, and control of contaminant inputs to Budd Inlet.

Planning/Coordination Needs

A long-term monitoring program for water and sediment quality in Budd Inlet is needed to gauge the success of water quality improvement programs (Budd Inlet Action Program, Budd/Deschutes Watershed Planning, City of Olympia Basin Planning). It may be possible to modify or coordinate the existing monitoring programs (e.g., LOTT permit monitoring and Ecology's Ambient Monitoring Program) to provide information on water quality conditions. Future monitoring programs developed through the Budd/Deschutes Watershed Planning process or the Olympia Basin Planning process could be the basis of an integrated long-term monitoring program for Budd Inlet.

Federal, state, and local agencies need to coordinate habitat enhancement activities in the inlet. Habitat in the inlet has been degraded through water quality impacts, dredge and fill projects, and development of waterfront areas. Nevertheless, the nearshore shallow waters of the western shore of lower West Bay provide critical habitat for migrating juvenile salmon, and the port-owned wildlife lagoon provides valuable habitat for waterfowl. In the Draft Urban Waterfront Plan, the joint city/port Urban Waterfront Task Force recommends that the City of Olympia adopt a Comprehensive Habitat Plan that would provide guidelines for local actions to restore Budd Inlet fish and wildlife habitat. The draft Urban Waterfront Plan will be considered by the Olympia City Council and the Port of Olympia Commissioners during summer 1991. If the plan is adopted with the Comprehensive Habitat Plan

element intact, resources will need to be allocated to carry out the program. The Comprehensive Habitat Plan element can also stand alone and should be pursued even if other aspects of the Urban Waterfront Plan are delayed.

The Squaxin Tribe and Thurston County should develop a way to share information between their GISs. Both the county and the tribe are currently using GISs to manage Budd/Deschutes watershed information, but the two systems are not compatible. If information could be easily shared between the tribe and county, the information that is now on the separate systems could be overlaid and compared.

A system for interjurisdictional data management is needed. Thurston County, City of Olympia, Port of Olympia, LOTT, DOH, Ecology, and Department of Fisheries all conduct some monitoring activities within the Budd Inlet watershed. A centralized, coordinated data management system of information from the various agencies would provide an overview of Budd Inlet water quality conditions. While some of the entities already collaborate on monitoring projects, an interjurisdictional system would provide more opportunities for coordination of monitoring projects and could provide a more complete strategy for evaluating water quality throughout the Budd Inlet watershed.

Local and state agencies should coordinate enforcement activities regarding water quality and hazardous substances. Water quality in Budd Inlet can be affected by sources originating in Olympia, Tumwater, or Thurston County. While each jurisdiction has its own ordinances and policies for dealing with water quality problems, coordination is important because upstream activities can affect water quality in downstream jurisdictions. Coordination of local enforcement activities with the state (i.e., by Ecology) could provide additional support in local water quality efforts.

Planning for the future development of the urban waterfront should include enhancement of water quality and aquatic habitat as key elements. The lower Budd Inlet area currently has a mix of land and water uses, including industry, shipping, marinas, recreation, and residences. As the City of Olympia continues to grow and as port activities change in response to changing economic conditions, land uses along the urban shoreline will inevitably change. There is a recognized need for the city and port to develop a common vision for the future of the community's waterfront. The Urban Waterfront Plan partially addresses this need through its goal of

governing over-the-water uses. Future plans for the overall development of the waterfront should provide for protection and enhancement of water quality and aquatic habitat.

The Thurston County Health Department and DOH should develop an MOA to identify the responsibilities of each agency in implementing the requirements of the Recreational Shellfish Rule (Chapter 248-52 WAC). The rule states that a "joint plan of operation" between the two entities should be developed to outline how recreational shellfish beaches will be managed. However, Thurston County has limited funds to take on additional responsibilities such as public notification or increased sampling activities. This issue should be resolved and the requirements of the recreational shellfish rule should be carried out.

Data Needs

Information about the geographic extent and seasonal variability of low levels of dissolved oxygen is needed. Dissolved oxygen conditions should be monitored throughout the water column and at the sediment interface to gain a full understanding of the nature of the problem. Also, monitoring of the geographic extent of nutrients and dissolved oxygen depletion should be increased to determine how much of the southern portion of the inlet is affected by eutrophication.

Data is needed on nutrient inputs to Capitol Lake and Budd Inlet from sources throughout the basin. Comparative information on nutrient contributions would help to target state and local staff resources to priority areas and sources. The Thurston County Health Department is making some progress in this area through their Budd/Deschutes watershed characterization project.

Information about water quality impacts of salmon rearing pens in Percival Cove is needed. This facility is located in the small cove adjacent to Capitol Lake and may be contributing significant amounts of nutrients and biochemical oxygen demand to the lake.

Better information about the water quality impacts and sediment contribution to Budd Inlet from the Deschutes River and Capitol Lake is needed. Capitol Lake often experiences algal blooms and decreased levels of dissolved oxygen during the summer months;

high fecal coliform bacteria levels have also been recorded. The oxygen-depleted waters and fecal coliform bacteria can enter Budd Inlet and negatively impact marine water quality.

The environmental condition and relevance of the area known as the "mothballed fleet site" should be further investigated and evaluated. This site is located near Gull Harbor and was used for storage of over 100 military vessels between the end of World War II and the early 1960s. Solvents, waste oils, and unknown objects were reportedly dumped into the inlet from the ships (Tetra Tech 1988). High concentrations of copper, lead, and zinc were detected in sediments in this vicinity (PTI 1991).

The Budd Inlet *Initial Data Summaries and Problem Identification* report (Tetra Tech 1988) identified several areas of elevated fecal coliform bacteria along the Budd Inlet shoreline. The Thurston County basin characterization monitoring efforts have also found high bacterial counts in these areas. Monitoring stations should be established to track fecal coliform levels in the outer inlet, particularly in the vicinity of the Tamoshan, Beverly Beach, and Seashore Villa wastewater treatment plants; Athens Beach; French Loop Road; north of Priest Point Park; and Tykle Cove.

Bioassay tests are needed for sediments in East and West bays, north of the Port of Olympia peninsula, near Priest Point, and near Gull Harbor. The sediments near the Cascade Pole Company are known to be highly contaminated with organic chemicals, but no toxicity data are available on these sediments. Similarly, no toxicity data are available for sediments near NPDES-permitted discharges, CSOs, and storm drains. Bioassay tests of sediments collected near known and suspected contaminant sources would provide important information about the magnitude of environmental degradation at those locations.

There are no acceptable data concerning benthic infaunal communities in Budd Inlet. An understanding of the composition of the benthic community in Budd Inlet would help determine the effects of sediment contaminants and the effects of low dissolved oxygen on the resident biota. A survey north of the Port of Olympia would be sufficient to identify the extent of benthic degradation to the north.

A study is needed to determine the effects of log-rafting on habitat and water quality in Budd Inlet. Storage of logs in floating rafts is common along the west shore of Budd Inlet. The same nearshore shallow water area where the logs are rafted is very important to

migrating juvenile salmon. The log rafts are likely to negatively impact habitat by shading and disturbing the substrate during low tides. Water quality can be affected by oxygen depletion caused by decaying bark. In addition, bark that drops to the bottom may impact fauna living in sediments by smothering organisms or degrading habitat. The full extent of this problem in Budd Inlet is not known.

Contaminant Control Needs

An inventory of industrial and commercial businesses in the study area is needed. The inventory should identify locations of businesses with the potential to contribute pollutants directly or indirectly to the inlet. This inventory would be used for planning state and local strategies for business inspections and source control activities. A coordinated strategy should be developed between local and state jurisdictions to reduce pollution loading to the inlet from these businesses. Enlisting local industries in a voluntary environmental audit and pollution reduction program could be a very effective way to achieve source control, in combination with general education and enforcement of water quality laws.

Enforcement and control of contaminants from chlorinated sewage systems is needed. There are numerous privately owned chlorinated sewage systems in Budd Inlet. These systems consist of a septic tank and a system for dousing the effluent with chlorine before the effluent is directly discharged into Budd Inlet. In many cases, chlorinator systems do not work and result in discharge of raw or minimally treated sewage.

Tracing of sources of pollution from Budd Inlet tributaries and storm drains should be conducted. While Thurston County and the City of Olympia are conducting intensive monitoring on several streams to identify pollution sources, source tracing work is needed for storm drains, CSOs, and other tributary streams. Thurston County will take sediment samples from several storm drain outfalls during the summer of 1991 as a starting point for pollution source tracing. An understanding of the storm water drainage systems throughout the urban area is needed to trace pollutants to their sources. The City of Olympia has already completed drainage system maps for some areas and is working on others. Locations of businesses identified in the inventory would be correlated with the drainage maps and water quality information to identify problem areas.

Characterization of the runoff and drainage systems of industries along West Bay Drive is needed to determine sources and routes of pollution from those businesses to the inlet.

By the fall of 1991, Thurston County and the cities of Olympia and Tumwater will adopt the Regional Drainage Design and Erosion Control Manual to govern storm water and erosion management for new construction. A system of enforcement of these regulations should be developed in each jurisdiction, including regular inspection and maintenance of publicly and privately owned oil/water separators and retention/detention basins. The City of Olympia has recently added a staff person who will, in part, enforce storm water regulations.

The Unocal/Hulco site in downtown Olympia has been identified as a contaminated site in need of cleanup. An initial investigation was completed and the site was ranked in relationship to other contaminated sites throughout the state. The site did not rank with the highest priority sites for Ecology-directed cleanup activities, although the site owner may initiate cleanup activities independently. The full extent of contamination at this site needs to be determined, and cleanup activities should begin. Other potential contaminated sites need to be investigated and ranked. These sites include petroleum-contaminated soils at the south end of East Bay and in the vicinity of Percival Landing, a historical landfill at the LOTT plant, and the old Delson Lumber/Olympia Forest Products site on the West Bay shoreline.

A statewide enforcement strategy is needed to ensure proper disposal of marine sewage. The Washington Parks and Recreation Commission and DOH have agreed that this is an important need, but funding is not currently available.

Contaminated sediment sites in Budd Inlet should be identified and prioritized for cleanup. Based on the sediment management standards (Chapter 173-204 WAC), the process for cleaning up contaminated sediment sites includes the following steps: screening sediment station clusters of potential concern; conducting hazard assessments to identify cleanup sites; ranking sites for cleanup; determining appropriate site cleanup authority; conducting a site cleanup study; and selecting a site cleanup action. Ecology will begin this process but may not focus on Budd Inlet. Also, additional characterization data for sediments within Budd Inlet are needed.

Glossary of Terms

Amphipod	Small shrimp-like crustaceans, such as sand fleas, that are often benthic dwellers and feed on algae and detritus.
Apparent effects threshold	Chemical-specific sediment concentrations above which a particular adverse biological effect is always found to be statistically significant ($P \leq 0.05$) for a given data set.
Benthic	Pertaining to the bottom of a water body.
Benthic community	A group of interacting species populations found within the benthic zone.
Best management practice	A method, activity, maintenance procedure, or other management practice to reduce the amount of contaminants entering a water body.
Bioaccumulation	The accumulation of a substance in tissues of an organism. Bioaccumulation of toxic substances may lead to disease or other health problems and may render organisms unfit for human consumption.
Bioassay	A laboratory or field test used to evaluate the toxicity of a material (commonly sediments or water) by measuring behavioral, physiological, or population response of organisms.
Biochemical oxygen demand	A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water.
Combined sewer overflow	A discharge of raw sewage and stormwater, which occurs when the hydraulic capacity of a combined sewer line is exceeded.
Contaminant	A substance that is not naturally present in the environment or is present in amounts that can, in sufficient concentration, adversely affect the environment.

Crustacean	A group of primarily aquatic invertebrate animals (phyllum *Arthropoda*, class *Crustacea*) with a hard exterior skeleton, segmented body, and paired jointed limbs, including crabs, lobsters, and amphipods.
Diversity	The number of species in a community, or a mathematical index of the variety of species that also accounts for the relative abundance of each species.
Effluent	The liquid that flows out of a facility (e.g., treated wastewater).
Elevation above reference	An index of toxic contamination or biological effects that is equal to the measured value of a variable (e.g., chemical concentration) at a study site divided by the measured value of the same variable at a relatively clean reference area. For measuring impacts on benthic organisms, this index is inverted so that a depression below reference is measured.
Erosion	Wearing away of rock or soil by the gradual detachment of soil or rock fragments by water, wind, ice, and other mechanical and chemical forces.
Gastropod	A group of invertebrate animals (phyllum *Mollusca*, class *Gastropoda*) with a shell, including snails, limpets, and abalone.
Geographic information system	A computerized database system used to integrate geographic or natural resource information and produce maps.
Groundwater	Water found in permeable rock layers underground.
Habitat	The specific area or environment in which a particular animal or plant lives.
Hazardous waste	Any solid, liquid, or gaseous substance which, because of its source or characteristics, is classified under state or federal law as hazardous and is subject to special handling, shipping, storage, and disposal requirements.
Histopathology	Study of tissue lesions.

Hydrocarbon	An organic compound composed of hydrogen and carbon (e.g., petroleum compounds).
Infauna	Animals living within the bottom sediments.
Influent	The liquid that flows into a facility (e.g., sewage into a wastewater treatment plant).
Invertebrates	Animals without backbones.
Larvae	(Singular: larva)–A juvenile stage of fish or invertebrates with a body form that differs greatly from the adult stage (e.g., an oyster larva is a small, free-floating organism).
Lesion	An abnormal structural change in the body due to injury or disease (e.g., a liver tumor in fish).
Loading	Quantity of a substance that enters a water body during a specified time interval (e.g., pounds per year).
National Pollutant Discharge Elimination System	A part of the federal Clean Water Act which requires point source dischargers to obtain discharge permits.
Nonpoint source contaminants	Contaminants that enter water from dispersed and often uncontrolled sources (such as stormwater runoff) rather than through pipes.
Nutrients	Essential chemicals needed by plants and animals for growth. Excessive nutrients may lead to water quality problems by promoting excessive growth and subsequent decay of plants such as algae.
Organic compound	Chemical compounds that contain carbon (e.g., petroleum hydrocarbon).
Pelecypod	Also known as bivalves, pelecypods are molluscs that have two shells, are generally filter feeders, and include clams, oysters, and mussels.
Point source contaminants	Contaminants from a single source such as a pipe (e.g., discharge from a sewage treatment plant or factory).
Polychaete	A large group of segmented worms found in the marine environment (e.g., feather dusters).

Polychlorinated biphenyls	A group of manufactured chemicals including 209 different but closely related chlorinated hydrocarbons. These compounds are toxic, persistent in the environment, and are probable human carcinogens.
Polycyclic aromatic hydrocarbons	A class of complex organic compounds, formed by the combustion of organic material, that are persistent and widespread in the environment and are known to cause cancer. Low molecular weight polycyclic aromatic hydrocarbons have up to three carbon rings. High molecular weight polycyclic aromatic hydrocarbons have greater than three carbon rings and are more carcinogenic than the lower weight polycyclic aromatic hydrocarbons.
Sediment	Material that settles to the bottom of a water body or collects on the bottom of pipes such as sewers and storm drains.
Toxic	Poisonous, cancer-causing, or otherwise directly harmful to life.
Toxic contamination	Presence of toxic substances, often caused by release of metals or synthetic organic chemicals to the environment.
Washington Ranking Method	A process used by the Washington Department of Ecology to rank hazardous waste sites and prioritize these sites for cleanup activities.
Watershed	The geographic region within which water drains into a particular river, lake, or body of water.

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APPENDIX A

Administrative Record of Agency Letters of Commitment

Appendix A
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CHRISTINE O GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Linda Cox
Army Corps of Engineers
P.O. Box C-3755
Seattle, WA 98121

Dear Linda,

Thank you for meeting with Michael Rylko of EPA and me in March. In the meeting we discussed actions that might be taken to complement existing programs and projects affecting Budd Inlet. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

East Bay Marina Dissolved Oxygen Monitors and Aerators

The installation, operation and maintenance of dissolved oxygen (DO) continuous monitors and aerators remain a condition of the East Bay Marina project. The Corps is aware the system does not operate sufficiently to ensure DO levels meet water quality standards. Through the critical summer months, the Corps has allowed the Port to conduct manual titrations in lieu of continuous monitoring. The manual sampling is not scheduled, but rather is conducted on a sporadic basis. This summer the Corps will provide the Port of Olympia with a portable DO probe with which to conduct a more in-depth analysis of how well the current aeration system works. **Will the Corps provide a schedule detailing frequency, locations, depths, etc. for the monitoring? If the study shows aerators are not sufficient to compensate for decreased flushing and low DO levels resulting from alteration of the estuary, what contingency actions has the Corps planned to mitigate this?**

Dredging and Filling Projects

A related concern is that of Clean Water Act Section 404 fills in East Bay. Accordingly, fill material on the southeast portion of the Port peninsula was only to be developed for water dependent uses. Several proposed developments indicate the fill may be used for non-water dependent uses. **Will the Corps allow such nonconforming uses?**

The Corps is evaluating the need for improvements to the Olympia Harbor turning basin and navigation channel. The cost-benefit portion of this evaluation was recently completed and recommended against funding to widen the Olympia Harbor turning basin. Though the turning basin project is no longer under consideration, the Corps continues in their negotiations with state and federal natural resource agencies to determine biological studies and mitigation projects needed prior to widening the navigation channel. **Please summarize which biological studies are likely to take place and when.**

Thank you again for taking time out of your busy schedules to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet Workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Frank Urabeck, Army Corps of Engineers
Fred Weiman, U.S. Environmental Protection Agency
Gwill Ging, U.S. Fish & Wildlife Service

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX C-3755
SEATTLE, WASHINGTON 98124-2255

REPLY TO
ATTENTION OF
Planning Branch

AUG - 8

Ms. Melany Vorass
Department of Ecology
7272 Cleanwater Lane, LU-11
Olympia, Washington 98504-6811

Dear Melany:

I am writing in response to your letter dated June 6, 1990 regarding East Bay water quality (WQ) and nonwater dependent uses and a summary of the biological studies that are likely to take place in the Olympia Harbor Navigation Improvement project.

East Bay Marina Dissolved Oxygen Monitors and Aerators. Operation and maintenance of the aeration system and WQ monitoring is a mitigation feature of the East Bay Marina project. The Port staff has diligently maintained the aeration system to ensure that it is operable prior to and during the seasonal period (generally August-September) of low dissolved oxygen (DO).

Operation of the originally installed continuous WQ monitoring equipment for DO has proven to be infeasible. The Port repeatedly calibrated and modified the automatic monitoring equipment per the manufacturer's service representative recommendations; however, the equipment has failed to provide reliable readings. Other continuous monitoring systems have been considered but found to have similar problems of high maintenance and poor reliability. Therefore, the Port staff performs manual titrations to obtain accurate measurements. Manual sampling at selective depths is in fact preferred for determining when to operate the aeration system as more information is provided than with the fixed depth samples obtained with the continuous monitoring device. To supplement manual sampling this summer, the U.S. Army Corps of Engineers is loaning the Port a portable WQ instrument. Early July monitoring indicates DO levels well above the State minimum standard, which is typical of past early July observations. The weekly July frequency of observations increases to daily observations as observed DO gets close to or below the State standard during August and early September. Monitoring is conducted during early morning hours when aeration is required until monitoring data indicates WQ has recovered to allow aerators to be turned off. Your office will be provided with a copy of our WQ monitoring data gathered this summer.

Causes of low DO in the south Puget Sound are very complex and we do not believe that it is possible to attribute decreases solely to flushing characteristics alone. We have no plans to provide mitigation measures in addition to the seasonal installation/operation of aeration equipment and periodic WQ monitoring, but if requested we could meet this fall and discuss the summer data.

Summary of Biological Studies in West Bay. The Corps of Engineers performed biological sampling on Olympia Harbor project benthos and fish from May 2-5, 1990. The Corps of Engineers sampled 10 stations within the project area, 5 in the 30-foot channel and 5 in the 4- to 7-foot shallow bar that would be dredged. At each station four van Veen grabs were pulled for infauna, one sampling sled was pulled for epifauna, and approximately one ottertrawl and one beamtrawl was pulled across each station, once during the day and once after dusk, to collect demersal fish, macroinvertebrates, and epifauna. This information will be used as part of the Olympia Harbor Navigation Channel biological study that will be used to evaluate the environmental impacts of the project and determine the mitigation needed for the widening of the navigation channel.

Section 404 Fills in East Bay. In response to Section 404 fills in East Bay, Regulatory Branch will respond in a separate letter. If you have any questions in regards to this topic, please contact Regulatory Branch at telephone (206) 764-3495.

If you have any questions regarding the first two topics, please contact me at telephone (206) 764-3654.

Sincerely,

Linda Cox
Environmental Coordinator

Copy Furnished:

Mr. Fred Weinmann
Environmental Protection Agency

Mr. Gwill Ging
Fish and Wildlife Service

HRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Gwill Ging
U.S. Fish & Wildlife Service
2625 Parkmont Lane S.W.
Building B-3
Olympia, WA 98502

Dear Gwill,

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in March. In the meeting we discussed actions that might be taken to complement existing programs designed to enhance and protect water quality in Budd Inlet. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

Dredging and Filling Projects

The U.S. Fish & Wildlife Service (USFWS) comments on proposed Clean Water Act Section 10 and 404 projects. The agency also reviews mitigation projects. This review can assert that mitigation projects are to be in place prior to the start of the project, and can recommend contingency plans in the event mitigations are later determined insufficient. The installation of continuous dissolved oxygen (DO) monitors and aerators was a requirement for dredging in East Bay. USFWS is aware the system has not been sufficient for ensuring DO levels meet water quality standards. This summer, the Army Corps of Engineers will provide the Port of Olympia with a portable DO probe with which to conduct a more in-depth analysis of how well the system works. The federal Water Resources Development Act (WRDA) of 1986 establishes a mitigation project fund for needed post-construction projects. The funding is limited to high priority sites. Fishkills resulting from low DO levels are well documented in Budd Inlet. **If new data submitted to the Corps shows that the aerators are insufficient to prevent violations of water quality standards, will USFW recommend WRDA funding for contingency mitigation projects?**

A related concern is that of Clean Water Act Section 10 and 404 permit conditions which specify that fill material on the southeast portion of the Port peninsula is to be developed for water dependent uses only. Several proposed developments for this fill area might be determined non-water dependent uses. **In the event projects are deemed nonconforming uses, how does USFW anticipate they would address this? Please be specific.**

Lografting in West Bay

I understand that lografting in West Bay is a concern to USFW and other natural resource agencies. Studies on lografting conducted elsewhere in Puget Sound show the practice is detrimental to benthic communities, as well as to outmigrating salmonid fingerlings. At low tide, it is common to see lografts resting on West bay tideflats. **Does USFW have any plans to address this problem? Does USFW have informational materials that would help educate the Port and citizen groups on the subject? Please suggest any means you know of for limiting the destructiveness of this practice.**

Thank you again for taking time out of your busy schedule to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Voras

Melany Voras
Budd Inlet Action
Plan Coordinator

cc: Fred Weiman, Environmental Protection
Agency

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Fish and Wildlife Enhancement
2625 Parkmont Lane SW, Bldg B
Olympia, Washington 98502
206/753-9440 FTS 434-9440

September 17, 1990

Ms. Melany Vorass
Budd Inlet Action Plan Coordinator
Washington Department of Ecology
7272 Cleanwater Lane, LU -11
Olympia, Washington 98504-6811

Re: Budd Inlet Action Plan

Dear Ms Vorass:

This letter responds to both our discussion of September 6, 1990, and your letter of June 6, 1990.

The U.S. Fish and Wildlife Service (Service) reviews and provides recommendations on projects that require federal permits, (e.g., Section 10/404 permits), federal licenses (e.g., Federal Energy Regulatory Commission licenses), or involve federal funding (e.g., federal projects). Our review typically focuses on evaluating the potential of a project proposal to impact fish and wildlife resources of concern to the Service, and to then recommend measures to mitigate and enhance the affected resources, as appropriate. Depending on the level of impact and the prospects for implementing successful mitigation, the Service may elect to recommend against project construction.

The Service has questions and concerns similar to those expressed by your agency regarding the operation of the continuous dissolved oxygen monitors and aerators. It is our understanding that the original equipment has not been entirely effective, and that alternative equipment is now being used. Of concern to the Service is whether the alternative equipment provides an equivalent level of protection of the resource. We will initiate discussions with the Corps, following the Port of Olympia's summer monitoring efforts, to address this issue.

Regarding your question on the use of Water Resources Development Act (WRDA) funding, the Service in 1990 recommended to the Corps that funding be provided to mitigate for fish and wildlife impacts caused by the construction of the East Bay Marina Project (Project). One of the options that was discussed involved measures to improve inwater habitat within the East Bay of Budd Inlet. The Service would support measures such as the replacement of monitoring and aerator equipment through funding from WRDA if the existing equipment is inadequate. While WRDA (Section 1135) authorized the Secretary

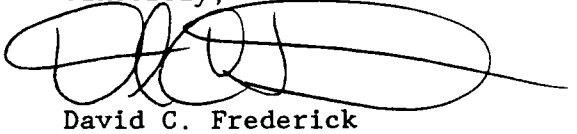
of the Army to spend up to 25 million dollars, Congress has yet to appropriate the requested funds. The Service is unaware of any projects nationwide that have been funded through WRDA.

Your inquiry about the appropriateness of using former intertidal areas that were filled during the construction of the Project for non-water dependent purposes raises some interesting questions. Such proposals are inappropriate from the Service's perspective and they would be inconsistent both with the Corps' policy (EP 1165-2-1) and with the justification given in the Project EIS for selecting the alternative with the greatest intertidal/subtidal fill (i.e., creation of cargo handling areas). Since impacts to fish and wildlife resources resulting from the project have already occurred, the Service is now primarily concerned with preventing further losses of habitat. The Service is opposed to additional filling of wetlands and intertidal and shallow subtidal habitats. Since the Port may need all of its existing cargo handling and storage areas at some time in the future, such areas should be reserved for *bona fide* Port purposes, instead of being used for non-water dependent facilities (e.g., Olympic Academy, restaurants, etc.). Because of the ramifications regarding future fills in Budd Inlet, the Service will request clarification from the Corps on what type of developments are appropriate on the areas created for cargo handling and storage.

The Service is also concerned about the Port's practice of storing log rafts over intertidal habitats along West Bay, Budd Inlet. During certain tidal periods, these log rafts "ground out" and likely crush or smother both benthic and epibenthic invertebrates, some of which are prey species for anadromous fish and migratory birds. The sluffing and subsequent decomposition of bark and the production of leachate from stored logs can also adversely impact water quality, (e.g., low dissolved oxygen levels, toxicity) and reduce both species diversity and abundance. The facts that shallow water habitats are important rearing and acclimation areas for juvenile salmonids, and that the log storage area is located along a migration route, increases the Service's concern over Port's log storage practice. While the Service does not have any regulatory authority to eliminate this practice, it is our intention to initiate discussions with the Port with the objective of having this practice terminated.

If you have any further questions regarding the issues contained in this letter, please contact Mr. Gwill Ging of my staff at the letterhead phone/address.

Sincerely,



David C. Frederick
Field Supervisor

gwg/gb

RISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Jeff Dickison
Fran Wilshesen
Squaxin Island Tribe
Natural Resources Dept.
West 81 Highway 108
Shelton, WA 98584

Dear Jeff and Fran,

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in February. Several Squaxin Island Tribe activities we discussed exemplify a strong willingness to ensure progressive environmental protection programs are put into place. In keeping with this enthusiasm, we discussed actions that might be taken to complement existing programs. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

Nutrient Loading / Abatement Studies

The tribe is concerned that required upgrades at the LOTT facility may not sufficiently address plant-related nutrient loading problems in Budd Inlet. Both the tribe and LOTT are interested in conducting "before" and "after" studies to observe the extent of water quality improvement. The tribe and LOTT co-wrote and submitted a CCWF grant proposal to partially fund a nutrient loading/abatement study that was to be largely sponsored by Seagrant. Because Seagrant monies were denied, the proposal was withdrawn. However, there remains considerable interest and support for the study. **Can the Budd Inlet Action Plan state in certain terms that the tribe will submit a retailored grant proposal during the next grant application period?**

Egg Planting & Stream Enhancement Activities

The Department of Fisheries has cut back financial support for salmonid egg planting and stream enhancement activities in the Budd Inlet basin. Initially, the Squaxin Island Tribe planned to add several tributaries to their program, including Mission Creek. Though the tribe will continue to maintain the current level of activity (1 million eggs in Adams Creek and Gull Harbor), work in Mission Creek and other tributaries will probably be delayed for up to 2 years. **Have other potential resources been examined for funding this activity (e.g., Trout Unlimited and other organizations)? As an element of the Action Plan, can it be stated in certain terms that Mission Creek will be added to the program within the next two years? What other tributaries are scheduled to be included and when?**

Geographical Information System (GIS)

With funding from the Northwest Indian Fisheries Commission and the Budd/Deschutes watershed management grant, the tribe is developing a GIS database which would be used for mapping and storing habitat information. The system is not yet ready for practical use. Data collected will be useful to other natural resource agencies. **When do you anticipate the system's information to be accessible to other agencies? Currently, what are the limiting factors for its development and use? Please suggest any actions other agencies might take to help you expedite development of the system.**

Capitol Lake Wetland Feasibility Study

The tribe will continue their involvement with the Capital Lake wetland feasibility study. One of the tribe's main concerns is sediment loading in the Deschutes River and Capitol Lake. According to at least one study, increased surface water velocities due to watershed management practices (e.g., forestry) results in scouring in the Deschutes, which is found to be the primary cause of sedimentation in Capitol Lake. To substantiate the results of this and other studies, the tribe is interested in tracing the origin of sediments found in Capitol Lake. This summer, the lake will be drawn down, making sediment sampling an easier task. **Is the tribe interested in conducting the sampling at this time?**

WSDOT Highway Runoff

With the Department of Fisheries, the tribe shares management of the chinook salmon fishery in the Deschutes River and Capitol Lake. Several stormwater drainage systems carry large volumes of highway runoff to the Deschutes River and Capitol Lake. The State Department of Transportation (WSDOT) is working with Ecology to develop a stormwater manual for future use. Local jurisdictions in Thurston County are also working on a separate stormwater management manual. As you are aware, WSDOT stormwater represents a large portion of the total runoff to the Deschutes River, Capitol Lake, Budd Inlet and local stormwater systems. Because I-5 and SR-101 are both within watershed and urban bay management areas, local jurisdictions have the opportunity to propose that WSDOT implement a more stringent "Roadside Management Plan" within these areas. **As a part of their involvement in watershed and urban bay management plans, will the tribe also consider entering into such an agreement, or agree to formally encourage and provide support to such an effort? How may this be stated specifically in the draft Budd Inlet Action Plan?**

Dredging and Filling Projects

Additional fill projects in Budd Inlet adversely impact flushing rates which results in further degradation of water quality in Budd Inlet. Through the Urban Waterfront Taskforce and other forums of interagency coordination, the tribe has encouraged the City, County, Army Corps of Engineers and the Port of Olympia to minimize future fill projects in the inlet. At the local level this can be accomplished through the revision of applicable policies and ordinances; at the state and federal level, this might be accomplished through a memorandum of understanding (MOU) or other formal agreement. Does the tribe have specific **suggestions or plans on how and when such agreements would be entered into?**

A related issue is that of use of 404 fill for non water-dependent uses. With few exceptions, 404 fills are to be used for water-dependent uses only. Several proposals indicate fill material on the southeast portion of the Port peninsula is being considered for siting non-water dependent developments. The tribe has a comment role on 404 permits issued for dredging and filling projects. This role implies a certain authority to ensure post-project permit conditions are met. The tribe plans to continue their active role in coordinating with the Port, City, USFWS and others to request from the Army Corps of Engineers an interpretation of how 404 fills should be used in East Bay and other areas. **When do you anticipate a formal interpretation from the Corps? Is the interpretation likely to also contain requirements for how nonconforming uses will be mitigated?**

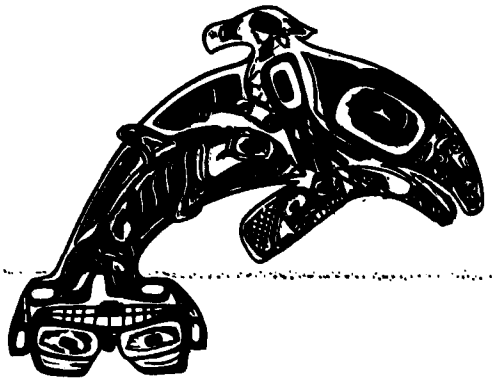
Thank you again for taking time out of your busy schedules to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Northwest Indian Fisheries Commission
Michael Rylko, EPA



SQUAXIN ISLAND TRIBE

June 22, 1990

Melany Vorass
Department of Ecology
7272 Cleanwater Lane, LU-11
Olympia, WA 98504

Dear Ms. Vorass:

Thank you for your letter of June 6th. We appreciate the work you are doing to coordinate activities for the Budd Inlet Action Plan. Following are some comments in response to the questions you have asked of the Tribe.

Nutrient Loading / Abatement Studies

The Tribe is extremely concerned about nutrient loading in Budd Inlet as this problem is perhaps the most significant cause of fish mortality in the inlet. The Tribe continues to support the need for a study to assess the effects of a nutrient abatement program at LOTT. The CCWF grant was submitted by LOTT for funding to accomplish this study. Regardless of the source of funding, the Tribe believes that it is essential to monitor the effectiveness of the LOTT program. The Tribe has no plans at this time to submit their own grant proposal for funding this endeavor.

Egg Planting and Stream Enhancement Activities

Egg planting is an important element of the Tribe's enhancement program. Budd Inlet continues to be a likely area for expanded egg planting activities. However, due to the failure of our budgets to keep pace with inflation and the added burden of absorbing Gramm Rudman cuts, our program is faced with cuts in work elements and services. Fish enhancement activities are of high priority to the Tribe and this should serve as some indication of the severity of our budgetary situation. At this time we cannot foresee adding any additional streams to our egg planting program, and in fact are faced with the possibility of reducing or eliminating our existing program. The assistance of volunteers generally serves only to augment an existing program. In the present situation our basic funding is in jeopardy and must first be secured before seeking the support of volunteer organizations.

NATURAL RESOURCES DEPARTMENT / West 81 Highway 108 / Shelton, WA 98584
FAX 426-3971 / Phone (206) 426-9783

Geographical Information System

As one might expect, there have been unexplained delays and extreme frustration in the implementation of a new computer system. We will assess the situation this summer and develop some ideas for the assistance from other agencies.

Capitol Lake Wetland Feasibility Study

Sediment transport and deposition is a serious concern in the Deschutes River and Capitol Lake. The Tribe is interested in any efforts to sample sediment composition. Though we have heard some general discussion of lake draw down, we will have to examine the intentions of other programs to conduct sampling during this period. Any information you can provide would be helpful.

WSDOT Highway Runoff

The Tribe is participating in the process initiated by Ecology and DOT under the Puget Sound Plan to develop a stormwater program. One aspect of this program will be the development of "Roadside Management Plans" on a localized basis. When the process reaches this stage, the Tribe will be an active participant in the development of these plans. It is our full intention to improve the quality of stormwater entering the Capitol Lake system in as short a time frame as is practicable.

Dredging and Filling Projects

The Tribe is currently working with the City and the Port on the Urban Waterfront Plan. One element of that plan will establish the basis for a Comprehensive Habitat Management Plan. This plan will address habitat needs in the Harbor area and should deal with many of the dredging and filling issues. On the related issue of restrictions of use for 404 permitted fills, we have not yet received a response from either the ACOE or EPA. I don't know their timeline or the depth with which they will address the issue.

I am sorry to acknowledge that all the news is not good news. If you have any ideas of how we could address our funding needs, either programmatically or on a project specific basis, please let me know. Thanks for your help.

Sincerely,

Jeff Dickison, Biologist

CHRISTINE O GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Neil Rickard
Regional Habitat Manager
Washington Dept. of Fisheries
Mail Stop AX-11
Olympia, WA 98504

Dear Neil,

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in February. In the meeting we discussed actions that might be taken to complement existing programs designed to enhance and protect water quality in Budd Inlet. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

Bulkhead Permits / Illegal Construction

Fisheries is concerned with the probable high number of illegal bulkhead constructions occurring in Budd Inlet. Resources for enforcement activities are limited. Thurston County requires a shoreline permit to be "on site" during construction; however, there is no requirement for permits to be posted in a place visible from the water. **To make boat surveillance a more effective means of inspection and enforcement, will Fisheries provide the County with signs that can be seen from the water, and encourage the County to incorporate a "post-permits-visibly" requirement in shoreline permits?**

Will Fisheries agree to examine other means of controlling the construction of illegal bulkheads (e.g., certification program for contractors) and to provide recommendations to agency upper management?

Until recently, surfsmelt spawning was thought to occur only in lower tidelands. Fisheries has recently identified sandlance (candlefish) surfsmelt spawning further up in tidelands. Current bulkhead requirements are not adequate to preserve this spawning habitat. Sandlance spawning occurs both in Boston Harbor and near Priest Point Park. Fisheries notes shoreline permits for bulkheads, particularly in these areas, need to be redefined to address this. **Please provide a target date for revising permit requirements.**

Hydraulic Permit Approval (HPA) Guidelines

Fisheries is currently revising HPA guidelines for stormwater retention, water quality and water quantity. The revised guidelines will be submitted to Fisheries management with a recommendation to either adopt them as policy or to use them as standard SEPA response. **When are the guidelines likely to be implemented? Will the new guidance be applied to Fisheries' SEPA review for LOTT's new outfall?**

Habitat Enhancement

Fisheries is involved in the management and enhancement of chinook, coho, and chum salmon in Adams, Ellis, Mission, Indian and Moxlie Creeks. Chum and pink salmon are also known to use Tyler and Butler Cove. **When do you anticipate specific management and enhancement activities to be developed in these areas?** Also, the Squaxin Island Tribe may be willing to plant eggs in Mission Creek if eggs are provided. **If so, will Fisheries provide eggs for planting in Mission Creek?**

Lografting Impacts to Fish

Lografting in West Bay is a concern to several natural resource agencies. Studies on lografting conducted elsewhere in Puget Sound show the practice is detrimental to benthic communities and to outmigrating salmonid fingerlings. At low tides, lografts over West Bay tidelands directly affect habitat used by juvenile salmonids. **Does Fisheries have specific plans to mitigate the potential affects of this practice? Are Natural Resource Damage Assessments (NRDA) applicable to log rafting and associated habitat loss; if so, does Fisheries plan to conduct a NRDA in West Bay?**

Thank you again for taking time out of your busy schedule to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Michael Rylko, EPA

JOSEPH R. BLUM
Director

STATE OF WASHINGTON
DEPARTMENT OF FISHERIES
115 General Administration Building • Olympia, Washington 98504 • (206) 753-6600 • (SCAN) 234-6600

August 1, 1990

Department of Ecology
ATTENTION: Melany Vorass
Budd Inlet Action Plan Coordinator
7272 Cleanwater Lane, LU-11
Olympia, Washington 98504

SUBJECT: Draft Budd Inlet Action Plan - Meeting Summary, Questions and Clarification of Inaccuracies

Dear Ms. Vorass:

The Department of Fisheries (WDF) has reviewed the above-referenced letter of June 6, 1990 and we have the following comments.

We disagree with your assessment of WDF's view on bulkhead activity in Budd Inlet. First, there is not a high number, if any, of illegal bulkheads being constructed in Budd Inlet. Second, we believe that Thurston County has its own procedures for enforcement of bulkhead activities and it would not be appropriate for us to encroach on their area of jurisdiction. It would also be inappropriate for WDF to participate in a county certification program for contractors.

At this point in time, information on sandlance spawning habitat requirements is not well documented. Until this information is available, it would be inappropriate to revise the bulkhead criteria appearing in the Washington Administrative Code (WAC 220-110-280 (2)). However, WDF will review each bulkhead proposal on a case by case basis and provide adequate protection for sandlance spawning habitat.

At the present time the Stormwater Management Guidelines are interim, but are being implemented. The final policy will be circulated for SEPA review upon completion. Since there is no relationship between LOTT and the Guidelines, their application would be inappropriate.

Management and enhancement of the salmon stocks in the urban tributaries of Budd Inlet is the responsibility of WDF's Harvest Management Division. We suggest you contact Tim Flint at 753-0198 for information regarding the issues identified in the letter.

We are concerned about log rafting and its detrimental affects on fisheries resources and their habitat but our authority related to existing log rafting areas is limited. We are, however, addressing new log rafting projects and are requiring full mitigation. It is our understanding that Natural Resource Damage Assessments apply to chemical contamination that is typically related to superfund sites, and would therefore not be appropriate in these instances.

Thank you for the opportunity to meet with you and comment on the development of the draft action plan. If you have any question, please contact Neil Rickard, Regional Habitat Manager at 753-5732.

Sincerely

Earl L. Finn, Jr.
Supervisor, Marine Permits
Habitat Management Division

ELF:NR:jkd:23:6

cc: Tim Flint - WDF, Harvest Management
Thurston County Planning Department
Michael Rylko - EPA

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Bob Arndt
Cliff Ikerd
Washington Dept. of
General Administration
Mail Stop AX-22
Olympia, WA 98504

Dear Bob and Cliff:

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in February. In the meeting we discussed actions that might be taken to complement existing programs designed to enhance and protect water quality in Capitol Lake. As a follow-up to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

Wetland Feasibility Study

The department hired a consultant to conduct a wetlands feasibility study for the middle and south basins of Capitol Lake. The report will not contain specific recommendations, but will be used by GA to 1) evaluate the necessity of funding continued maintenance dredging in the lake, 2) address water quality, and 3) develop and erosion/nonpoint pollution control plan. **Does GA have any plans contingent on information in the report (e.g., recommendations to conduct further sediment sampling, recommendations to fund an aerial survey of sedimentation)? Does GA plan to submit recommendations to the 90/91 legislature based on the report and any subsequent evaluations?**

Petroleum Storage Tanks

Over 30 stormwater outfalls discharge to Capitol Lake, 7 of which collect water from GA property. Two of the outfalls discharge water that collects in a containment dike around a 300,000 gallon aboveground petroleum tank. The storage and its containment system do not include oil/water separators. State law (RCW 90.48) requires discharges from such systems to be sufficiently treated to assure no contamination enters state waters. **How does GA plan to upgrade their bulk petroleum storage system and when will this take place?** Also, federal law (40 CFR 112) requires Spill Prevention and Containment and Contingency (SPCC) plans to be on site at bulk oil storage facilities. **Does an SPCC plan exist for the facility? If not, please provide a target date for completing a plan.**

GA plans to remove their 1,000 gal. underground storage tank. **What is the target date for removal?**

Capitol Lake Restoration Plan

This year, the GA, in conjunction with other local and state agencies, will begin phase two of the Capitol Lake Restoration Plan, implementation. **Which elements of the restoration plan are budgeted for 1990, 1991, 1992? Will GA meet target dates shown in the plan document?**

Highway Construction Storage Area in Wetland

GA is responsible for managing Capitol Lake and surrounding lands. A wetland at the southwest end of the lake houses a storage area for the Department of Transportation. An Ecology drive-by inspection revealed riprap and barrels being stored in the area. GA reviewed records and found reference to a verbal agreement permitting this. GA noted two barrels of wood preservative stored on the site and requested its removal. The barrels have been removed and riprap remains on the site. Ecology plans a thorough inspection this spring. **If problems are found, is GA willing to coordinate with Ecology to minimize the threat of any potential contaminants on site?**

Thank you again for taking time out of your busy schedules to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Allen Moore, Ecology

K. WENDY HOLDEN
Director

STATE OF WASHINGTON
DEPARTMENT OF GENERAL ADMINISTRATION
218 General Administration Building, AX-22 • Olympia, Washington 98504-0622

July 2, 1990

Ms. Melany Vorass, Budd Inlet Action Plan Coordinator
Department of Ecology
7272 Cleanwater Lane, LU-11
Olympia, WA 98504-6811

Dear Melany:

This communication is in response to your letter of June 6, 1990 regarding activities which may affect water quality in Capitol Lake. I apologize for the delay in responding to your questions. Each of your questions is addressed as follows:

1. **Wetlands Feasibility Study**

GA's plans related to wetlands are contingent on the content of the feasibility study report. The findings will be presented to the 1991 Legislature, and GA is expected to implement Legislative directions on wetland development, dredging, or other actions.

2. **Petroleum storage tanks**

GA intends to upgrade the bulk diesel storage tank at the Powerhouse in the 1991-1993 biennium by installing an oil separator system in the enclosure perimeter. This will allow rainwater to exit the enclosure, but prohibit oil from entering Capitol Lake. We will also develop a Spill Prevention and Containment Contingency plan in conjunction with this project. Estimated completion of both projects is December 1992.

The 1,000 gallon underground storage tank (UST) adjacent to the Powerhouse is currently in temporary closure. Petroleum products have been removed from the tank, and GA plans to remove the tank during the 1991-1993 biennium. A projected date for removal is March 1993, as removal of regulated USTs (those used for motor fuel) will be accomplished prior to removal of unregulated or exempt tanks.

3. **Capitol Lake Restoration Plan**

During 1990, GA will complete a study of erosion in the North Basin. GA will also be a member of the Capitol Lake Action Committee, as per recommendation #1 of the plan, with the City of Olympia in the lead position.

Capital items are not projected for the 1991-1993 biennial period, nor will be requested until the feasibility study results are available and have been analyzed.

4. **Highway construction storage area in wetland**

GA is willing to coordinate an effort with the Department of Ecology to minimize contamination on the site. We cannot, however, commit to accomplish or to fund contamination mitigation efforts until the extent of any liability is determined. Should the Department of Transportation or its contractors be determined at fault for contamination, GA would seek restitution for any damages or costs of cleaning the site.

I hope that this information provides you with a more complete understanding of GA's planned activities related to Capitol Lake. Should you have questions regarding the information in the letter, please contact me at 753-0501 or Nick Cockrell at 586-5256. Nick will be replacing me as project manager of the Wetlands Feasibility Study.

Sincerely,

Robert Arndt
Facilities Planning Manager
Division of Capital Management

RA:ncm

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Bill Cleland
Washington Dept. of Health
Mail Stop LD-11
Olympia, WA 98504

Dear Bill,

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in March. In the meeting we discussed actions that might be taken to complement existing programs designed to enhance and protect water quality in Budd Inlet. As a followup to the meeting, I have summarized below potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also verify any inaccuracies found below.

Commercial Geoduck Beds

Commercial geoduck beds located at the mouth of Budd Inlet are harvested on a rotational basis. The Budd Inlet geoduck beds were harvested this year, and will probably not be re-opened for harvest for at least another 10 years. At Boston Harbor, a wastewater treatment plant (WWTP) is under construction to serve that area; the outfall pipe will be placed within a 1/2 mile of the geoduck beds. In recent years, simply by virtue of proximity, the beds would have been administratively closed to commercial harvest. The Department of Health now determines a prohibited zone based on a post-project dilution analysis. **Will the department agree to conduct baseline water column sampling prior to the WWTP coming on line?** The Department also conducts occasional geoduck tissue sampling. **Will the DOH agree to conduct baseline tissue sampling to determine future WWTP impacts to the geoduck beds?**

Recreational Shellfish Harvesting / Warning Signs

Through the Puget Sound Ambient Monitoring Program, DOH conducts annual tissue chemistry sampling at Priest Point Park. The department also conducts quarterly sampling for fecal coliform bacteria at Priest Point Park and Burfoot Park. Priest Point Park has been closed to recreational shellfish harvesting. **Will the DOH agree to continue sampling for fecals on quarterly basis at Burfoot? Are there other areas in Budd Inlet in which DOH plans to conduct future tissue chemistry sampling?**

DOH has available contaminated shellfish warning signs. The County is responsible for actually posting and maintaining warning signs. In at least one other urban bay area, DOH has entered into a formal agreement with the county health department to designate responsibilities for various shellfish monitoring activities. The agreement includes a specific trigger for the point at which the county health department would post a beach warning. **Could this MOA be applied in Thurston County to encourage posting warning signs; if new data confirms contaminated shellfish at other public beaches (e.g., Rat Cove in West Bay) will DOH formally recommend Thurston County post warning signs in those locations?**

Thank you again for taking time out of your busy schedule to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Verass

Melany Verass
Budd Inlet Action
Plan Coordinator

cc: Clive Pepe, DOH

STATE OF WASHINGTON

DEPARTMENT OF HEALTH

Olympia, Washington 98504

June 21, 1990

Ms.Melany Vorass
Budd Inlet Action Plan Coordinator
Department of Ecology MS PV-11
Olympia, Washington 98504

Dear ~~Ms. Vorass:~~ Melany

Please find below my responses to the questions you asked in your June 6th letter regarding the Budd Inlet action plan:

Will the department agree to conduct baseline water column sampling prior to the WWTP coming on line?

> Yes. We have stations located in the immediate vicinity which are sampled as part of our ambient monitoring plan.

Will the DOH agree to conduct baseline tissue sampling to determine future WWTP impacts to the geoduck beds?

> Yes. Geoduck tissue sampling is a routine activity. However, tissue samples are not used to determine water quality impacts.

Will the DOH agree to continue sampling for fecals on quarterly basis at Burfoot?

> Once we have collected a sufficient number of samples to classify Burfoot (15 samples per station) ambient monitoring will occur on a yearly basis.

Are there other areas in Budd Inlet in which DOH plans to conduct future tissue chemistry sampling?

> No additional chemistry sampling sites are planned at this time.

Could this recreational shellfish MOA be applied in Thurston County to encourage posting warning signs; if new data confirms contaminated shellfish at other public beaches (e.g., Rat Cove in West Bay) will DOH formally recommend Thurston County post warning signs in those locations?

Posting contaminated beaches is a part of the recreational shellfish program. All public beaches in Inner Budd Inlet should be posted and we have recommended this. We anticipate concluding a formal MOA with Thurston County by late summer.

I hope I have addressed all of your concerns.

If you have any questions or require further assistance, I can be reached at 753-5993.

Sincerely,

Bill Cleland

BILL CLELAND
Public Health Advisor
Office of Shellfish Programs

BC:vb

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

September 11, 1990

Ms. Peggy Britt
Boater Education Program
Parks & Recreation Commission
7150 Cleanwater Lane
Mail Stop KY-11
Olympia, WA 98504-8711

Dear Ms. Britt:

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me earlier this summer. At that time, and in subsequent conversations, we discussed several Parks and Recreation Commission activities related to environmental protection in the Budd/Deschutes watershed. Below is a summary of topics we discussed, as well as a few remaining questions. In addition to responding to the questions, please clarify any inaccuracies found in the text below. Please provide your written response by September 21, 1990.

Marine Sewage Disposal Pumpouts

Design criteria for marina pumpouts has now been finalized, and a grant program for funding the installation and retrofitting of pumpouts is now being administered by your agency. At least two local jurisdictions in Thurston County have applied for grants to improve the operation of existing pumpouts. **When is it likely monies for this grant period will be allocated, and when will the next grant period begin? Also, you indicated the agency estimates approximately six pumpout stations will be "intalled" statewide per year. How do grants toward retrofitting figure into this estimate; is there a cap on funds that go toward retrofitting?**

Marine Sewage Disposal (MSD) Requirements

The agency has been working on an enforcement strategy for requiring MSDs on recreational boats under 65' feet in length. The report, required by the 1988 PSWQ Plan, was due spring, 1990. If the report has been completed, please forward a copy. If not, what is the status for completing the report and what factors may have caused delays?

The Parks and Recreation Commission conducted a survey detailing types of MSDs, frequency of use, waste issues, boating impact on local communities, etc. Please forward a copy of the final report. Also, you indicated the agency is likely to perform another survey in 1991 to determine the program's success. **When do you anticipate the decision will be made on whether or not to conduct the 1991 survey?**

Interpretive & Educational Signs

I am aware of two signs your agency makes available to local jurisdictions. **Please briefly describe these and other signs available; are these also available to private marinas?**

Thank you for your continued participation in the Budd Inlet Action Plan. Please contact me at 586-5554 with any questions on the above or other elements of the Action Plan.

Sincerely,

Melany Vorass
Budd Inlet Action
Plan Coordinator

JAN TVETEN
Director

STATE OF WASHINGTON
WASHINGTON STATE PARKS AND RECREATION COMMISSION
7150 Cleanwater Lane, KY-11 • Olympia, Washington 98504-5711 • (206) 753-5755

September 27, 1990

Ms. Melany Vorass
Budd Inlet Action Plan Coordinator
Department of Ecology
7272 Cleanwater Lane, W-11
Olympia, Washington 98504-6811

Dear Ms. Vorass,

I am responding to your letter dated September 11, 1990 requesting clarification and confirmation of Washington State Parks and Recreation Commission's (State Parks) activities related to environmental protection in the Budd/Deschutes watershed. I will respond to each section of your letter.

Boat Sewage Pumpout Grants

The first round of grants were awarded on September 21, 1990. State Parks will fund 10 and possibly 12 pumpout stations in this round. Olympia Parks and Recreation Department will be awarded a grant. The Port of Olympia will not receive a grant in this round.

Renovation of existing facilities is an eligible grant cost. There is no cap on funds that go toward renovations; however State Park engineers will make a recommendation on suitability of a station for renovation and may require a new system to be installed for cost and maintenance reasons.

Marine Sewage Disposal (MSD) Requirements

State Parks has not developed an MSD enforcement strategy as directed by the 1988 PSWQ Plan. State Parks did not receive the staffing required to undertake the task. We will begin working on an enforcement strategy July 1991 and finish July 1992. The enforcement strategy will be developed with the aid of an advisory committee consisting of boating and state agency representatives. A second boater survey may be a part of the MSD enforcement strategy project.

Interpretive and Educational Signs

State Parks Boating Programs has two signs and an instructional decal. One sign is an interpretive sign and one is a pumpout logo sign used to indicate the location of a boat sewage pumpout station or portable toilet dump station. Copies of these two signs are enclosed. The instructional decal verbally and visually describes how to operate a pumpout station. This

instruction decal has been adopted for use by Keko, Inc. All new Keko pumpout stations now include the instruction decal.

Please contact me if you require any further information. I may be reached at 586-2283.

Sincerely

Peggy Britt

Peggy Britt
Boating Environmental
Education Coordinator

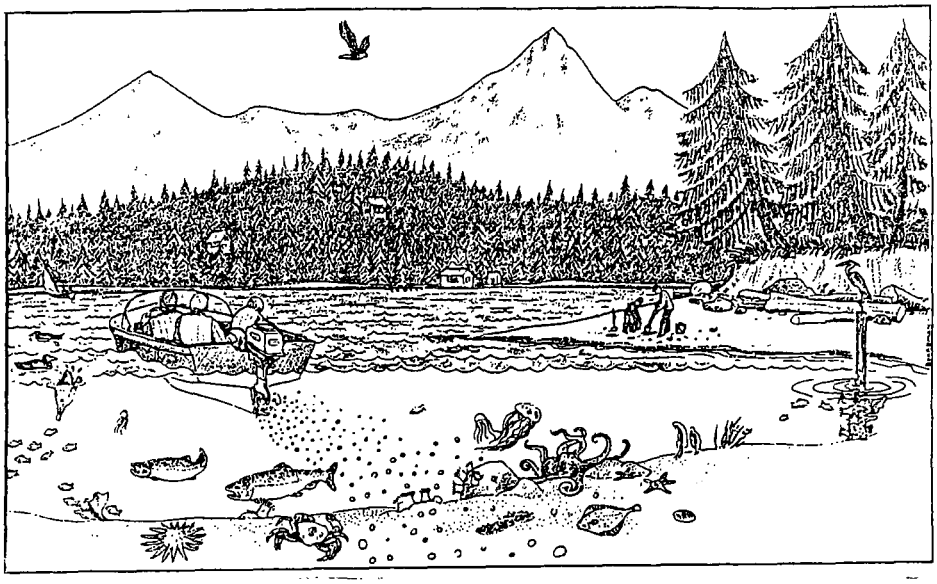
PB/kf

Enclosures


PUMP OUT
STATION

PLEASE HELP

PRESERVE HOOD CANAL'S BOUNTIFUL AND FRAGILE ENVIRONMENT



Over 40,000 boaters visit the waters of Hood Canal each year. Litter, sewage, and boat maintenance wastes can pollute water and contaminate marine life. Water in shallow bays and inlets is often restricted and natural flushing may take several years or more. Wastes that are dumped overboard tend to stay around for a long time.

BOATERS CAN MAKE A DIFFERENCE. THIS IS WHAT WE CAN DO:

Stow all litter on board. Dispose of it in proper dockside containers or take it home.

Dispose of sewage properly by treating it or using a holding tank. Watch for pumpout stations and use them as they become available in the future. Use shoreside restrooms when possible.

Practice smart boat maintenance: keep your engines well-tuned; recycle waste oil and solvents; use a bilge sponge; and choose non-toxic paints and biodegradable cleansers.

CAPTAINS: INSIST THAT YOUR CREW, GUESTS AND FELLOW BOATERS FOLLOW THESE PRACTICES. SET A GOOD EXAMPLE.

This panel was developed by citizen volunteers. Special thanks to Adopt a Beach and to the Hood Canal Coordinating Council, the Puget Sound Water Quality Authority, Naval Submarine Base, Bangor and the Washington State Parks and Recreation Commission for funding and support.

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Andrea Copping
Puget Sound Water
Quality Authority
217 Pine St., Suite 1100
Seattle, WA 98101

Dear Andrea:

Thank you for meeting with Michael Rylko of EPA and me in March. In the meeting we discussed actions that might be taken to complement existing environmental protection programs. As a follow-up, I have summarized potential activities we hope become part of the draft Budd Inlet Action Plan. Please respond to the following summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

Stormwater Management Programs

As part of the Puget Sound Water Quality Plan, Ecology is drafting a stormwater management manual. The manual will provide minimum requirements for stormwater management in the Puget Sound basin. Watershed planning areas and other areas considered environmentally sensitive are subject to more stringent requirements under area-specific "roadside management plans." The area-specific plans would be primarily negotiated between local jurisdictions and the State Department of Transportation. Large volumes of highway runoff and sediment impact wetlands and waters within both the Budd/Deschutes watershed planning area and the Budd Inlet Action Plan study area. **As environmentally sensitive areas are identified through these efforts, and if local jurisdictions propose WSDOT implement a roadside management plan, will the Authority provide support to such an effort (e.g., letters of support; recommendations for local rule, authority, funding)?**

Ecology is also in the process of drafting stormwater rules. The authority under which the rules are being promulgated (RCW 90.48) does not permit Ecology to extend to local authorities provisions for private stormwater facilities. Under RCW 90.70, the PSWQA is given authority to address private systems. The Authority plans to exercise this authority by adopting the Puget Sound Management Plan by rule or by developing a companion rule. **When will this decision be made? If the Authority proposes a companion rule, will the rule adoption process occur simultaneously with Ecology's RCW 90.48 rule adoption?**

The Department of Transportation has agreed to write an EIS this year for pesticide use in Washington. The EIS could be applied to other statewide applicators, such as Burlington Northern and Union Pacific railroads. **Would the Authority agree to review the draft EIS and, if applicable, formally recommend the conditions become requirements for other applicators?**

NPDES Permits

The Authority tracks and reviews certain NPDES permits written by Ecology for consistency with the Puget Sound Water Qulity Management Plan. Generally, only precedent-setting permits are chosen for review, due to the number and complexity of NPDES permits. Ecology is responsible for reviewing and prioritizing the vast majority of permits to be written and/or renewed. **How do you anticipate PSWQA and Ecology will coordinate permit review and prioritization in the future?**

PSAMP Monitoring

The Authority coordinates the Puget Sound Ambient Monitoring Program (PSAMP), which involves sediment and fish sampling for toxic chemicals, among other parameters. Under PSAMP, there are two fixed (annual) and two rotating (triannual) sediment sampling stations and two fixed fish tissue sampling stations in Budd Inlet. The stations are selected with the objectives of obtaining baseline data and looking for long-term trends to identify any changes in ambient estuarine quality. **Which agencies secured funding to continue PSAMP? Is the PSWQA now considering placing future PSAMP monitoring (Puget Sound-wide) closer to shore in order to improve the resolution of degradation or improvement trends in the marine estuary?**

Public Involvement and Education (PIE) Fund

Local agencies and citizen groups implementing the Budd Inlet Action Plan are eligible to apply for PIE awards. **Will higher priority for funding be assigned to projects that involve implementation of urban bay action plans?**

What changes, if any, do you anticipate over the next two years in the PIE award program?

Thank you again for taking time out of your busy schedule to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Vallana Piccolo, PSWQA
Sheila Kelly, PIE Fund Administrator, PSWQA

KATHERINE FLETCHER
Chair

STATE OF WASHINGTON
PUGET SOUND WATER QUALITY AUTHORITY
217 Pine Street, Suite 1100 • Seattle, Washington 98101 • (206) 464-7320

August 30, 1990

To: Melany Vorass
From: Andrea Copping
Re: Response to Questions concerning Budd Inlet Action Plan

In response to your letter of June 6, I am providing the information which you highlighted as being important for inclusion in the Budd Inlet Action Plan.

Stormwater Management Programs

Under the stormwater program of the Puget Sound plan, local jurisdictions have several options for gaining support for implementing a roadside management plan including: a rule and model ordinances for carrying out the rule (element SW-4); technical assistance from the Department of Ecology for developing local ordinances (SW-3.2); and eligibility for funding under the Centennial Clean Water Fund and the Puget Sound Grants Program (element EM-6).

The decision to adopt the Puget Sound plan by rule or to adopt a companion rule will be made after the 1991 plan is adopted. The Authority will probably examine adopting a companion stormwater rule simultaneously with the adoption of 90.48 by Ecology as one of several options.

The Authority will probably review the WSDOT EIS on pesticide use. The Authority's role in pesticide use by statewide applicators is generally restricted to encouraging education and research into the safe application of pesticides.

NPDES Permits

Under element P-13 of the 1991 Puget Sound Water Quality Management Plan, the Authority gives priority to the review of NPDES permits in urban bays. In general, the Authority reviews permits for consistency with the permit writer's manual (element P-5) and other portions of the Puget Sound plan. Through the urban bay action teams and the ongoing working relationship between the point source sections of the Authority and Ecology, coordination for the review of urban bay permits between the two agencies should be enhanced.

PSAMP Monitoring

Under the 1989 Puget Sound plan, funds became available for monitoring the following PSAMP tasks:

- sediment quality (Ecology) - about 80% funded
- fish toxics and fish health (Fisheries) - about 35% funded
- shellfish contamination (Health) - about 40% funded
- marine water column (Ecology) - about 35% funded
- fresh water (Ecology) - about 25% funded

We anticipate that the PSAMP agencies will have these funds available to them during the next biennium. In addition, we anticipate that additional funds will be available for PSAMP.

In order to meet the goals of PSAMP, sampling stations are placed away from the shoreline and away from individual sources of contamination. At this time, there are no plans to move PSAMP stations closer to shore.

Public Involvement and Education (PIE) Fund

Selection criteria during the first four rounds of the PIE fund focussed on model projects directed towards implementing the Puget Sound plan. Projects associated with the UBATs were given equal consideration with all others which have direct relationship to the plan.

We anticipate that new criteria for the selection of PIE fund projects will be developed for awards during the next biennium.

I apologize for the delay in getting this information to you. If I can be of any further help, please call me at 464-7934 (scan 576-7934).

Sincerely,

Andrea E. Copping, PhD.
PSAMP Coordinator

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Dave Jamison
Washington Department
of Natural Resources
Mail Stop EX-12
Olympia, WA 98504

Dear Dave:

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in February. In the meeting we discussed actions that might be taken to complement existing programs designed to enhance and protect water quality in Budd Inlet. As a follow-up to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also verify any inaccuracies found below.

Commercial Geoduck Beds

DNR may elect to re-seed a recently harvested geoduck bed located at the mouth of Budd Inlet. **What criteria must be met in selecting an area for re-seeding. Is Budd Inlet likely to approved for reseeding, and if so, when would it likely take place? Specifically, what conditions would prevent the area from being re-seeded?**

DNR Administration of Model Toxics Control Act Rules

Though the Port owns most tidelands adjacent to the Port peninsula, DNR manages aquatic lands adjacent to those and is concerned that industrial discharge pollutants migrate to DNR-managed aquatic lands. The results of several recent sediment sampling projects may confirm these concerns. Ecology and DNR are developing a memorandum of understanding (MOU) by which DNR will carry out provisions of the state Model Toxics Control Act for DNR-managed aquatic lands. **What is the target date for finalizing the agreement? Until the MOU is signed, how will DNR address contaminated sediments that may be identified in recent studies?**

DNR is currently developing a method to assess probability of contaminated sediments from near-shore industrial use (type of industry, length of time there, etc.) Due to resource constraints, sediment sampling may not occur except in areas that have high potential to be impacted. **Have criteria been selected to determine where sampling projects will be located; are any areas of Budd Inlet likely to meet those criteria? At the earliest, when might sampling projects begin in Puget Sound?**

Pesticide Impacts to Marine Plants

Recently, the Washington Department of Transportation (WSDOT) agreed to write an EIS for their statewide pesticide use. When completed, conditions of the EIS may be applied to other entities (e.g., Burlington Northern and Union Pacific railroads). **Will DNR consider formally encouraging this?**

Lografting Impacts to Benthic Communities

Lografting in West Bay is of concern to several natural resource agencies. Studies on lografting conducted elsewhere in Puget Sound show the practice is detrimental to benthic communities, as well as to outmigrating salmonid fingerlings. At low tides, lografting in West Bay directly affects habitat used by juvenile salmonids. **Does DNR have authority to restrict this practice over Port-owned tidelands? What guidelines does DNR impose for lografting over aquatic lands that might be adopted by the Port? Does DNR have informational materials that would help educate the Port and citizen groups on the subject? Please suggest any means you know of for mitigating the effects of this practice.**

Aquatic Lands Enhancement Account

A workshop was held in March to inform interested parties of available monies to provide public access to shorelines. I would appreciate receiving information on any proposed activities within the Budd/Deschutes basin.

Thank you again for taking time out of your busy schedule to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: ALEA Coordinator

WASHINGTON STATE DEPARTMENT OF
Natural Resources

BRIAN BOYLE
Commissioner of Public Lands

OLYMPIA, WA 98504

Melany Vorass
Budd Inlet Action Plan Coordinator
Department of Ecology
LU-11
Olympia, WA 98504-6811

July 30, 1990

Dear Melany:

I'm sorry for the delay in responding to your earlier letter on the action plan. Here are my responses to your questions:

Commercial Geoduck beds

As of this date the only planting has been of an experimental nature. The main criteria is whether or not natural recruitment appears to be occuring at the site. If it is then no planting will be done. We do not know the statis of the Budd Inlet site in terms of future planting.

DNR and MTCA

The MOU with DOE is in the discussion stage. I anticipate we will be signing the document the fall of 1990. Using funds from the Model Toxics Account allocated to DNR by the legislature this past session, DNR is forming an action team to begin an inventory of potential contaminated sites on state owned aquatic lands, including Budd Inlet. We hope to have the inventory done by the end of this fiscal year. In addition we have funds from the same source to begin characterizing sites where a potential PRP is not present. We have just begun development of criteria to identify and rank those sites. It is unknown if a site in Budd Inlet will be identified.

Pesticides

We have not contemplated formally dealing with the Department of Transportation on this issue, but we would like to review the EIS draft when it is issued.

Log rafting Impacts

Attached for your information is WAC 332-30-145 which deals with log rafting. The current lease for the West Bay harbor area for log storage expires in 1992. While current lease language appears not to have anti-grounding language, those raft areas appear to be beyond the intertidal zone so grounding would not be a problem.

ALEA

I will inform the program manager of your interest in the program.

Sincerely yours,

David W Jamison, Ph.D.
Senior Marine Scientist
Division of Aquatic Lands

in the vicinity, and the degree of navigational use by the public and adjacent property owners;

(c) The dock interferes with preferred water-dependent uses established by law; or

(d) The dock is a public health or safety hazard.

(6) **Appeal of revocation.** Upon receiving written notice of revocation or cancellation, the abutting residential owner shall have thirty days from the date of notice to file for an administrative hearing under the contested case proceedings of chapter 34.04 RCW. If the action to revoke the permission is upheld, the owner shall correct the cited conditions and shall be liable to the state for any compensation due to the state from the use of the aquatic lands from the date of notice until permission requirements are met or until such permission is no longer needed. If the abutting residential owner disclaims ownership of the dock, the department may take actions to have it removed.

(7) **Current leases.** Current lessees of docks meeting the criteria in this section will be notified of their option to cancel the lease. They will be provided a reasonable time to respond. Lack of response will result in cancellation of the lease by the department.

(8) **Property rights.** No property rights in, or boundaries of, public aquatic lands are established by this section.

(9) **Lines of navigability.** The department will not initiate establishment of lines of navigability on any shorelands unless requested to do so by the shoreland owners or their representatives.

(10) Nothing in this section is intended to address statutes relating to sales of second class shorelands. [Statutory Authority: RCW 79.90.105, 79.90.300, 79-.90.455, 79.90.460, 79.90.470, 79.90.475, 79.90.520, 79-.68.010, 79.68.68 [79.68.080], and chapter 79.93 RCW. 85-22-066 (Resolution No. 500), § 332-30-144, filed 11/5/85.]

WAC 332-30-145 Booming, rafting and storage of logs. All requirements in this section shall apply to the department and to port districts managing aquatic lands under a management agreement (WAC 332-30-114).

(1) Unless specifically exempted in writing, all log dumps located on aquatic lands, or operated in direct association with booming grounds on aquatic land, must provide facilities for lowering logs into the water without tumbling, which loosens the bark. Free rolling of logs is not permitted.

(2) Provision must be made to securely retain all logs, chunks, and trimmings and other wood or bark particles of significant size within the leased area. Lessee will be responsible for regular cleanup and upland disposal sufficient to prevent excessive accumulation of any debris on the leased area.

(3) Unless permitted in writing, aquatic land leased for booming and rafting shall not be used for holding flat rafts except:

(a) Loads of logs averaging over 24" diameter.

(b) Raft assembly, disassembly and log sort areas.

(4) Unless permitted in writing, grounding of logs or rafts is not allowed on tidelands leased for booming and rafting. However, tidelands which were leased for booming and rafting prior to January 1, 1980, are exempt from this provision.

(5) No log raft shall remain on aquatic land for more than one year, unless specifically authorized in writing.

(6) For leases granted to serve the general needs of an area such as an island, the leased area shall be made available to others for booming and rafting and at a reasonable charge.

(7) Areas within a lease boundary meeting the definition of log booming are water-dependent uses. The rent for these areas will be calculated according to WAC 332-30-123.

(8) Areas leased for log storage shall have the rent calculated by applying a state-wide base unit rent per acre. Temporary holding of logs alongside a vessel for the purpose of loading onto the vessel is neither booming nor storage.

(9) The base unit rent, application to existing leases, and subsequent annual rents will be determined as provided for water-dependent uses under WAC 332-30-123 except for the following modifications:

(a) A formula rental calculation will be made for each such area leased as of July 1, 1984, as though the formula applied on July 1, 1984.

(b) The assessment for an upland parcel shall not be used when the following situations exist:

(i) The parcel is not assessed.

(ii) The size of the parcel in acres or square feet is not known.

(c) When necessary to select an alternative upland parcel, the nearest assessed waterfront parcel shall be used if not excluded by the criteria under (b) of this subsection.

(d) Because of the large size and shape of many log storage areas, there may be more than one upland parcel that could be used in the formula. The department shall treat such multiple parcel situations by using:

(i) The per unit value of each upland parcel applied to its portion of the lease area. If it is not possible or feasible to delineate all portions of the lease area by extending the boundaries of the upland parcel, then;

(ii) The total of the assessed value of all the upland parcels divided by the total acres of all the upland parcels shall be the per unit value applied in the formula.

(e) The total formula rents divided by the total acres under lease for log storage equals the annual base unit rent for fiscal years 1985-1989. That figure is $171.00 per acre.

(f) For purposes of calculating stairstepping of rentals allowed under WAC 332-30-123, the base unit rent multiplied by the number of acres shall be the formula rent. In cases of mixed uses, the log storage formula rent shall be added to the formula rent determinations for the other uses under leases before applying the criteria for stairstepping.

(g) Inflation adjustments to the base rent shall begin on July 1, 1990.

(10) On July 1, 1989, and each four years thereafter, the department shall establish a new base unit rent.

(a) The new base rent will be the previous base rent multiplied by the result of dividing the average water-dependent lease rate per acre for the prior fiscal year by the average water-dependent lease rate per acre for the fiscal year in which the base unit rent was last established. For example, the formula for the base unit rent for fiscal year 1990 would be:

$$\text{FY90 BUR} = \text{FY85 BUR} \times \frac{\text{(FY89 AWLR)}}{\text{(FY85 AWLR)}}$$

(b) When necessary to calculate the average water-dependent lease rate per acre for a fiscal year, it shall be done on or near July 1. The total formula rent plus inflation adjustments divided by the total acres of water-dependent uses affected by the formula during the prior fiscal year shall be the prior fiscal year's average.

(11) If portions of a log storage lease area are open and accessible to the general public, no rent shall be charged for such areas provided that:

(a) The area meets the public use requirements under WAC 332-30-130(9);

(b) Such areas are in a public use status for a continuous period of three months or longer during each year;

(c) The lease includes language addressing public use availability or is amended to include such language;

(d) The department approves the lessee's operations plan for public use, including safety precautions;

(e) Changes in the amount of area and/or length of time for public use availability shall only be made at the time of rental adjustment to the lease; and

(f) Annual rental for such areas will be prorated by month and charged for each month or part of a month not available to the general public. [Statutory Authority: 1984 c 221 and RCW 79.90.540. 84-23-014 (Resolution No. 470), § 332-30-145, filed 11/9/84. Statutory Authority: RCW 43.30.150. 80-09-005 (Order 343), § 332-30-145, filed 7/3/80.]

WAC 332-30-148 Swim rafts and mooring buoys. (1) Swim rafts or mooring buoys will not be authorized where such structures will interfere with heavily traveled routes for watercraft, commercial fishing areas or on designated public use - wilderness beaches.

(2) Swim rafts or mooring buoys may be authorized on aquatic lands shoreward of the -3 fathom contour or within 200 feet of extreme low water or line of navigability whichever is appropriate. The placement of rafts and buoys beyond the -3.fathom contour or 200 feet will be evaluated on a case by case basis.

(3) No more than one structure may be installed for each ownership beyond extreme low water or line of navigability. However, ownerships exceeding 200 feet as measured along the shoreline may be permitted more installations on a case by case basis.

(4) Swim rafts or buoys must float at least 12" above the water and be a light or bright color.

(5) Mooring buoys may be authorized beyond the limits described above on land designated by the department for anchorages. [Statutory Authority: RCW 43-.30.150. 80-09-005 (Order 343), § 332-30-148, filed 7/3/80.]

WAC 332-30-151 Reserves (RCW 79.68.060). (1) Types of reserves: Educational, environmental, scientific - see definitions (WAC 332-30-106).

(2) Aquatic lands of special educational or scientific interest or aquatic lands of special environmental importance threatened by degradation shall be considered for reserve status. Leases for activities in conflict with reserve status shall not be issued.

(3) The department or other governmental entity or institution may nominate specific areas for consideration for reserve status.

(4) Such nominations will be reviewed and accepted or rejected by the commissioner of public lands based upon the following criteria:

(a) The site will accomplish the purpose as stated for each reserve type.

(b) The site will not conflict with other current or projected uses of the area. If it does, then a determination must be made by the commissioner of public lands as to which use best serves the public benefit.

(c) Management of the reserve can be effectively accomplished by either the department's management program or by assignment to another governmental agency or institution.

(5) The department's reserves management program consists of prevention of conflicting land use activities in or near the reserve through lease actions. In those cases where physical protection of the area may be necessary the management of the area may be assigned to another agency.

(6) When DNR retains the management of reserve areas the extent of the management will consist of a critical review of lease applications in the reserve area to insure proposed activities or structures will not conflict with the basis for reserve designation. This review will consist of at least the following:

(a) An environmental assessment.

(b) Request of agencies or institutions previously identified as having a special interest in the area for their concerns with regard to the project.

(7) Proposed leases for structures or activities immediately adjacent to any reserve area will be subjected to the same critical review as for leases within the area if the structures and/or activities have the potential of:

(a) Degrading water quality,

(b) Altering local currents,

(c) Damaging marine life, or

(d) Increasing vessel traffic.

(8) All management costs are to be borne by the administering agency. Generally, no lease fee is required. [Statutory Authority: RCW 43.30.150. 80-09-005 (Order 343), § 332-30-151, filed 7/3/80.]

WAC 332-30-154 Marine aquatic plant removal (RCW 79.68.080). (1) Any species of aquatic plant may

RISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Joanne Richter
City of Olympia Public Works
P.O. Box 1967
Olympia, WA 98507

Dear Joanne,

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in January. Olympia's current and planned activities exemplify a strong willingness to ensure progressive environmental protection programs are put into place at the local level. In keeping with this enthusiasm, we discussed in our meeting actions that might be taken to complement existing programs. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

Regional Drainage Manual

In conjunction with other local jurisdictions, the City of Olympia is in the process of assembling a manual containing design criteria and other requirements for stormwater management. Beginning in August, 1990, the manual will be used by City and County planning, public works and utilities staff for routine review of development. **To better ensure consistent use of the manual, will City staff agree to recommend the manual be adopted by ordinance?**

The current draft manual does not define operation and maintenance requirements and to what extent education and enforcement are to be funded. **As part of the Action Plan, will staff agree to recommend to the City Council to adopt and enforce an ordinance (or other means) to ensure operation and maintenance programs are adequately funded for both private and public systems?**

Percival and Moxlie/Indian Storm Drain Studies

The City is conducting storm drain studies in Indian, Moxlie and Percival Creeks. Studies will be completed by the end of 1990, and data will be used to prioritize capital improvement needs. **To determine longterm effects of future capital improvement projects, will the City consider continuing to monitor at regular intervals in locations sampled during the study?**

The City is participating with other local and state agencies in preparing a Capitol Lake wetland feasibility study for legislative review. As part of the study, and to make improvements in Percival Cove, the lake will be drawn down in July, 1990. The County plans to take advantage of a drawdown to conduct storm drain surveys. **Is the City interested in coordinating with the County in this effort so data on Percival Cove can be applied to the City's Percival Creek Stormwater Study (e.g., source identification).**

WSDOT Highway Runoff

The Washington State Department of Transportation (WSDOT) is currently working with Ecology to develop and adopt a highway runoff manual. The manual will contain design and O&M requirements for new construction. Current WSDOT design criteria may not meet local drainage manual requirements. Through watershed and urban bay planning activities, local jurisdictions are dedicating many hours and much money to protecting waterways from contaminants delivered by local stormwater systems. As you are aware, WSDOT stormwater represents a large portion of runoff discharging directly to the Deschutes River, Capitol Lake and Budd Inlet, as well as to local stormwater systems. Because I-5 and SR 101 are both within watershed and urban bay management areas, local jurisdictions have the opportunity to propose that WSDOT implement a more stringent "Roadside Management Plan" within these areas. **In conjunction with other local jurisdictions, will the City of Olympia agree to co-write and submit such a proposal to WSDOT?** (A proposal might be as easy and brief as suggesting WSDOT meet the requirements of the new local drainage manual.)

City Owned and Operated Marine Sewage Pumpout

The City owns, operates and maintains a marine sewage pumpout at Percival Landing. Several citizen complaints to Ecology indicate a need to improve O&M practices and/or upgrade the facility. **The City may qualify for a State Parks and Recreation grant to fund major renovation to the existing pumpout or a new pumpout; will the City apply for one of these grants? What other steps has the City planned to ensure the pumpout operates sufficiently on a consistent basis?**

Water Quality Policies and Ordinances

The City recognizes increased resources are needed in order to adequately fund and staff inspection and enforcement activities to ensure requirements are adhered to under the Shoreline Master Program, SEPA conditions and building codes. In addition, the City specifically recognizes the need to increase resources to improve enforcement of erosion and sedimentation requirements. **Will City staff examine potential funding sources for these activities and submit recommendations to the City Council?**

Environmental Education

In addition to the regional drainage manual and the County's environmental education library, a handbook containing water quality policies (and possibly educational information, best management practices, building code information, etc.) would be beneficial to developers, to zoning officials and to staff responsible for design review. **As an Action Plan element, will the City consider working with the County to organize and distribute such a manual?**

The City is conducting storm drain surveys to identify and prioritize problem drains for capital improvement projects. However, high priority capital improvements will not take place until at least 1992, and lower priority drains may not be addressed for some time after that. Until the systems are upgraded, public awareness of street-to-waterway drains should be increased. **Will the City agree to help increase awareness by actively participating with neighborhoods to initiate storm drain stencilling projects? In addition to this, will the City agree to assist other agencies in the distribution of storm drain posters (provided by Ecology) to businesses?**

The City and other local jurisdictions recently allocated funding for time on a local cable t.v. channel. Coverage for this year will include County Commission and possibly City Council meetings to which viewers will be able to phone in their questions. Future meeting agendas are now being reviewed, and specific meetings will be identified as those most likely to be aired. Thurston regional growth has brought to the forefront many environmental issues in need of citizen input. **Will the City of Olympia agree to formally recommend (or encourage to whatever extent possible) that one or more of the televised meetings include discussion on key environmental issues being addressed by the City in the Budd/Deschutes basin?**

Thank you again for taking time out of your busy schedules to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Marziah Kiehn, Olympia Planning
Dan Doles, Olympia Fire Dept.

City of
OLYMPIA
Public Works Department

August 17, 1990

Melany Vorass
Budd Inlet Action Plan Coordinator
Department of Ecology
7272 Cleanwater Lane, LU-11
Olympia, WA 98504-6811

Dear Melany:

The following responds to the meeting summary and questions presented in your letter of June 6, 1990. I have attempted to clarify several inaccurate statements as well as address target dates, potential funding sources, and resource constraints that may affect the City of Olympia's implementation of specific aspects of the Budd Inlet Action Plan. I have also addressed many of the issues that you raised in your June 6, 1990 letter to Marziah Kiehn. I apologize that it has taken me so long to get back to you. I'm finding that the life of a local government employee is never boring.

Regional Drainage Manual

The regional drainage manual is scheduled to be adopted by ordinance by the end of the year. City staff have been implementing various aspects of the draft manual since early June, including enhanced storage and treatment requirements and improved erosion and sediment control practices.

The current draft manual does address operations and maintenance (O & M) requirements for both private and public facilities. In addition, the City's new Storm and Surface Water Management Program describes an enhanced O & M program that is funded by increased utility rates approved in June of this year. In addition to a yearly O & M budget of about $550,000, the utility is also funding a stormwater enforcement staff person who will be responsible for enforcement of stormwater ordinances, development standards, and policies. This person will also conduct a regular inspection program to ensure that public and private facilities are being properly maintained.

837 7th Avenue S.E. P.O. Box 1967 Olympia, WA 98507-1967, (206) 753-8314

Percival and Moxlie/Indian Storm Drain Studies

The first phase of the Indian/Moxlie Drainage Basin Plan will be completed by the end of 1990; the second phase of this study and the Percival Creek Drainage Basin Plan will be completed by the end of 1991. The City, in conjunction with the other jurisdictions, intends to maintain permanent flow and water quality monitoring stations at key locations within the drainage basins. We are currently working on a draft interlocal agreement to formalize the cost-sharing arrangement for this monitoring program. The City's share of the program will be funded by utility revenue.

During the July 1990 draw-down of Capitol Lake, City crews walked the lake shoreline to inventory storm drain outfalls. We also obtained a copy of the water quality data that the County collected from storm drain outfalls during that event. Those data will be included in our Percival Creek Drainage Basin Plan.

WSDOT Highway Runoff

Preliminary discussions among the local jurisdictions have indicated consensus agreement that WSDOT should meet all requirements of the new regional drainage manual. As this drainage manual nears completion towards the end of the year, the City, in conjunction with the other local jurisdictions, will make a formal request to WSDOT to seek their cooperation in meeting regional drainage manual requirements.

City Owned and Operated Marine Sewage Pumpout

The City has applied for a $5,500 grant from State Parks and Recreation to replace the marine sewage pumpout facility located at Percival Landing. Although the existing facility is maintained year-around on a regular basis by the City Parks and Recreation Department, chronic mechanical failures necessitate its replacement.

Water Quality Policies and Ordinances

The City of Olympia has approved funding to hire a stormwater enforcement person whose duties would include enforcement of erosion and sedimentation requirements. We intend to advertise for this position this fall and hire no later than the end of year.

I support the adoption of stricter standards for aboveground storage tanks (ASTs) in order to achieve better protection of our surface and groundwater resources. With Ecology providing background information to justify the need, I can commit resources from within my program to pursue adoption by the Olympia City

Council of stricter standards for ASTs.

With respect to the City adopting stricter environmental standards for new marinas, these stricter standards will be applied when existing marinas undergo expansion or other alterations. However, existing marinas not undergoing expansion are considered to be "grandfathered" under the old standards; they will not be required to comply with the stricter standards.

Sediment Quality Studies

The City has not yet received results of the sediment sampling that is being done for the draft EIS on the Olympic Academy. We will review those data as they become available.

Environmental Education

The City will be developing informational flyers covering our stormwater policies, best management practices, stormwater facility design standards, water quality educational programs, and other topics. These flyers will be distributed to staff, the development community, and others. At this time we do not envision preparing a separate manual that would include these items. However, such a manual, developed jointly with the county and other cities, may be warranted in the future.

The City is actively developing a storm drain stenciling program. We have organized 12 stenciling kits and training materials that are available for use by groups throughout the City. In addition, we are working with neighborhood groups interested in specific stream restoration/cleanup activities. As part of our overall public involvement and education program, we would be pleased to work with other state and local agencies in the distribution of storm drain posters and other educational materials as they become available.

I believe a discussion by the Olympia City Council of key environmental issues in the Budd/Deschutes basin is an appropriate topic for a televised council meeting. I will raise this issue with the Council's Energy and Utilities Committee to see if they will support pursuit of such a discussion.

In summary, the City of Olympia actively supports the ongoing work of the Budd Inlet Urban Bay Action Committee, and we look forward to playing an integral role in the implementation of the Budd Inlet Action Plan. I believe the activities we are pursuing as part of our comprehensive Storm and Surface Water Program nicely complement your efforts to protect and preserve water quality and marine habitats in Budd Inlet.

I hope this letter has helped clarify the relationship between some of our on-going programs and elements of the draft Budd Inlet Action Plan. Please let me know if I can provide you with any additional information.

Sincerely,

Joanne E. Richter, Supervisor
Water Resources Program

cc. Emmett Dobey, Olympia Public Works Department
Marziah Kiehn, Olympia Planning Department
Paula Ehlers, Olympia Planning Department
Kevin Pierce, Olympia Parks and Recreation Department

HRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Linda Hoffman
Thurston County
Environmental Health Div.
2000 Lakeridge Drive SW
Olympia, WA 98502

Dear Linda,

Thank you for meeting with Michael Rylko (EPA), Michael Jacobson (PTI Environmental Services) and me in February. Thurston County's current and planned activities exemplify a strong willingness to ensure progressive environmental protection programs are put into place at the local level. In keeping with this enthusiasm, we discussed in our meeting actions that might be taken to complement existing programs. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, as well as resource constraints and/or other limiting factors. Please also clarify any inaccuracies found below.

Regional Drainage Manual

In conjunction with other local jurisdictions, Thurston County is in the process of assembling a manual containing design criteria and other requirements for stormwater management. The manual will be in use by August, 1990, and will be used for routine review of development. The current draft does not define operation and maintenance requirements and to what extent program education and enforcement are to be funded. **As part of the Action Plan, will staff agree to recommend to County Commissioners adopting an ordinance (or other means) to ensure these elements of the program will be adequately funded for both private and public systems? Also, will the County consider encouraging other local jurisdictions to enter into agreements to ensure regional consistency for these elements?**

Thurston County has taken a lead role in recognizing the need to impose requirements for the design, operation and maintenance of oil/water separators, as well as minimum requirements for disposal of sediments from these systems. **Will requirements for sediment disposal be included in the drainage manual for both public and private systems (or imposed by another means)?**

Basin Planning

The County hopes to receive Centennial Clean Water monies to help fund the first phase of Budd/Deschutes watershed planning. EPA and Ecology conducted marine sediment sampling in April, 1990; several sampling stations were located near larger stormwater outfalls. **Will the County consider reviewing this data (singularly and/or in conjunction with data collected through watershed planning, stormwater surveys and ground water studies) and, where necessary, take early actions to identify priority upland sources and drainages of contamination?**

Wetland Feasibility Study

The County is participating with other local and state agencies in preparing a Capitol Lake wetland feasibility study for legislative review. As part of the study, and to make improvements in Percival Cove, the lake will be drawn down in summer, 1990. When this occurs, the County may conduct a stormdrain survey. Though the survey may not include sediment sampling, an inventory of outfall locations will be performed, and data will presumably become part of a larger stormwater mapping project. **As the outfalls are mapped, will the County consider identifying, prioritizing and mapping potential "upstream" contaminant sources to the systems? Does the County have an interest in coordinating this effort with the Squaxin Island Tribe for the development of a regional geographical information system (GIS)?**

If sediment sampling does take place, what contaminants will be analyzed and how will the data be used? Will Puget Sound Protocols be used? Will source identification sampling follow?

Water Quality Policies and Ordinances

County staff recognize that increased resources are needed in order to adequately fund and staff inspection and enforcement activities to ensure requirements are met under the Shoreline Master Program, SEPA and building codes. **Will County staff agree to examine potential funding sources and submit recommendations to the County Commission?**

As with most other local jurisdictions, the County regulates the construction of aboveground storage tanks (ASTs) through the Uniform Fire Code (adopted by reference in the state building code). The Fire Code contains few requirements pertaining to environmental protection (e.g., the Code holds no requirement for impervious surfaces to be placed beneath ASTs, nor for oil/water separators within diked containment and adequate burm construction). The fire code gives fire marshals discretion to impose stricter standards; this has been done by the City of Olympia, using Ecology guidelines, on a case-by-case basis. If adequate justification were presented (by Ecology), the County would consider using the guidelines on a consistent basis by referencing them in building codes or in an ordinance (either countywide or in

environmentally sensitive areas). However, imposing new rules may require increased staffing. **If Ecology provides background information illustrating the need for stricter requirements (e.g., by siting local incidents), will County staff consider 1) identifying resource needs to implement new guidelines, and 2) recommending their implementation as well as potential funding sources to the County Commission?**

The scope of work for the County Stormwater Utility identifies the need to develop an erosion control ordinance. **What is the target date for adopting the ordinance? Are there any foreseeable delays to meeting this date?** Also, the County recognizes the need to increase enforcement resources in order to ensure current, general erosion control requirements are met. **As an element of the Action Plan, will the County agree to include in the draft ordinance a means to increase funding for enforcement activities?**

WSDOT Highway Runoff

The Washington State Department of Transportation (WSDOT) is currently working with Ecology to develop and adopt a highway runoff manual. The manual will contain design, operation and maintenance requirements for new construction. Current WSDOT design criteria may not meet local drainage manual requirements. Through watershed and urban bay planning activities, the County and other local jurisdictions have dedicated many hours and much money for protecting waterways from contaminants delivered by local stormwater systems. However, as you are aware, stormwater from WSDOT right-of-ways represents a large portion of the total runoff to the Deschutes River, Capitol Lake and Budd Inlet. Because I-5 and SR 101 are both within watershed and urban bay management areas, the County has the opportunity to propose that WSDOT incorporate more stringent standards through "Roadside Management Plans" within these areas. **In conjunction with other local jurisdictions, will the County agree to take the lead on writing and submitting such a proposal to WSDOT?** (A proposal might be as easy and brief as suggesting WSDOT meet best management practices prescribed in the new local drainage manual.)

Environmental Education

In addition to the regional drainage manual and the County's environmental education library, a handbook containing water quality policies (and possibly educational information, best management practices, building code information, etc.) would be beneficial to developers, to zoning officials and to staff responsible for design review. **Will the County consider organizing and distributing such a manual?**

This year, the County and other local jurisdictions bought airtime on the local cable t.v. channel. Television coverage for this year includes County Commission meetings during which viewers are able to phone in questions. Future meeting agendas will be reviewed, and

specific meetings identified as those most likely to be aired. Thurston County's growth rate has brought to the forefront many environmental issues in need of citizen input. **As an element of the Action Plan, will the County Department of Health formally recommend (or encourage to to the extent possible) that one or more of the televised meetings include discussion on key environmental issues being addressed in the Budd/Deschutes basin?**

Two County parks on Budd Inlet, Priest Point and Burfoot Parks, both have maintained trails providing beach access. The beach at Priest Point Park posts a warning that shellfish are contaminated. **Will the County Parks Department also post environmental education signs and/or interpretive displays (e.g., detailing how Priest Point Park shellfish became contaminated)?**

Fecal Contamination

The County administers a limited volunteer shellfish sampling program. **Will the County agree to directly contact residents living in areas of concern to solicit their involvement?** (Areas of concern include beaches near package wastewater treatment plants, between Butler and Tykle Coves, Athens Beach.) **When a private beach is found to be contaminated, what followup action does the County typically take?**

The County is planning to upgrade the Tamoshan package wastewater treatment plant. Improvements will include aeration and decreasing discharges of nutrients and fecals. **When do you estimate the improvements will be made?**

Thank you again for taking time from your busy schedule to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any qestions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass
Budd Inlet Action
Plan Coordinator

mv/
cc: Terry Rogers, County Parks
Greg Grunenfelder, County Health
Clint Dice, County Public Works
Jay Armstrong, County Public Works
Michael Rylko, EPA

THURSTON COUNTY
WASHINGTON
SINCE 1852

COUNTY COMMISSIONERS
George L. Barner, Jr.
District One
Diane Oberquell
District Two
Les Eldridge
District Three

OFFICE OF WATER QUALITY
AND RESOURCE MANAGEMENT

Linda Hoffman, Director

September 6, 1990

Ms. Melany Vorass
Budd Inlet Action Plan Coordinator
Washington State Department of Ecology
7272 Cleanwater Lane Mail Stop: LU-11
Olympia, WA 98504

Dear Melany:

Thank you for your assistance in framing and responding to questions about Thurston County activities relating to the Budd Inlet Action Plan. The following are responses to your questions with the exception of those pertaining to the Tamosham wastewater treatment plant and above ground storage tanks. I understand you will talk to Clint Dice, Public Works, and the Public Works Building Division on those issues.

Thurston Regional Drainage Manual

The manual will be adopted in late-1990 and will be in use by 1991. Each local jurisdiction will be responsible for determining the mechanism by which the manual will be implemented; those mechanisms have yet to be decided. To ensure adequate funding for implementation of all aspects of the manual, each jurisdiction will be responsible for identifying their own funding sources; this will be part of the utility budget process.

Funding of program education and enforcement activities is a priority, but monies for these elements have not yet been "earmarked;" county staff are dedicated to, at the very least, ensuring improved training for new staff, providing workshops for design engineers and other staff education efforts. As above, resources dedicated to these elements of the program would be a separate utility budget process for each jurisdiction.

Operation and maintenance requirements are included in the manual for facilities that are part of an overall project undergoing permit review. The manual covers public and private facilities. Additional policies are being developed to address maintenance of stormwater systems that are not part of a project reviewed in accordance with the new manual.

The completion of an inventory of private and public systems is expected August, 1990.

The drainage manual requires sediments to be disposed but does not specify at this time the method of disposal.

Basin Planning

The Ecology grant contract under which Thurston County will begin the first phase of Budd/Deschutes watershed planning was signed in early-August, 1990. Under this contract, water quality data is being collected and analyzed, and will be used to develop the plan. Throughout this and other data collection activities, where problems are identified, the County plans to take immediate actions to identify upland sources and drainages of contamination.

The County is also a subcontractor to the City of Olympia for water quality monitoring in support of stormwater basin plans for Indian/Moxlie and Percival Creeks.

Wetland Feasibility Study

Earlier this summer, the County completed an inventory of stormdrains discharging to Capitol Lake. Sediment sampling was not a part of the survey, though this is likely to occur under watershed planning activities. As data is collected through watershed planning activities, the County will begin to identify, prioritize and map potential "upstream" contaminant sources. The data collected will be compiled as a "Data Collection and Analysis Plan." This plan will be used to determine future water and sediment sampling needs. Thurston County has subcontracted the Squaxin Island Tribe to develop a regional geographic information system (GIS). Data collected will become part of the GIS.

As the Data Collection and Analysis Plan is developed, any sediment sampling outlined will reference the Puget Sound Protocols. Source identification will be done within the time permitted by funding.

WQ Policies and Ordinances

County directors are proposing a variety of budget additions for 1991, including increased funding for improved enforcement of the regional Shoreline Master Plan, SEPA, building codes, erosion policies, etc. The budget will be reviewed and adopted during October - December, 1990.

The County Stormwater Utility has given high priority to developing an erosion control ordinance. County board members support the effort, and adoption of the ordinance is expected by late-1990. There are no foreseeable delays to meeting this target date. The ordinance will provide enforcement authority. Various funding sources to support enforcement activities are being examined and will be addressed as part of the adoption process.

WSDOT Highway Runoff

The County cannot at this time commit to taking the lead on writing and submitting a "Roadside Management Plan" proposal to WSDOT. Such an activity may receive higher priority as watershed planning efforts continue. However, upon completion of the Indian/Moxlie stormwater study, Thurston County's recommendations to the City of Olympia could potentially include a suggestion that such a plan be proposed.

Environmental Education

Informational materials containing local ordinances, policies, educational information, BMPs, building code information, etc. are indeed valuable to developers, design reviewers, zoning officials, etc. The County will continue the longterm project of organizing and providing informational handbooks to staff and the public. Though many of the materials would (in varying degrees) address environmental protection, there are no plans to compile a manual with water quality issues as its primary focus.

As part of the watershed planning efforts, the County would consider televising a Commission meeting during which environmental issues in the Budd/Deschutes basin would be the focus. This could be carried out as an element of the "Public Information Plan" portion of the program.

Priest Point Park is a City of Olympia park.

Fecal Contamination

To the extent funding will allow, the County is willing to formally encourage citizens to conduct volunteer shellfish sampling, specifically targeting residents living near "package" wastewater treatment plants.

When high levels of fecal contamination are detected, the County typically performs follow-up activities, including sampling, in order to identify the source.

I hope this letter adequately responds to your questions. We are extremely supportive of the work on the Budd Inlet Action

Sincerely,

Linda Hoffman

Linda Hoffman,
Director

MAINTENANCE POLICY DEVELOPMENT
SCOPE OF WORK

PROJECT OVERVIEW:

Most private drainage facilities within the County receive little or no maintenance. When a problem with these facilities develops, most people turn to the County for assistance. At the present time, the County is unable to provide maintenance assistance, and generally provides only minimal technical assistance. New policies will be developed relating to the maintenance responsibilities of private drainage facilities, and the funding for maintenance expense. These policies will be developed in coordination with the Surface Water Commission, Road Division and Drainage Districts.

Private drainage facilities that fall under this scope of work include retention/detention ponds in subdivisions, catch basins, vaults in commercial/industrial facilities, old drainage district ditches, private drainage ponds, swales, wetlands, culverts and others. Most private facilities are usually working in conjunction with some public facility.

In addition to a lack of policies relating to private facility maintenance, there is a great need to improve the public response process for service requests. At this time there is frequently confusion on how drainage requests should be responded to. This project is detailed in the Drainage Complaint Response Scope of Work.

TASK 1. PRIVATE FACILITY DATA BASE

To develop policies pertaining to private drainage facilities, we need to identify how many, what type, what condition, and who maintains the existing facilities. The data base will be limited to the existing surface water area boundary, and may be further restricted to identified problem areas.

- *There will be a significant amount of data that is unavailable, and the policy development will be based somewhat on "best guesses".
- Review existing inventory put together by students.
- Gather all drainage district X-sections, boundary, and topo info from assessor's.
- Contact local consultants regarding drainage plans for facilities for mini markets, offices, shops, etc.
- Contact DOE to determine if any discharge permits are issued within the boundary.
- Contact private pumpers to obtain a list of customers.
- Contact attorneys to obtain list of private drainage litigations.

TASK 1, CONT'D.

- o Review any new inventory information and enter into the data base (includes field review).
- o Gather copies of past drainage maintenance requests.
- o Gather all existing regulations and policies pertaining to drainage facilities in Thurston County (RCW's, UBC, Comp. plan, Platting Subdivision Ordinance, etc.).
- o Gather maintenance information from other jurisdictions.
- o Gather any past correspondence from prosecutor's office relating to drainage problems, obtain any case law.
- o Interview County Staff for a list of past drainage complaints/problems in the North County area.

TOTAL HOURS: 250
ESTIMATED COMPLETION DATE: July 1990

TASK 2. MAINTENANCE POLICY DEVELOPMENT

- o Develop maintenance action criteria, ie: County facility damage, private property damage, ground/surface water contamination, etc.
- o Compare level of maintenance problem to action criteria, to develop an action prioritization list.
- o Identify general categories of maintenance needs, then prepare a maintenance frequency and cost estimate.
- o Review legal responsibilities & prohibitions with prosecutor's office.
- o Draft private facility maintenance schedule, cost, responsibility alternatives.

TOTAL HOURS: 115
ESTIMATED COMPLETION DATE: August 1990

TASK 3. MAINTENANCE POLICY REVIEW/APPROVAL

- o Review the facility maintenance alternatives in-house: PW staff, OWQ, Policy Group, and Board.
- o Make revisions.
- o Meet with affected drainage districts to review alternatives and obtain input.
- o Meet with Surface Water Commission to review alternatives and obtain input.
- o Meet with Tom Clingman to review alternatives and see how that fits in with the rate proposals.
- o Meet directly with some homeowners associations to obtain their input.
- o Conduct a survey of homeowners?
- o Prepare a summary of special interest groups comments and recommendations, prepare a staff recommendation to take to Policy Group, then Board.
- o Policy Group and Board briefings.
- o Draft final maintenance policy.
- o Follow-up with Tom Clingman regarding rate implications.

TOTAL HOURS: 160
ESTIMATED COMPLETION DATE: October 1990

PROJECT/TASKS	PRELIMINARY SCHEDULE	NEW SCHEDULE
VACTOR WASTE		
1. Preliminary Report Complete	May 7	May 7
2. Engineering Report Complete	Mid-June	August
3. Review/Design Selection	July	September
4. Final Facility Design Complete	Mid-October	January
5. Bid Package Prepared; Contract Awarded	Mid-December	May, 1991
COMPLAINT RESPONSE/MAINTENANCE POLICY DEVELOPMENT		
1. Collect Data for Policy Development	May	June/July
2. Complete Policy Development *	October	August
3. Complete Maintenance Policy Review and Approval	January	Mid-October
4. Complete Complaint Response Policies and Procedures	May, 1991	Mid-June

* The data collection may take longer than July, due to staffing. We run some risk of developing policy without the full information gathered.

GRANT NO. TAX 91004
PROJECT TITLE: BUDD/DESCHUTES WATERSHED MONITORING
GRANTEE NAME: THURSTON COUNTY HEALTH DEPARTMENT

PROJECT DESCRIPTION

In compliance with the Puget Sound Water Quality Management Plan, the GRANTEE undertook a ranking of its Puget Sound watersheds in 1988. Because three of the Thurston County watersheds (Henderson, Eld, and Totten/Little Skookum) were already designated as Early Action Watersheds, only the Budd/Deschutes and Nisqually watersheds remained to be ranked. The Thurston County Watershed Ranking Committee prioritized the Budd/Deschutes watershed as the number 1 priority for the development of a watershed action plan to deal with and control non-point sources of pollution and protect beneficial uses.

Prior to establishing a watershed committee to develop an action plan, the GRANTEE recognized the fundamental need to gather as much information as possible regarding the current water quality status in the watershed. The purpose of this project is to characterize the water quality in the basin and identify the major influences detrimentally impacting water quality. The resulting project will provide a basis for the watershed committee to develop an action plan to address the non-point sources of pollution identified within the basin.

This grant will provide water quality data to be used in satisfying the requirements of Chapter 400-12 WAC, "Local Planning and Management of Nonpoint Source Pollution." A technical advisory committee will be formed to review and comment on the various aspects of this project. Following the completion of this water quality data collection project, the next phase will be to form the Watershed Management Committee who will use this and other data to form the Budd-Deschutes Watershed Management Plan.

SCOPE OF WORK

TASK 1 - DATA COLLECTION AND ANALYSIS PLAN

The GRANTEE will develop a Data Collection and Analysis Plan (DCAP) and a Quality Assurance/Quality Control (QA/QC) Plan which will outline the sampling stations, parameters, frequency, timing, protocols, and other information as needed. The DEPARTMENT will review, comment and approve the plans according to the draft report "Guidelines and Specifications for Preparing Quality Assurance Project Plans" dated January 5, 1990. The DCAP will be developed from a review of existing information on the basin water quality. This information will be drawn from a number of sources including those applicable sources listed in the List of References for the Thurston County Watershed Ranking Committee Final Report, November, 1988. Sampling stations and sampling and analysis methods will be consistent with the applicable requirements of the DEPARTMENT publication "Guidance for Conducting Water Quality Assessments". This document further refers to following the guidance

in the Puget Sound Estuary Program's Protocols, where applicable. The purpose of following the applicable requirements of these documents ensures consistency in the type of water quality data collected in the Puget Sound region.

Completion Date: October 31, 1990

Estimated Cost: $9,960

Required Performance:

A. Data Collection and Analysis Plan

B. Quality Assurance/Quality Control Plan

TASK 2 - WATER QUALITY DATA COLLECTION

Task 2 cannot be started until the products of Task 1 have been approved by the DEPARTMENT. The GRANTEE will conduct water quality monitoring efforts in accordance with the approved DCAP and QA/QC developed in Task 1. While the DCAP will fully describe the activities to be accomplished under this task, it is currently envisioned this effort would include routine ambient monitoring throughout the watershed as well as more intensive monitoring in areas of concern in attempts to identify pollution sources. The area encompassed by this monitoring effort would include Budd Inlet, Capitol Lake, and the Deschutes River basin south to the Lewis County boundary. Parameters most likely to be included in the effort include:

fecal coliform
temperature
dissolved oxygen
conductivity
Ph
turbidity (at selected stations)
nutrients (at selected stations)
chemical analysis of sediments (one-time grab samples at selected locations)

Completion Date: November 30, 1991

Estimated Cost: $251,509

Required Performance: Quarterly reports to the DEPARTMENT, which include all the data collected and analyzed to that time. These quarterly reports are due 15 days after the end of the calendar quarter. After the end of the first year of data collection, that data will be presented in a report for presentation to the project technical advisory committee (TAC). The purpose

of the TAC meeting will be to determine if the monitoring program is providing the information that is needed to develop the watershed action plan that will follow this project. Further information on the annual report format is given in SPECIAL CONDITION 11.

TASK 3 - UPPER DESCHUTES CHANNEL CHARACTERIZATION

The draft River Basin Team report on the Deschutes basin identified sedimentation problems in the upper Deschutes watershed as one of the most significant impacts to the river's water quality. In order to better quantify this issue, special emphasis will be placed on gathering data relative to stream channel characterization in the upper watershed. This task will include:

- Collection of hydrological data including rainfall, stream flows and discharge.
- Collection of physical data including substrate, bank stability, fine sediment embeddedness, large organic debris, fish habitat units, stream width and depth, gradient, and total suspended solids.
- Development of a stream mapping system which indicates adjacent land uses, erosion source, riparian vegetation, and instream resources.

Completion Date: August 31, 1991

Estimated Cost: $51,650

Required Performance: Task 3 data report including an evaluation plan to outline an effective means of using the collected data for future watershed planning activities and identifying watershed rehabilitation projects.

TASK 4: DEVELOPMENT OF BACKGROUND INFORMATION

The GRANTEE will prepare the following information to be used by the Watershed Management Committee to develop a watershed action plan in the next phase following this grant :

- summary of land use trends, activities and projections
- discussion of beneficial uses
- program development plan which will provide a scope of work for the development of the watershed action plan by the future watershed management committee

The GRANTEE will ensure that this task does not duplicate efforts of the River Basin Team Study.

GRANT NO. TAX 91004
PROJECT TITLE: BUDD/DESCHUTES WATERSHED MONITORING
GRANTEE NAME: THURSTON COUNTY HEALTH DEPARTMENT

Completion Date: September 31, 1991

Estimated cost: $11,543

Required Performance;

A. Development of background information which will be incorporated into the final water quality report (Task 5).

B. Development of a program plan outlining a scope of work for development of the watershed action plan and funding strategy for the next phase of watershed management.

TASK 5: WATER QUALITY REPORT DEVELOPMENT

The GRANTEE will develop a comprehensive water quality report for the Budd/Deschutes watershed describing the data and information resulting from the efforts of Tasks 1, 2, 3, and 4 above. The report will be intended for use by the Watershed Management Committee in developing an Action Plan for the watershed. The report will provide background information on the watershed area, summarize the sources of nonpoint pollution identified through the project's efforts, and describe the overall status of the water quality in the basin. This data will be used in the next phase to develop a water quality assessment according to the requirements of Chapter 400-12 WAC.

Completion Date: January 31, 1992

Estimated Cost: $25,578

Required Performance: Final water quality report for the Budd/Deschutes watershed.

TASK 6: GRANT MANAGEMENT, COORDINATION AND PROGRAM SUPPORT

The GRANTEE shall provide overall grant administration and operational support for the undertaking of this grant project. Elements of this task include:

- provide overall grant and subcontract management
- provide grant accounting and liaison with Ecology
- coordinate and monitor the progress of various tasks and elements
- provide secretarial, office, and goods and services support for all related grant activities of the Health Department and Office of Water Quality
- coordinate with the PSWQA and other agencies or jurisdictions on programs and activities related to the watershed program (eg. stormwater plans, Capitol Lake wetlands feasibility study, Budd

Inlet Urban Bay Action Plan, etc.).

- o A technical advisory committee (TAC) will be formed to review and comment on various aspects of the project including the data collection program, whether it needs to be modified during the project and how the data will meet the needs of the project. The membership of the TAC will be selected by the GRANTEE upon approval by the DEPARTMENT.

Estimated Cost: $69,760

Required Performance:

A. quarterly and final reports to the DEPARTMENT
B. periodic billings
C. maintenance of records sufficient for audit
D. meetings of the TAC as needed

RISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Dick Malin, Dir.
Engineering & Planning
Port of Olympia
P.O. Box 827
Olympia, WA 98507

Dear Dick,

Thank you for meeting with Michael Jacobson (PTI) and me in March. Several planned Port activities exemplify a strong willingness to ensure required environmental protection programs are put into place. In keeping with these efforts, we discussed in our meeting actions that might be taken to complement and expedite existing programs. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, as well as resource constraints and/or other limiting factors. Please also clarify any inaccuracies found below.

East Bay Marine Sewage Pumpout Facility

The Port recognizes that the marine sewage pumpout facility at East Bay Marina is frequently inoperative. To remedy this, funding for a booster pump is to be included in the Port's 1990 budget. The booster pump will be in operation in late-spring or early-summer, 1990. **Has the Port applied for a State Parks and Recreation grant to fund the project? Please provide a specific target date for installation.**

East Bay Dissolved Oxygen Monitors and Aerators

As a condition of dredging for East Bay Marina, the Port is responsible for the operation and maintenance of continuous dissolved oxygen (DO) monitors and aerators located there. Because the monitors are not reliable, the Corps allowed the Port to conduct manual titrations using the "Winkler" method. This method cannot be considered continuous monitoring, as required, and is performed on an irregular schedule through critical late-summer months. This year, the Corps provided the Port with a portable DO probe with which to conduct a more in-depth water quality analysis, and to thus determine how effective the aerators are. **Does the Port plan to continue to perform manual titrations in addition to using the portable probe? For either or both methods, will the Port agree to follow a detailed monitoring schedule, particularly during critical summer months? If available, please provide the schedule you anticipate using.**

A related issue is that of marina live-aboards turning off aerators during evening hours. Boat owners frequently shut the aerators off, stating the equipment is noisy and stirs waters to a foam that adheres to boathulls. Port staff assert the switchbox cannot be locked for safety reasons. **Will the Port agree to install mufflers on the systems or to address this problem in another way? Will the Port also place nearby educational signs stating the purpose and necessity of the aerators? How soon can this be done?**

Stormwater Management / NPDES Permit Application

The Port has hired a consultant to design a sampling plan for gathering information needed to determine NPDES permit limitations and necessary treatment for stormwater. **When will sampling be conducted and when will the data be available? Please give a target date for submitting the NPDES permit application. When finalized, please also provide the sampling plan, as recommended by your consultant.**

The Port is to be commended for completing several logyard paving projects aimed to reduce Port property pollutants from entering Budd Inlet. A sizeable log storage area is still in need of paving. **Please provide a target date for budgeting and completing this project.**

Underground Storage Tank (UST) Removal

In this year's budget, the Port allocated funding to remove remaining USTs. **Please provide a target date for completing this project.**

Land Lease Requirements

The Port is very interested in ensuring tenants meet requirements of all environmental laws and policies to prevent further contamination to Port-owned property. **In keeping with this, will the Port include in lease language references to local, state and federal natural resource agency requirements (e.g., AST and storm water BMPs, water quality technical guidance for log sort yards, and/or a blanket statement)?**

Navigation Channel Dredging

The Port will fund 50% of studies needed prior to Corps-sponsored navigation channel widening project. **Does this 50% also apply to mitigation projects?**

West Bay Lografting

Lografting over Port-owned tidelands in West Bay directly affects habitat used by juvenile salmonids. The Port considers lografting in West Bay to be "market driven" and does not know of any authority it may have to minimize this practice. **Are there ways in which the Port could reduce the need for this practice? If so, what are they and when might they be implemented?**

Cascade Pole

The Port will conduct sediment sampling off the north end of the Cascade Pole site. The data will not only be used to determine a final cleanup plan, but will also be a valuable addition to the Budd Inlet database. **What is the schedule for this sampling?**

The Port is also organizing a committee to garner citizen input for Port decisions made on Cascade Pole cleanup activities. **Has a decision been made on how this group will function and on what their specific purpose will be? Do you anticipate the group will apply for a Public Information and Education (PIE) award from the Puget Sound Water Quality Authority? Will the Port formally encourage the group to coordinate closely with the Budd Inlet Citizen Advisory Committee on issues relating to the Cascade Pole site?**

Environmental Education

The Port owns, operates and maintains a marine sewage pumpout at East Bay Marina. The pumpout is well posted with user instructions provided by the State Department of Parks and Recreation. In addition to these signs, State Parks and Recreation now also provides environmental interpretation signs for use at pumpout sites and other marina areas. **Will the City post one of these signs at East Bay Marina?**

East Bay Sediment Fill

According to Section 404 of the Clean Water Act, fill material on the southeast portion of the Port peninsula is to be developed for water dependent uses. Several development proposals indicate the fill is being considered for siting non-water dependent developments. **How do these plans conform to the Section 404 dredging permit?**

Thank you again for taking time out of your busy schedule to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Eric Egge, Port of Olympia
Bill Backous, Ecology

915 Washington St. N.E.
Post Office Box 827
Olympia, Washington 98507-0827
206 586-6150
FAX 586-4653

PORT OF OLYMPIA USA

August 10, 1990

Department of Ecology
7272 Cleanwater Lane, LU-11
Olympia, WA 98504-6811

Attention: Melany Vorass

Dear Melany:

I am responding to your letter of June 6, regarding activities at the Port and the Budd Inlet Action Plan.

East Bay Marina Sewage Pumpout Facility:

Application was made to State Parks & Recreation for a grant to replace the existing pumpout facility. As soon as a grant is confirmed, we will implement a contract to replace the existing system.

East Bay Dissolved Oxygen Monitors and Aerators:

We plan to continue to perform manual titrations throughout the critical period. We are currently sampling twice weekly in the early mornings because DO levels still remain high. As DO levels fall, we will switch to daily sampling. Results are reported to the Corps as soon as the titrations are completed.

There is no practical way to muffle the noise from these aerators, though we have looked into many possibilities. We would have no problem with installing some sort of educational signage nearby. We could try signage at each switch box and see if this is effective.

Stormwater Management/NPDES Permit Application:

Sampling will be conducted during this winter's rainy season. A sampling plan will be submitted to Ecology prior to the rainy season. A copy will be forwarded to you.

Continued capital improvements on yard paving and drainage will depend upon the fiscal impact to the Port of the Cascade Pole cleanup. Much of the Port's funding is going to be directed at this cleanup effort. Given the limited capital funding outside of this effort, we will continue to pursue our paving and storm drainage program.

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Underground Storage Tank (UST) Removal:

The last two remaining underground fuel tanks are slated for removal in late August or early September of this year.

Land Lease Requirements:

Below is the standard language included in Port of Olympia leases:

"PETROLEUM, DANGEROUS, TOXIC AND HAZARDOUS MATERIALS. Tenant agrees to abide by all federal, state and local laws pertaining to the handling, storage, use and transportation of petroleum, dangerous, hazardous and toxic materials. (For purposes of this Agreement, wood waste shall be considered a dangerous material to be handled in accordance with the Department of Ecology's requirements or guidelines for wood waste disposal.) Tenant further agrees in the event of any occurrence in violation of such laws (including but not limited to, any action resulting in a spill, emission, accumulation, contamination or fire, whether discovered during the term of this Lease or after termination or renewal thereof), Tenant shall take all steps required by law and the appropriate authorities to clean up and restore the premises, and any other contaminated or affected area, to the satisfaction of said authorities and to provide a letter from said authorities to the Port certifying that the premises and affected areas have in fact been cleaned or restored and are presently in compliance with all federal, state and local laws. Finally, Tenant agrees to indemnify the Port for any claims, damages, costs or professional fees incurred by the Port by reason of any event or occurrence involving petroleum, dangerous, toxic or hazardous wastes directly or indirectly attributable to Tenant's use of Port property."

In addition, please see attached Exhibit "A," also incorporated as part of the Port's standard lease document language.

Navigation Channel Dredging:

50% applies to studies done for the Feasibility Study. Actual mitigation under a federal project, if implemented, would be considered a project cost and would be funded at a 25% match by the Port.

West Bay Log Rafting:

Log rafting is done independently of Port operations and is beyond the Port's administrative jurisdiction.

Cascade Pole:

Sediment sampling is scheduled to begin this November. A Sampling & Analysis Plan is to be submitted to Ecology for comment on August 27.

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The Port Commission has selected 6 members from a number of applicants to serve in an advisory nature to the Commission. They will be making reports to the Commission as the study progresses.

P.I.E. funding is not available to a Port Advisory group.

The Port encourages the Advisory Committee to coordinate and receive input from any group or individual. The Committee shares this viewpoint.

Environmental Education:

The City will probably not be involved in any signage, but the Port of Olympia would certainly cooperate in any educational signage associated with the pumpout facility.

East Bay Sediment Fill:

This issue is not resolved at this time. We will respond at a later date.

If you have any further questions, please do not hesitate to contact me.

Sincerely,

R. O. Malin, P.E.
Director of Engineering & Planning

Attach. - 1

ROM/cbr

a:rm081001.90

EXHIBIT "A"

TOXIC, DANGEROUS AND HAZARDOUS SUBSTANCES STORAGE LICENSE
(License required for any material covered by
Dangerous Waste Regulations in WAC 173-303
as amended and 40 CFR Part 116-117 as amended,
copies are on file in the Port of Olympia offices)

Licensee: _____
Lease: _____
Term: _____ (Not to exceed 5 years.)
Fee: _____
Insurance: _____ The Port must be named insured and entitled notice prior to cancellation.

Renewable: For life of underlying lease so long as conditions below are met:

1. Facilities approved for installation and use:

_____
_____
_____

2. Preconstruction approvals required:

_____
_____

3. Preoccupancy approvals required:

_____
_____

4. Inspections required:
   a. _____
   _____
   b. At any time the Port has good reason to believe a problem may exist.
   c. At a minimum, all tanks shall be pressure tested at least once every five (5) years to assure no loss of product into the environment (air, soil, surface or ground water).
5. Materials authorized for storage:
   a. _____
   _____
   b. Any additional materials require the consent of the Port.
6. Additional terms:
   a. The Port Engineer shall have the right to terminate this license at any time and in his own discretion, if the facilities fail to meet all federal, state or local requirements or otherwise pose a hazard of unlawful contamination or pollution and such failures are not cured within thirty (30) days of written notice or such lesser time as appropriate under emergency circumstances.
   b. The licensee agrees to bear all costs of construction, operation, maintenance, inspection or repair of the approved facilities and to keep the same in good operating repair during the term of this license, and the cost of any cleanup or other activities required in the event of a spill, leak or other pollution causing event.

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c. The licensee agrees at any time that the approved facilities cease to be subject to a valid license agreement, for any reason, that the licensee shall, at its own cost, remove the facilities and restore the site to its original condition (including removal of all contaminated soils or water).

d. The Port shall have the right to terminate this license upon breach of any term herein or termination of the specified lease. Breach of any term of this license shall constitute a breach of the specified lease.

e. The licensee shall compensate the Port for all costs incurred by reason of any breach of this license.

LICENSEE:

By: _____
Title: _____
License Date: _____

PORT OF OLYMPIA;

By: _____
Title: _____

a:rm081001.90

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Jerry Hendrichs
Doug Baker
City of Tumwater
555 Israel Road SE
Tumwater, WA 98502

Dear Jerry and Doug:

Thank you for meeting with Michael Jacobson (PTI Environmental Services) and me in February. Several of Tumwater's current and planned activities exemplify a strong willingness to ensure progressive environmental protection programs are put into place at the local level. We discussed in our meeting actions that might be taken to complement these efforts. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, resource constraints and/or other comments on feasibility. Please also clarify any inaccuracies found below.

Regional Drainage Manual

In conjunction with other local jurisdictions, the City of Tumwater is in the process of assembling a manual containing design criteria and other requirements for stormwater management. The manual will be in use by August, 1990, and will be used for routine review of development. **To better ensure consistent use of the manual, will the City agree to adopt it by ordinance?**

The current draft manual does not define operation and maintenance requirements and to what extent education and enforcement are to be funded. **As part of the Action Plan, will staff agree to recommend to the City Council adopting and enforcing an ordinance (as part of the manual adoption or separately) or other means to ensure these elements of the program will be adequately funded for both private and public systems? Also, will the City strongly encourage other jurisdictions to formally adopt a similar means of funding these elements?**

Percival Creek Storm Drain Studies

The City of Tumwater is working with the City of Olympia to conduct storm drain studies in Percival Creek. The study is to be completed by the end of 1990, and data will be used to prioritize capital improvement needs. **To determine the longterm effectiveness of future capital improvement projects, is the City of Tumwater willing to work with Olympia to conduct sampling at regular intervals at locations sampled during the study?**

Capitol Lake Wetland Feasibility Study

The City is participating with other local and state agencies in preparing a Capitol Lake wetland feasibility study for legislative review. As part of the study, and to make improvements in Percival Cove, the lake will be drawn down in summer, 1990. The County plans to take advantage of the drawdown to conduct a storm drain survey. **Will the City coordinate with Olympia and the County in developing the scope of work so that data might also be used for source identification work in Percival Creek?**

Washington State Department of Transportation
Highway Runoff

The Washington State Department of Transportation (WSDOT) is currently working with Ecology to develop and adopt a highway runoff manual. The manual will contain design and O&M requirements for new construction. Current WSDOT design criteria may not meet local drainage manual requirements. Through watershed and urban bay planning activities, Tumwater and other local jurisdictions are dedicating many hours and much money to protecting waterways from contaminants delivered by local stormwater systems. As you are aware, WSDOT stormwater represents a large portion of runoff to the Deschutes River, Capitol Lake, Budd Inlet, and to local stormwater systems. Because I-5 and SR 101 are both within watershed and urban bay management areas, local jurisdictions have the opoprtunity to propose that WSDOT implement a more stringent "Roadside Management Plan" within these areas. **In conjunction with other local jurisdictions, will Tumwater agree to co-write and submit such a proposal to WSDOT?** (A proposal might be as easy and brief as suggesting WSDOT meet the requirements of the new local drainage manual.)

Water Quality Policies and Ordinances

The City recognizes increased resources are needed in order to adequately fund and staff inspection and enforcement activities to ensure requirements are adhered to under the Shoreline Master Program, SEPA conditions and building codes. The City specifically recognizes the need to increase resources to improve enforcement of new erosion and sedimentation requirements. **Will City staff examine potential funding sources for these activities and to submit recommendations to the City Council?**

Environmental Education

In addition to the regional drainage manual and the County's environmental education library, a handbook containing water quality policies (and possibly educational information, best management practices, building code information, etc.) would be beneficial to developers, to zoning officials and to staff responsible for design review. **As an Action Plan element, will the City work with other local jurisdictions to organize and distribute such a manual?**

With the City of Olympia, Tumwater is conducting storm drain surveys to identify problem drains and to prioritize capital improvement projects. However, high priority capital improvements would probably not take place until at least 1992, and lower priority drains may not be addressed for some time after that. Until the systems are upgraded, public awareness of street-to-waterway drains should be increased. **Will the City agree to help increase awareness by actively participating with neighborhoods to initiate storm drain stencilling and waste oil/antifreeze collection projects? In addition to this, will the City agree to assist other agencies in the distribution of storm drain posters (provided by Ecology) to businesses?**

The City of Olympia and Thurston County recently allocated funding for time on a local cable TV channel. Coverage for this year will include County Commission and possibly City Council meetings to which viewers will be able to phone in their questions. Future meeting agendas are being reviewed, and specific meetings will be identified as those most likely to be aired. Thurston regional growth has brought to the forefront many environmental issues in need of citizen input. **Will the City of Tumwater formally recommend that one or more of the televised meetings include discussion on key environmental issues being addressed by the City of Tumwater in the Budd/Deschutes basin? Does the City of Tumwater plan to fund televising council meetings?**

Thank you again for taking time out of your busy schedules to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committe members. The packet will also be included as an appenedix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Harold Robertson
Thurston Regional Planning

555 ISRAEL ROAD S.W.
TUMWATER, WA 98501

206/754-5855
INFORMATION

206/754-4120
MAYOR
COUNCIL
CITY ADMINISTRATOR

206/754-4130
FINANCE DIRECTOR

206/754-4133
UTILITIES

206/754-4140
ENGINEERING
PUBLIC WORKS

206/754-4180
COMMUNITY DEVELOPMENT
PLANNING
BUILDING
PARKS & RECREATION

206/754-4170
FIRE DEPARTMENT

206/754-4200
POLICE DEPARTMENT

206/754-4190
MUNICIPAL COURT

CITY OF TUMWATER
Washington's First Community.

June 25, 1990

Ms. Melaney Vorass
Budd Inlet Action Plan Coordinator
Department of Ecology
7272 Clearwater Lane, LU-11
Olympia, WA 98504-6811

SUBJECT: Budd Inlet Action Plan

Dear Ms. Vorass:

Jerry Hendricks and I have reviewed your letter of June 6, 1990 asking for specific Tumwater commitments in implementing the Budd Inlet Action Plan.

Before outlining our responses to your specific questions on commitments, I should make clear that most of these items will take review and approval from the City's Mayor and City Council given the substantial policy decisions involved.

Commitment #1

Question: To better ensure the consistent use of the Tumwater Stormwater Management Manual, will the City agree to adopt it by ordinance?

Response: Yes. Jerry Hendricks has intended that the implementing act be by ordinance.

Commitment #2

Question: Will staff recommend to Council an ordinance be adopted to ensure that the Action Plan elements are implemented for the Stormwater Manual dealing with operation, maintenance, education and enforcement for private and public systems?

Response: Staff will probably do this, 2but we reserve the right to change direction given further study on these issues later this year.

Commitment #3

Question: Will the City strongly encourage other jurisdictions to formally adopt ordinances and fund similar stormwater management programs?

Response: This is an area that would take City Council authorization and I can't make a commitment on this topic.

Commitment #4

Question: Regarding the Tumwater and Olympia storm drainage studies in Percival Creek, would the City be willing to work with Olympia to conduct samplings at regular intervals to determine the long-term effectiveness of future capital improvement projects?

Response: This could be a budget proposal put forward by the Public Works Department, but the question is what would be the cost? Without such a cost estimate, a commitment would be premature and in any event the Mayor and City Council must approve any commitment of funds. Also, I would think that DOE should also be a partner in such monitoring venture.

Commitment #5

Question: The County plans to conduct a storm drain survey for Capitol Lake when it is drawn down this summer. Is Tumwater willing to work with Olympia and the County to develop a scope of work so that the data might also be used for source identification work in Percival Creek?

Response: I am not clear how this would be accomplished since Percival Creek is not part of the Capitol Lake Project.

Commitment #6

Question: In conjunction with other local jurisdictions, would Tumwater agree to co-write and submit a proposal to the WSDOT to implement a more stringent "Roadside Management Plan" for I-5 and SR 101?

Response: This would be a proposal which I and Director Hendricks would favor and so this may be possible. City Council approval would be needed to authorize such an action.

Commitment #7

Question: Will the City staff examine potential funding sources for increased resources for inspection and enforcement activity relating to the Shoreline Master Program, SEPA conditions, building codes, and erosion/sedimentation requirements?

Response: Yes.

Commitment #8

Question: Will Tumwater work with other local jurisdictions to organize and distribute a Water Quality Policy Handbook to developers, zoning officials and staff responsible for design review?

Response: Possibly. This type of project could be a future item for consideration in our Development Standards Program.

Commitment #9

Question: Will Tumwater help increase citizen awareness of street-to-waterway drains through such programs as drain stencilling and oil/antifreeze collection projects?

Response: Yes. Public Works is prepared to recommend beginning this in 1991.

Commitment #10

Question: Will Tumwater formally recommend that the local access TV channel air a show on environmental issues addressed by Tumwater in the Budd/DesChutes River Basin?

Response: Such a recommendation would have to be approved by the City Council. I am uncertain of the effectiveness of this media approach.

Commitment #11

Question: Does Tumwater plan to fund televising Council meetings?

Response: Not to my knowledge.

I hope that this letter is helpful in your completion of the Budd Inlet Action Plan. If you have any questions, please contact me.

Sincerely,

Doug Baker, AICP, Director
Community and Economic Development

cc: Leonard Smith
Jerry Hendricks

ltr\db90105

CHRISTINE O. GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

June 6, 1990

Mike Sharar
Tom Kolby
LOTT Regional Wastewater
Treatment Plant
P.O. Box 1967
Olympia, WA 98507-1967

Dear Mike and Tom:

Thank you for meeting with me in February. Several of LOTT's ongoing projects exemplify a strong willingness to ensure progressive environmental protection programs are put into place at the local level. In keeping with this enthusiasm, we discussed in our meeting actions that might be taken to complement existing programs. As a followup to the meeting, I have summarized below several of those potential activities which we hope become part of the draft Budd Inlet Action Plan. Please respond to the following meeting summary and questions, including (where applicable) target dates, potential funding sources, as well as resource constraints and/or other limiting factors. Please also clarify any inaccuracies found below.

Water and Sediment Quality Sampling & Analysis

LOTT currently conducts sediment and water column sampling at 5 stations in Budd Inlet. In order for the data to be used conclusively in other studies, sampling and lab protocols may need to be reviewed. **If LOTT's current sampling procedures differ from EPA's "Puget Sound Protocols" (which are currently widely used and accepted), will LOTT consider incorporating the EPA procedures?**

LOTT is in the process of having their lab accredited, and have offered to add parameters to sampling efforts, as needed. Ecology is moving toward incorporating toxics requirements in new permits. **To obtain baseline data for LOTT's new permit in 1992, are there plans to add new parameters to monthly water and sediment sampling and analysis; if so, what parameters?**

Nutrient Loading/Abatement Studies

LOTT recognizes that documenting "before" and "after" conditions in Budd Inlet, relative to LOTT's nitrogen removal effort, is critical to understanding the long-term environmental benefits achieved. Earlier this year, LOTT and the Squaxin Island Tribe co-wrote and submitted a Centennial Clean Water Fund (CCWF) grant proposal to partially fund a

nutrient loading/abatement study that was to be largely sponsored by Seagrant. Because Seagrant monies were denied, LOTT withdrew the proposal. However, there remains considerable interest and support for the study. **Can the Budd Inlet Action Plan state in certain terms that LOTT plans to submit a retailored grant proposal during the next grant application period?**

Infiltration and Inflow (I&I) and Combined Sewer Overflow (CSO) Reduction Plans

Per NPDES requirement, LOTT submitted to Ecology an I&I reduction plan in December, 1989 which describes how storm water infiltration to the sewer system will be minimized. Ecology has also required LOTT to submit a CSO reduction plan. Definitions of CSOs differ between the agencies, and LOTT believes the I&I plan could also be used to fulfill the CSO Reduction Plan requirement. LOTT plans to schedule a meeting with Ecology to clarify requirements. **Please provide a specific target date for the meeting or for otherwise addressing this issue.**

WSDOT Highway Runoff

The Washington State Department of Transportation (WSDOT) is currently working with Ecology to develop and adopt a highway runoff manual. The manual will contain design and O&M requirements for new construction, and will address water quantity and quality. As you are aware, WSDOT stormwater infiltration represents a large portion of total runoff to downtown Olympia sewer drains. Because I-5 and SR 101 are both within watershed and urban bay management areas, local jurisdictions have the opportunity to propose that WSDOT implement a more stringent "Roadside Management Plan" within these areas. Through the Budd Inlet Action Plan, interagency work group (IAWG) members representing local jurisdictions have been asked to consider drafting such a proposal. Presumably, LOTT's I&I and CSO Reduction plans address highway runoff. **Within these plans or separately, will staff consider recommending to LOTT administrators the adoption of roadside management plans as a partial means to reducing I&I and CSO events?**

Ultraviolet (UV) Disinfection Pilot Project

Under a CCWF grant, LOTT has undertaken a pilot project using ultraviolet disinfection. Currently, the plant's primary disinfection system is through chlorination; in the past, the plant has experimented with the ozonation. The pilot project was recently completed, and LOTT partners agreed to submit to Ecology a revised engineering plan which will include UV disinfection. To allow time for the necessary revisions, Ecology has extended the deadline for submitting the engineering plan by two months. This extension will not alter the final date by which LOTT must have its improved system on line.

Pretreatment Program

LOTT submitted a pretreatment program plan to Ecology for approval. The plan met with general agreement between LOTT partners and, once approved by Ecology, could be implemented almost immediately. Under the plan, LOTT will issue and administer pretreatment permits to facilities discharging industrial wastes to the WWTP. **Please provide a schedule for implementation and a current listing of dischargers.**

Environmental Education

The County and other local jurisdictions recently allocated funding for time on a local cable t.v. channel. Coverage for this year will include County Commission and City Council meetings, and viewers will be able to phone in their questions. Future meeting agendas are now being reviewed, and specific meetings will be identified as those most likely to be aired. As rates increase to fund LOTT facility improvements, citizens are becoming more interested in the plant's efficiency. Advertising tours of the LOTT facility has not generated the desired level of public interest. **Will LOTT consider televising administrative meetings and/or developing presentations on how citizens can reduce waste to the plant and thus reduce their cost (or other educational information)?**

Thank you again for taking time out of your busy schedules to meet with us and to respond to this letter. Similar letters are being sent to other Budd Inlet workgroup members. These letters and their responses will be assembled and mailed as a packet to all workgroup and citizen advisory committee members. The packet will also be included as an appendix to the final Budd Inlet Action Plan.

Please submit your written response by June 22, 1990. Also, please feel free to call me with any questions and/or if you wish to discuss any part of this letter (586-5554).

Sincerely,

Melany Vorass

Melany Vorass
Budd Inlet Action
Plan Coordinator

cc: Rob Lowe, Industrial Waste Supv, LOTT
Ross Allan, Plant Supervisor, LOTT
Bill Backous, Ecology
Pat Lee, Ecology

LOTT
Wastewater
Management
Program

P.O. Box 1967
Olympia, WA 98507
(206) 753-8291

a partnership of
Lacey
Olympia
Tumwater, and
Thurston County

August 21, 1990

Melany Vorass
Budd Inlet Action Plan Coordinator
Washington State Department of Ecology
7272 Cleanwater Lane, LU-11
Olympia, WA 98504-6811

Dear Melany:

The following is in response to your questions concerning various issues in the Budd Inlet Action Plan. In general, funding for all LOTT activities comes from LOTT rate payers. Certain specific, primarily capital, programs receive grant assistance from the Washington State Department of Ecology Cleanwater Fund. At present, the schedule for nearly all of our activities is driven by the schedule included in our NPDES Permit. Attachment "A" to this letter is a summary copy of the current dates and activities in that permit.

The following information is arranged according to your letter.

Water and Sediment quality Sampling and Analysis

LOTT uses EPA's "Puget Sound Protocols" for testing. Some testing is done for which protocols are not yet available. LOTT will adopt these as they become available.

LOTT initiated a Sediment and Water Sampling Program of the receiving water. In the current NPDES Permit, DOE makes the LOTT program a requirement. LOTT has consistently asked DOE about other testing parameters, but we currently do not have any additional testing planned as we have not heard of any new specific requirement. We are aware of DOE's interest in more sediment testing.

Nutrient Loading/Abatement Studies

LOTT did seek grant funding for an extension of the nutrient studies preformed by Dr. Charles Boatman, which led to the nitrogen removal requirement at LOTT. The grant request effort, in the spring of 1990, relied substantially on Sea Grant funding which was denied. This denial forced us to withdraw our request for Centennial Cleanwater Funds since without the Sea Grant monies the research program was incomplete.

Work is underway by Dr. Charles Boatman to redesign the program so it can be accomplished without Sea Grant funding. At this time, the LOTT Partners have not pledged rate payer money to support additional nutrient research since capital program requirements have already resulted in a doubling of the LOTT rate between January of 1989, and January of 1990.

At this point, it would be inappropriate to say categorically that LOTT will submit a revised grant proposal during the next grant application period. LOTT's application will be dependent on the total funding package which can be assembled.

Infiltration and Inflow (I&I) and Combined Sewer Overflow (CSO) Reduction Plans

As you will recall from our discussion, characteristics of the LOTT system confound the normal understandings of I&I and CSO. It is our intention to meet with Ecology to see if we can reach an understanding concerning our NPDES, CSO and I&I requirements which places the emphases on efforts to mitigate inflow.

We have not pursued scheduling this meeting during spring or summer. We are hopeful that by year end a meeting can be scheduled and resolution reached. Meanwhile, the City of Olympia is moving forward with inflow reduction efforts which have been documented in our regular NPDES reporting.

WSDOT Highway Runoff

LOTT's I&I reduction plans do not specifically address highway runoff. This issue would be handled by appropriate partner jurisdictions, primarily the City of Olympia. You may wish to contact the City of Olympia Assistant Director of Public Works, Mr. John Cunningham (753-8362), for more information.

Ultraviolet (UV) Disinfection Pilot Project

An initial test of ultraviolet disinfection was conducted by LOTT in cooperation with Trojan Industries between the summer of 1988 and fall of 1989. As a result of that effort, the Department of Ecology urged the LOTT partners to consider including ultraviolet disinfection in the upgrade of the LOTT Treatment Plant with 50% funding from the Centennial Cleanwater Fund. The LOTT partners conducted a 90 day preliminary design study in spring of 1990 to determine the feasibility of ultraviolet disinfection at LOTT. That effort resulted in the decision by the LOTT partners to include ultraviolet disinfection in the upgrade.

Currently, the LOTT partners are engaged in designing an ultraviolet disinfection facility. Part of that design is a pilot test which will determine the size of the disinfection system to be installed at LOTT. That pilot study will begin in September and run six months.

Consideration of ultraviolet disinfection effected numerous NPDES dates. Attachment "A" is a summary of the schedule which resulted from those considerations.

Pretreatment Program

There is no definite timetable for implementation of elements of the pretreatment program. Issuing of Industrial Discharge Permits can begin following approval of the program by the Department of Ecology and adoption of legal authority for pretreatment regulation by the local agencies. To date, we have not received DOE approval although we believe our proposal meets all DOE requirements.

The industrial waste survey identified the following significant industrial dischargers:

Hardel Mutual Plywood - Georgia Pacific Corp. - Continental Can Co. - Pabst Brewing Co. - Columbia Bottlers - Louis Kemp Seafoods - Ellehammer Packaging - Dart Container Corp.

The Pabst Brewery, Continental Can and Georgia Pacific currently operate under state permits and specific agreements with the local agencies. These existing agreements could be the basis for local Industrial Discharge Permits when the program is implemented.

The survey also identified 25 minor dischargers including printers, photo processors, and dry cleaners. Permits will be issued to significant and minor dischargers. Pretreatment may not be required of all permitted dischargers. The Industrial Waste Survey will be continually updated to identify new significant dischargers.

DEFINITIONS

(V) SIGNIFICANT INDUSTRIAL USER OR DISCHARGER - An industrial user of the municipal sewer system who:

1. Is subject to national pretreatment standards promulgated under Section 307(b) or (c) of the Clean Water Act; or

2. Has in its wastes any priority toxic pollutants listed in 40 CFR part 403 or appendix A; or

3. Has in its wastes toxic pollutants as defined pursuant to Section 307 of the Act; or

4. Has a discharge flow of 25,000 gallons or more per average work day; or

5. Has a discharge flow greater than 5 percent of the flow in the City's wastewater treatment system; or

6. Is determined by the Director to have a significant impact, either singly or in combination with other contributing industries, on the wastewater treatment system, the quality of sludge, the system's effluent quality, or air emissions generated by the system.

(j) MINOR INDUSTRIAL DISCHARGER OR USER; a non-categorical industrial or commercial user of the POTW, identified by the Director as having the potential to spill or discharge chemicals or slugs of wastewater to the municipal wastewater system, or the potential to discharge a waste stream that, when taken into account with the waste streams of other industrial users, may have a significant impact on the POTW.

Environmental Education

Advertising of Treatment Plant tours has not received a high response. LOTT's work with the local schools, colleges, and interested citizens, however, has been very successful. Tours are offered on a regular basis to schools and an extremely high participation has been received.

The LOTT Advisory Committee is very interested in pursuing worthwhile public information efforts. Any proposals you may have will be welcome. Our only limitation is the same you encounter everywhere: staff and budget. Please call us if you have other information needs.

Sincerely,

Mike Sharar

D. Michael Sharar
LOTT Project Administrator

Tom Kolby
LOTT Plant Manager

DMS/sd

Attachment

UV GO REVISED

Resubmit Hydraulic
Engineering Report ..... (Late Summer)

Submit Final PS&E for Review
and Approval
Hydraulic Improvements ..... Oct 30, 1990

Submit Plan of Operation
Hydraulic Improvements ..... Oct 30, 1990

Bid Award
Offsite Preload ..... Jan 30, 1991

Submit Draft PS&E for Review
Nitrogen Removal Facility ..... (Early Spring)

Submit Final PS&E for Review
Nitrogen Removal Facility ..... Jun 1, 1991

Submit Plan of Operation
Nitrogen Removal Facility ..... Jun 1, 1991

Bid Award
Offsite Land Pipeline ..... Aug 30, 1991

Bid Award
Nitrogen Removal Facility ..... Oct 1, 1991

Bid Award
Offshore Pipeline ..... Oct 30, 1991

Submit Final O&M Manual
Nitrogen Removal Facility ..... Dec 1, 1992

Substantial Completion
Nitrogen Removal Facility ..... Feb 28, 1993

Discontinue Routine Use
of Fiddlehead Discharge ..... Feb 28, 1993

Nitrogen Facility on-line
Meeting Discharge Limits ..... June 1, 1993

Complete Construction
Nitrogen Removal Facility ..... Aug 30, 1993

APPENDIX B

Available Funding Sources: Urban Bay Action Plan Implementation

AVAILABLE FUNDING SOURCES:
URBAN BAY ACTION PLAN IMPLEMENTATION

April, 1990

Prepared for the Department of Ecology
by Jo Anne Harrison

INTRODUCTION

The Washington State Department of Ecology (Ecology) recognizes that some local governments with limited financial resources face serious water pollution control needs. While the trend in solving environmental problems is toward equal responsibility between federal, state, and local governments, creative options in meeting local match requirements are available to help communities take advantage of funding sources without straining local revenues. Ecology stands ready to assist local governments in exploring these options in order to solve environmental problems in a manner that does not cause undue financial hardship.

"In-kind" expenses (services or materials contributed to the project by organizations or individuals) can count toward up to half of the local match for many grants. The local share may be funded by taxes, sales of bonds, formation and assessment of Local Improvement Districts, user fees, fines and penalties, construction permits and grants or loans from other state or federal agencies. The Washington State Revolving Fund (SRF) for Water Pollution Control can provide low interest financing of local match for state grants. Grants from the Centennial Clean Water Fund (CCWF) and loans from SRF may be combined, so applicants need only deal with Ecology staff for complete financing of water pollution control projects.

The Washington State Legislature and the U.S. Congress have passed major legislation to protect water resources. State legislation includes the Centennial Clean Water Fund and Aquatic Lands Enhancement Account. Federal legislation includes the Clean Water Act and the Coastal Zone Management Act of 1972. Amendments are added to the Clean Water Act as the need arises.

Brief descriptions of possible funding sources for implementation of urban bay action plans are presented here for your information. A chart listing grant and loan programs, requirements, time lines, and contact persons is attached.

THE WASHINGTON STATE CENTENNIAL CLEAN WATER FUND

The Centennial Clean Water Fund (CCWF) is a major source of financial assistance providing grants and loans for water quality projects. The CCWF is a partnership between the state and local governments. Created by the state legislature in 1986, the continuation of the fund has been authorized through the year 2021. The CCWF helps local communities meet water quality, health and safety requirements. It is dedicated to protecting the waters of Washington State for current and future generations.

Through the year 1995, 50 percent of the annual fund of $45 million is earmarked for marine water facilities, which include secondary sewage treatment plants, reduction of combined sewer overflows (CSOs), stormwater discharges or other facilities which empty directly into marine waters. Facilities receive a base 50 percent of the total eligible cost;.an additional grant and/or loan is possible if the local match would cause the community financial hardship. Most activities receive a grant covering 75 percent of the total eligible project costs. Other funding categories include, nonpoint pollution control, groundwater and freshwater projects. Activities include planning, research, monitoring and education. In special cases, the discretionary category can provide up to 100 percent of the eligible project cost. Strong local support and the seriousness of the problem are rating criteria for grant and loan awards.

THE WASHINGTON STATE REVOLVING FUND (SRF) FOR WATER POLLUTION CONTROL

The Washington State Revolving Fund (SRF) for Water Pollution Control provides low interest loans for high priority water quality needs. Congress established the SRF as part of the Clean Water Act Amendments of 1987 as a way to phase out federal grants and phase in state loans. The U.S. Environmental Protection Agency (EPA) will "seed" the SRF with yearly capitalization grants, subject to Congressional appropriation, until 1994. The state must contribute 20 percent matching funds during this period. After 1994, federal and state capitalization will end. Loan repayments, with interest, will sustain the SRF from then on in perpetuity.

Eighty percent of the money is earmarked for the planning, design or contruction of water pollution control facilities. Ten percent can go for nonpoint sources control projects, and 10 percent of the SRF can go to conservation and management projects for federally designated estuaries like Puget Sound. Projects in this category may include purchases of wetlands, the construction of boat pumpout facilities and other projects. The SRF can provide financing for the local match for state grants under certain conditions such as financial hardship.

The sooner the borrower repays the SRF loan, the lower the interest rate. For now, for a 0-5 year term, no interest will be charged; for a 6-14 year term, the interest rate will be 4 percent; and, for a 15-20 year term, the interest rate will be 5 percent. After 1992, SRF interest rates will be 60 percent-75 percent of the current market rate. If all federal requirements are satisfied, SRF can provide refinancing of local funds already spent on planning and design not covered by grants as well as financing to make up some ineligible portions of state or federal grants.

COASTAL ZONE MANAGEMENT 306 GRANTS

Ecology's Shorelands and Coastal Zone Management Program administers $400,000 in 306 grant funds annually (provided to Ecology through the federal Coastal Zone Management Act) for local shoreline master program (SMP) improvements and special shoreline projects.

Preparation of SMP amendments, including public involvement, legislative review and process necessary for local adoption, can address such issues as: public access policies and regulations; environment mapping and redesignations; waterfront revitalization policies and standards; beach and dunes management provisions; use activity provisions such as aquaculture, marinas, etc.; site planning and design for public access improvements, waterfront restoration and interpretive centers; and, public information and education programs. The grant project must enhance the local shoreline master program, improve management of shoreline resources and go beyond routine shoreline management activities.

205J GRANTS

Each year approximately $334,000 in grant funds is provided to the state from the Federal Clean Water Act, subject to Congressional appropriations. Fifty percent of the funds go to state agencies and 50 percent is available for pass-through to local governments. The grants cover water quality planning activities only. One of the current priorities is the restoration and maintenance of a healthy and productive Puget Sound. Ecology can provide information on what is currently available.

GROUNDWATER MANAGEMENT AREA PROGRAM

Centennial grants in the Groundwater Category are providing $5.5 million in funds for fiscal year (FY) 91. Funding is available for the designation of local Groundwater Management Areas (GWMAs) and for protection of groundwater quality and quantity.

WASTE MANAGEMENT GRANT PROGRAMS

Many grant programs are available to address waste management problems. Hazardous waste planning grants provide financial assistance for updating local comprehensive hazardous waste management plans. Local health departments can apply for solid waste enforcement grants. Financial assistance is

available for planning and carrying out household hazardous waste collection events. Local governments may apply for financial assistance for installation of groundwater monitoring wells at municipal landfills, for the purpose of identifying potential contamination of groundwater. Waste reduction and recycling grants provide funds for the design of programs that promote Washington's solid waste management priorities.

In 1989 the Legislature authorized several new waste reduction and recycling grants. Projects include: tire recycling, removal, and enforcement programs; developing public informational materials; establishing the feasibility of composting food and yard waste; Phases 2 and 3 - waste reduction and recycling grants; and, hazardous waste planning implementation grants.

Public participation grants are available to citizen groups of three or more persons and not-for-profit public interest groups organized for the purpose of working on environmental issues or providing public involvement services. Citizen/Proponent negotiations grants can be awarded to local governments affected by the development of a dangerous waste management facility, to establish a citizen negotiating committee that will discuss mitigation of potential impacts on the community with the facility proponent.

AQUATIC LANDS ENHANCEMENT ACCOUNT

In 1984 the Legislature created the Aquatic Lands Enhancement Account (ALEA). The ALEA was established to provide funding for state and local projects designed to enhance state-owned aquatic lands by providing public access, recreation and environmental protection. The account is funded by lease revenue received from various uses of state aquatic lands under the Department of Natural Resources (DNR).

Projects may involve acquisition of marine tidelands and/or adjacent uplands. Examples of eligible public access/recreation projects are: planting shellfish for recreational use; creating water-oriented interpretive displays; establishing open-water swimming areas; providing nonmotorized boat launches and temporary moorage facilities; and building fishing piers and reefs.

ALEA projects in Whatcom County include the acquisition of approximately 300 linear feet of tidelands abutting Birch Bay State Park and expanding and improving an existing trail system along Whatcom Creek in downtown Bellingham. The Whatcom Creek project includes a viewpoint and deck at the historic location of an old mill.

AGRICULTURAL WATER SUPPLY LOANS/GRANTS

Referendum 38, (approved by the voters in 1980), authorizes the State Finance Committee to issue State General Obligation Bonds, in the amount of $125 million for water supply facilities. Fifty million dollars of the authorization is to be used for agricultural water supply facilities alone or in combination with fishery, recreational, or other beneficial uses of water. The $50 million is to be administered by the Department of Ecology.

Ecology may use or permit the use of the bond proceeds, subject to legislative appropriation, by direct expenditure, and by grants or loans to public bodies. This includes grants to public bodies as matching funds in any case where federal, local, or other funds are made available on a matching basis.

REMEDIAL ACTION

Remedial action funds are available for investigation of suspected hazardous waste sites and for the cleanup of confirmed sites. For fiscal year (FY) 89-91, $15,902,000 was made available to applicants. Fifty thousand dollars is the ceiling amount for routine cleanup and also for site hazard assessment. Fifty percent funding is available for investigation and cleanup; 100 percent for routine cleanups and site hazard assessments; and, for economically disadvantaged communities an additional 25 percent supplement may be awarded.

PROGRAM	DESCRIPTION	REQUIREMENTS	NEXT APPLICATION PERIOD	CONTACT*
Centennial Clean Water Fund (CCWF)	Financial & technical assistance for water pollution control activities and facilities	Only water quality projects; 1/2 of local share must come from local sources or loans	Jan. - Feb. 1991	Helen Bresler (206)459-6096
State Revolving Fund for Water Pollution Control (SRF)	Low interest loans for water pollution control projects	Meet state Nonpoint Plan or Puget Sound Plan if relevant	June - July 6, 1991	Dan Pilip (206)459-6061
Coastal Zone Management 306 Grants	Planning grants and special projects to implement shoreline master programs	Write or call	Jan. - Feb. 1991 Jan. - Feb. 1991	Steve Craig (206)459-6780 Jim Scott (206)459-6781
205J Grants	Planning for water quality projects	Planning activities only	Jan. - Feb. 1991	Helen Bresler (206)459-6096
Ground Water Management Area Program	For designation of GWMAs and protection of groundwater quality & quantity	Must be on Ecology's General Schedule	Ongoing	Doug Rushton (206)459-6120
Household Hazardous Waste Collection Events	Planning and carrying out collection days for households	Call for info.	Call for deadline info.	Mike Drumright (206)459-6297
Public Participation	Investigating and remedying hazardous substance release	Chptr. 173-321 WAC or grant	Feb. - March 1991	Laurie Davies (206)438-7562
Citizen/ Proponent Negotiations	Negotiations committee to meet with proponents of dangerous waste management facilities	WAC 173-303-902 and grant guidelines	Ongoing	Laurie Davies (206)438-7562
Aquatic Lands Enhancement Account	Land acquisition, public access/ recreation projects	Call for info.	June 30, 1991 Deadline	Robert Brandow (206)586-9033
Agricultural Water Supply Loan/Grant	Agricultural water supply facilities	Call for info.	Call for deadline info.	Ray Newkirk (206)459-6165
Remedial Action	Investigation and cleanup of hazardous waste sites	WAC Chptr. 173-322 and grant guidelines	Early summer 1991	Julia Woods (206)438-7265

* Note: To call Ecology staff on the SCAN system, use "585" instead of "459" or "438."

APPENDIX C

Summary of South Sound Reconnaissance Study

PTI
ENVIRONMENTAL SERVICES
15375 SE 30th Place
Suite 250
Bellevue, Washington 98007

RECONNAISSANCE SURVEY OF CHEMICAL CONTAMINATION AND BIOLOGICAL EFFECTS IN SOUTHERN PUGET SOUND

Prepared for

U.S. Environmental Protection Agency
Region 10, Office of Puget Sound
1200 Sixth Avenue
Seattle, Washington 98101

EPA Contract 68-D8-0085
PTI Contract C744-27

April 1991

EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) Region 10, through the Office of Coastal Waters, has been responsible for the development and implementation of an estuary program for Puget Sound. The present study is a reconnaissance survey of chemical contamination (i.e., of sediments and biota) and associated adverse biological effects in southern Puget Sound. Although several recent studies have provided comprehensive evaluations of chemical contamination and biological effects in central and northern Puget Sound, a similar evaluation has been lacking for southern Puget Sound. The present study serves to fill this gap in the soundwide database.

In the present study, a reconnaissance survey was conducted throughout the embayments of southern Puget Sound using several of the indicators of chemical contamination and biological effects employed in recent surveys conducted in central and northern Puget Sound. Environmental conditions were evaluated in two urban embayments (i.e., Budd Inlet and Oakland Bay), eight nonurban embayments (i.e., Hammersley Inlet, Totten Inlet, Eld Inlet, Henderson Inlet, Case Inlet, Filucy Bay, Carr Inlet, and Wollochet Bay), and three areas off the main channel of the southern sound (i.e., two areas near Steilacoom and one area in Cormorant Passage). In each study area, stations were located in depositional areas where chemical contaminants would be expected to accumulate in sediments. To provide integrative assessments of contamination over relatively large areas, all stations were located away from known contaminant sources.

The indicators used to assess chemical contamination and biological effects were a subset of those used in the recent surveys conducted in central and northern Puget Sound. Chemical contamination was evaluated in the sediments

of Budd Inlet and in five areas outside Budd Inlet (i.e., Eld Inlet, Henderson Inlet, Cormorant Passage, Carr Inlet, and Wollochet Bay). Additional sediment samples were collected for chemical analysis in the other five areas of southern Puget Sound, but were not analyzed because the results of the sediment toxicity tests indicated that the sediments were not toxic. Bioaccumulation of chemical contaminants was evaluated by measuring the concentrations of chemicals in the edible muscle tissue of fish [i.e., English sole (*Parophrys vetulus*) or starry flounder (*Platichthys stellatus*)] throughout the southern sound and in the whole bodies of littleneck clams (*Protothaca staminea*) from Budd Inlet. The primary indicators of biological effects throughout the southern sound were the amphipod mortality toxicity test (using *Rhepoxynius abronius*) and histopathological abnormalities in the livers of English sole. Benthic macroinvertebrate assemblages were sampled in Budd Inlet, but those samples were not analyzed because the results of the sediment toxicity tests indicated that the sediments were not toxic. Although not used explicitly as indicators of chemical contamination, the characteristics of demersal fish and megainvertebrate assemblages captured at all transects were described and compared. Megainvertebrates include large organisms such as crabs, starfish, and sea cucumbers that are collected using an otter trawl.

Field sampling was conducted from 3 to 12 April 1990. Sediment samples for chemical and bioassay analyses were collected at 12 stations in Budd Inlet. Sediment samples were also collected for chemical analysis in 12 areas outside Budd Inlet. Chemical analyses were subsequently conducted for five of these 12 areas (i.e., Eld Inlet, Henderson Inlet, Cormorant Passage, Carr Inlet, and Wollochet Bay). The five areas were selected because they were located in areas that have the potential of being contaminated (i.e., near the heads of embayments or, for Cormorant Passage, near a shoreline discharge). Sediment samples were also collected for bioassay analysis at 12 additional stations outside Budd Inlet. Demersal fish assemblages were sampled for histopathological and bioaccumula-

tion analyses along seven transects throughout southern Puget Sound. Clams were collected for bioaccumulation analysis at two intertidal stations in Budd Inlet.

Because the present study was a reconnaissance survey, the data evaluation focused on comparisons with the results of previous studies in Puget Sound. A limited number of site-specific comparisons were possible by evaluating the historical data collected at stations close to those sampled in the present study. Many of the site-specific comparisons were made with data collected in southern Puget Sound as part of the Puget Sound Ambient Monitoring Program (Tetra Tech 1990). In addition, all results of the present study were placed in the larger context of Puget Sound as a whole by making comparisons with the results obtained for other parts of the sound or with benchmark values based on previous studies throughout the sound. The benchmark values are values derived from information collected throughout the sound for various purposes (e.g., development of sediment quality values, identification of potential health risks). Because they are based on soundwide databases, they can be used to place the results of area-specific studies (such as the present study) in a soundwide perspective.

For sediment contamination, the benchmark values included various sediment quality values such as apparent effects threshold (AET) values (Barrick et al. 1988), the maximum level (ML) and screening level (SL) values developed by the Puget Sound Dredged Disposal Analysis (PSDDA), and numerical sediment quality standards for Puget Sound issued by the Washington Department of Ecology. All of these values are described in the text of this report. Specific AET values used for comparison were the lowest AET (LAET) and highest AET (HAET) values for the four biological indicators having AET values for Puget Sound (i.e., the amphipod mortality, bivalve larvae abnormality, and Microtox® toxicity tests and alterations of benthic macroinvertebrate assemblages). The benchmark values for sediment contamination also included the interim performance standards proposed for reference areas in Puget Sound (Pastorok et al.

1989). For bioaccumulation, the benchmark values included the tissue chemical concentrations of concern in Puget Sound identified by Tetra Tech (1988). For the amphipod mortality toxicity test, the benchmark values included the interim performance standards for Puget Sound reference areas (Pastorok et al. 1989). Although no benchmark values were available for histopathological abnormalities in fishes, the results of the present study were placed in a soundwide context by comparing them with the results obtained in previous studies from a variety of environments throughout the sound.

The remainder of this section summarizes the major results for each of the indicators of chemical contamination and biological effects evaluated in this study.

SEDIMENT CHEMISTRY

Metals

Concentrations of metals in sediments sampled at the 17 stations in southern Puget Sound were relatively low, and few of the existing sediment quality values for the sound were exceeded. No metal concentration exceeded a LAET or HAET value, a numerical sediment quality standard, or a PSDDA ML value. However, several exceedances of PSDDA SL values were found. The SL value for cadmium was exceeded at seven stations in Budd Inlet and at the single stations sampled in Eld Inlet and Carr Inlet. The SL value for mercury was exceeded at two stations in Budd Inlet. The SL values for silver and lead were exceeded at single stations in Budd Inlet. Although several exceedances of PSDDA SL values were found, exceedances of the interim performance standards for metals in reference areas of Puget Sound were relatively small for the nine metals that have interim standards. These results suggest that metals contamination at the 17 stations was not substantial. However, sediments from stations

where SL values were exceeded would require biological testing before they could be dredged and disposed of at unconfined, open-water disposal sites in Puget Sound.

Organic Compounds

All organic compounds were evaluated on the basis of dry-weight normalization, which is the traditional method of expressing concentrations for these compounds. In addition, nonionic organic compounds were evaluated on the basis of organic-carbon normalization, which more accurately assesses the potential bioavailability of these compounds.

The concentrations of most organic compounds in sediments sampled at the 17 stations evaluated in southern Puget Sound were either undetected or relatively low. However, high concentrations of phenol and 4-methylphenol were found at numerous stations in Budd Inlet, and an unusually high concentration of tributyltin (62 μg/kg) was found at a single station in that embayment. Concentrations of four of the organic compounds detected in sediment samples from Budd Inlet exceeded various sediment quality values for Puget Sound. Those compounds included phenol, 4-methylphenol, p,p'-DDD, and indeno(1,2,3-cd)pyrene.

On the basis of dry weight normalization, concentrations of phenol exceeded the HAET value at five stations and exceeded the LAET value at six additional stations. Concentrations of 4-methylphenol at two stations exceeded the LAET value, and concentrations of p,p'-DDD exceeded the HAET value at a single station. On the basis of organic carbon normalization, concentrations of p,p'-DDD exceeded the LAET value at a single station.

The numerical sediment quality standards were exceeded for phenol at 11 stations and for 4-methylphenol at 2 stations.

PSDDA ML values were exceeded for phenol at five stations and for 4-methylphenol at two stations. PSDDA SL values were exceeded for phenol at six stations and for 4-methylphenol at three stations. In addition, the SL value for indeno(1,2,3-cd)pyrene was exceeded at a single station.

Interim performance standards for organic compounds in reference areas in Puget Sound have been developed only for total low molecular weight polycyclic aromatic hydrocarbon (LPAH) compounds, total high molecular weight polycyclic aromatic hydrocarbon (HPAH) compounds, and total polychlorinated biphenyls (PCBs). In the present study, comparisons were made only for total PCBs. Comparisons were not made for total LPAH and total HPAH compounds because most of the individual LPAH and HPAH compounds were not detected in the present study. Although the interim performance standard for total PCBs was exceeded at two stations (i.e., one in Budd Inlet and one in Henderson Inlet), both values were considerably lower than the LAET value (i.e., the concentration at which adverse biological effects would be expected).

The results of the analysis of organic compounds in sediments from the 17 stations evaluated in southern Puget Sound suggest that although the observed concentrations of most compounds were relatively low, phenol and 4-methylphenol were present at concentrations that may be associated with adverse biological effects at numerous stations in Budd Inlet. In addition, p,p'-DDD was present at a single station in Budd Inlet at concentrations that may be associated with adverse biological effects.

CHEMICAL CONTAMINANTS IN TISSUE

Fish

Of the total of 94 chemicals evaluated in muscle tissue of English sole and starry flounder, only four metals (i.e, arsenic, copper, lead, and mercury) and four organic compounds (i.e., total PCBs, di-*n*-butyl phthalate, isophorone, and benzoic acid) were detected. The concentrations of all of these detected chemicals, except di-*n*-butyl phthalate, were relatively low. Four of these eight chemicals were identified by Tetra Tech (1988) as having a medium to high priority with respect to potential concerns for health risks to humans through seafood consumption. Those chemicals include two carcinogens (i.e., arsenic and total PCBs) and two noncarcinogens (i.e., lead and mercury).

Although a formal health risk assessment was beyond the scope of the present study, the health implications of the observed tissue concentrations of the four priority chemicals were evaluated qualitatively by comparing them with the results of the risk assessments conducted previously by Tetra Tech (1988). Based on this comparative analysis, the plausible upper limit estimates of excess lifetime cancer risk for the maximum tissue concentrations of arsenic and total PCBs observed in the present study were probably in the range of 10^{-4} to 10^{-5}. The noncarcinogenic risk index values for the maximum tissue concentrations of lead and mercury observed in the present study were probably less than 1.0. To place these risk values in a regulatory perspective, they all were consistent with EPA's Superfund site remediation goals, as contained in the National Contingency Plan, of $\leq 10^{-4}$ for carcinogens and < 1.0 for noncarcinogens (U.S. EPA 1989). This consistency indicates that the observed concentrations of chemical contaminants in fish muscle tissue from the seven transects in southern Puget Sound did not appear to pose an unacceptable health risk to consumers of these organisms.

Clams

Of the total of 94 chemicals evaluated in the whole bodies of littleneck clams, only four metals (i.e, arsenic, copper, lead, and mercury) and no organic compounds were detected at the two stations evaluated in Budd Inlet. The concentrations of all four of the detected metals were relatively low. Three of these four metals were considered by Tetra Tech (1988) to have a medium to high priority with respect to concerns for potential health risks to humans through seafood consumption. Those chemicals included the carcinogen arsenic and the noncarcinogens lead and mercury.

The health implications of the observed tissue concentrations of the three priority metals were evaluated qualitatively by comparing them with the results of the risk assessments conducted previously by Tetra Tech (1988). Based on this comparative analysis, the plausible upper limit estimate of lifetime cancer risk based on the maximum tissue concentrations of arsenic observed in the present study was probably in the range of 10^{-6} to 10^{-7}. The noncarcinogenic risk index values associated with the maximum tissue concentrations of lead and mercury observed in the present study were each probably less than 1.0. These results were consistent with EPA's Superfund site remediation goals, as contained in the National Contingency Plan, of $\leq 10^{-4}$ for carcinogens and < 1.0 for noncarcinogens (U.S. EPA 1989) and indicate that the observed concentrations of chemical contaminants in the whole bodies of littleneck clams from Budd Inlet did not appear to pose an unacceptable health risk to consumers of these organisms.

SEDIMENT TOXICITY

Amphipod mortality at the 24 stations sampled in this study ranged from 1 to 18 percent. All of these values were less than the interim performance standard of 25 percent proposed for Puget Sound reference areas (Pastorok et al.

1989). In addition, all but one mortality value (18 percent, Station 8) were less than the median value of 16.2 percent observed by Pastorok et al. (1989) for 60 samples from Puget Sound reference areas. These results indicate that the toxicity of sediments from all 24 stations sampled in this study was well within the range of conditions found in Puget Sound reference areas, and that elevated sediment toxicity did not appear to be a problem at any of the sites evaluated. However, neither sublethal nor chronic effects of sediment toxicity were evaluated in this study.

FISH ASSEMBLAGES

A total of 9,496 fishes, representing 15 families and 28 species, was sampled in this study. The most abundant family of fishes throughout southern Puget Sound was Pleuronectidae (i.e., righteye flounders), which accounted for 50 percent of the total catch. The most abundant pleuronectids were English sole and starry flounder, the two species selected for histopathological and bioaccumulation analyses.

Although English sole and starry flounder were abundant in southern Puget Sound as a whole, considerable differences were found among individual transects. In general, English sole was most abundant at the two transects located near the mouths of embayments, whereas starry flounder was most abundant at the five transects located at the heads of embayments. The total numbers of species and individuals also showed large differences between transects located in the mouths or heads of embayments, with both variables being considerably lower in the latter environments. The results of this study suggest that habitat differences within the embayments exerted a considerable influence on the characteristics of the resident demersal fish assemblages. Because English sole was relatively rare or absent at the heads of embayments, starry flounder was used for bioaccumulation analysis at those five transects, and histopathological evaluations

were not conducted at those locations. Starry flounder was not used for histopathological evaluations because the historical database for this species is limited.

FISH HISTOPATHOLOGY

Sufficient sample sizes of English sole for histopathological analysis were obtained at only two of the seven transects (i.e., those in Totten and Carr inlets) at which demersal fishes were sampled. The only kinds of liver lesions found at those two transects were nonspecific responses to injury. These lesions generally are not indicative of major adverse biological effects. The three kinds of serious liver lesions found in previous studies of English sole from contaminated environments in Puget Sound (i.e., neoplasms, foci of cellular alteration, and megalocytic hepatosis) were not found in any of the fish collected in this study. In general, the prevalences of nonspecific responses to injury were relatively low (all < 17 percent), and only three of these conditions (i.e., hepatocellular regeneration, mononuclear infiltrates, and parenchymal inflammation) were found in more than 10 percent of the fish from either study area.

The absence of neoplasms, foci of cellular alteration, and megalocytic hepatosis in English sole from Totten and Carr inlets suggests that any potential chemical contamination in those two areas was not high enough to cause serious liver lesions in fishes. Compared with historical data collected in a variety of environments elsewhere in Puget Sound, the absence of serious liver lesions in English sole from Totten and Carr inlets suggests that those two areas were similar to the reference areas used in previous studies in Puget Sound.

CONCLUSIONS

The results of this study suggest that most of the areas sampled in southern Puget Sound were not characterized by substantial levels of chemical contamination or adverse biological effects. However, the concentrations of several organic compounds in one or more sediment samples from Budd Inlet were high enough to potentially result in adverse biological effects. Despite these elevated chemical concentrations, sediment toxicity was not elevated above Puget Sound reference levels at any of the Budd Inlet stations, according to the results of the amphipod mortality toxicity test. Sediment toxicity also was not elevated above reference levels at any of the other stations sampled throughout southern Puget Sound. However, neither sublethal nor chronic effects of sediment toxicity were evaluated in this study. The limited amount of information collected on fish disease suggests that fish evaluated from Totten and Carr inlets were not affected by chemical contamination, as serious histopathological abnormalities were not found in the livers of any of these individuals. However, information on fish disease in Budd Inlet (i.e., the major urban embayment in southern Puget Sound) could not be evaluated because the target species (i.e., English sole) was not found in sufficient abundance there. Finally, the observed concentrations of chemical contaminants in tissue samples from fishes and clams did not appear to pose an unacceptable health risk to consumers of these organisms.

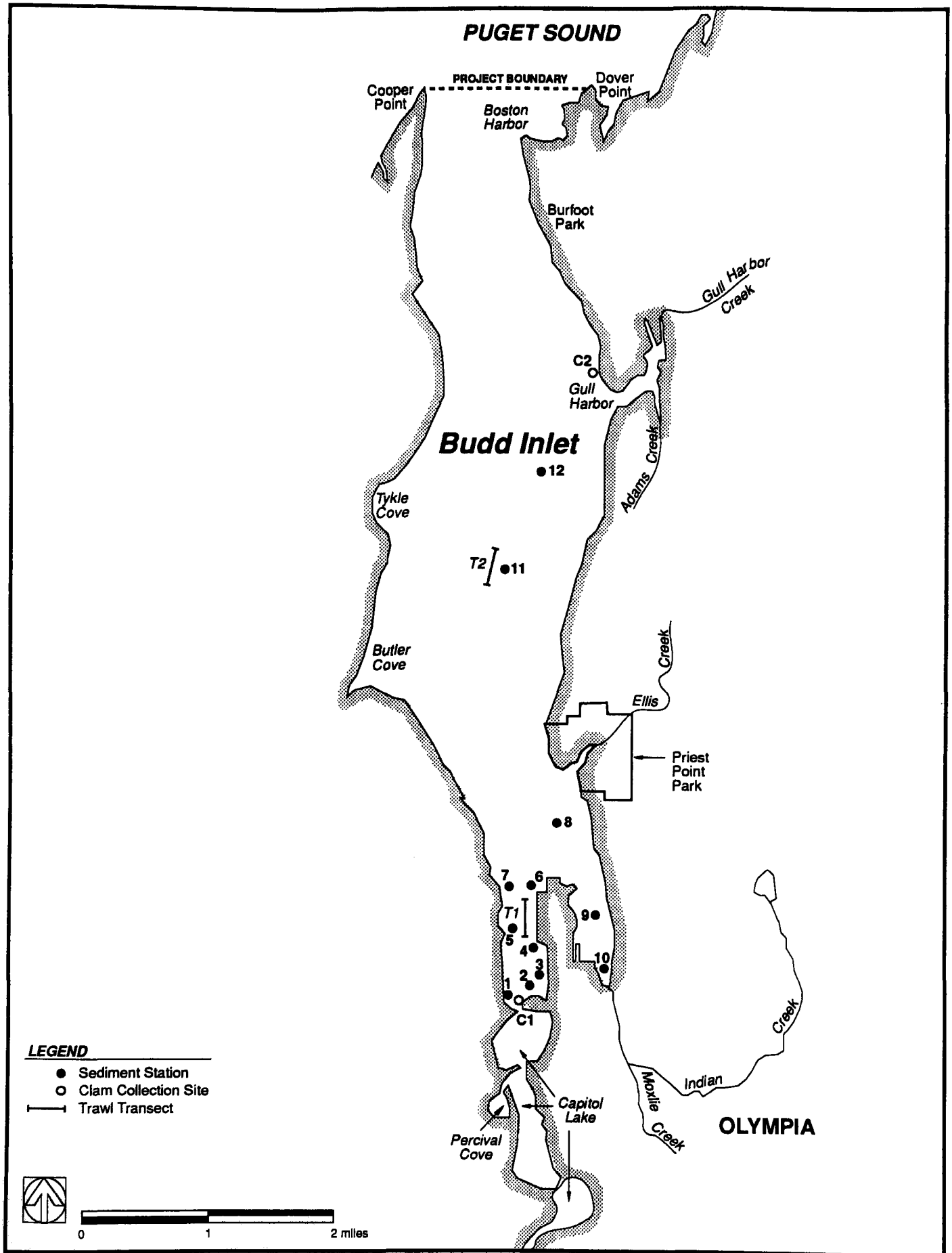

Figure C-1. Sampling station locations in Budd Inlet from the South Sound Reconnaissance Survey.

APPENDIX D

List of EPA Technical Studies in Support of Urban Bay Action Programs

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6. Recommended Protocols for Microbiological Studies in Puget Sound (11/86).

7. Recommended Protocols for Measuring Organic Compounds in Puget Sound Sediments and Tissue Samples (12/86; revised 12/89).

8. Recommended Protocols for Sampling and Analyzing Subtidal Benthic Macroinvertebrate Assemblages in Puget Sound (1/87).

9. Recommended Protocols for Fish Pathology Studies in Puget Sound (7/87).

10. Recommended Protocols for Measuring Conventional Water Quality Variables and Metals in Fresh Waters of the Puget Sound Region (12/89).

11. Recommended Protocols for Sampling Soft-Bottom Demersal Fishes by Beach Seine and Trawl in Puget Sound (12/89).

12. Recommended Protocols for Measuring Conventional Marine Water Column Variables in Puget Sound (In preparation).

13. Recommended Protocols for Marine Mammal Tissue Sampling and Analysis (In preparation).