

Habitat Development Technical Working Group 1999 Summary

Chair: Curtis Tanner, U.S. Fish and Wildlife Service
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During 1999, the Habitat Development Technical Working Group (HDTWG) continued to work on real property acquisition, project implementation and follow through for habitat sites and projects within three Geographic Focus Areas (GFA) chosen for habitat development projects as described in the *Concept Document* (June 1994). The vicinity of Turning Basin No. 3 at the upper end of the Duwamish Waterway; the vicinity of Kellogg Island in the lower portion of the estuary; and along the shoreline of Elliott Bay in the nearshore environment of the marine system. In addition to project work within the GFAs identified in the Concept Document, Panel supported habitat development is occurring in the middle portion of the Green River watershed.

Throughout the year, working group members discussed monitoring approaches for Panel habitat projects and anticipated the adoption of an overall monitoring plan no later than the first quarter of the year 2000. The Chair of the working group guided members in identifying physical and biological success criteria that will assist the Panel in determining project success.

Elliott Bay GFA

Elliott Bay Nearshore Habitat Enhancement (Figure 3)

Project Manager: Randy Shuman, King County Water and Land Resources Division (WLR).

Panel Project Coordinator: Margaret Duncan, The Suquamish Tribe.

Project Team Members: King County WLR, Corps of Engineers Environmental Program, Dinnel Marine Research, Explorer Scouts.

The habitat enhancement project, completed in February 1998, entailed placement of oyster shell, quarry spalls, and pea gravel in the intertidal and subtidal areas seaward of Seacrest Marina, and approximately five cubic yards of rocks at four plots northwest of Duwamish Head on state owned aquatic lands administered by Washington Department of Natural Resources. Although no Dungeness crab were found in the subtidal oyster shell, the constructed shell plot was found to provide complex habitat that served the need of other crab species and fish and invertebrate fauna (see monitoring report noted below). During 1999, underwater epibenthic monitoring and dives revealed that the quarry spalls, pea gravel, and rock are providing habitat to a variety of marine organisms. In particular, divers observed numerous shrimp occupying the spaces between the rock and cobble substrate. King County anticipated further monitoring events during the year, and incorporating the findings into a report that would be available by the end of the year or in the first quarter of the year 2000.

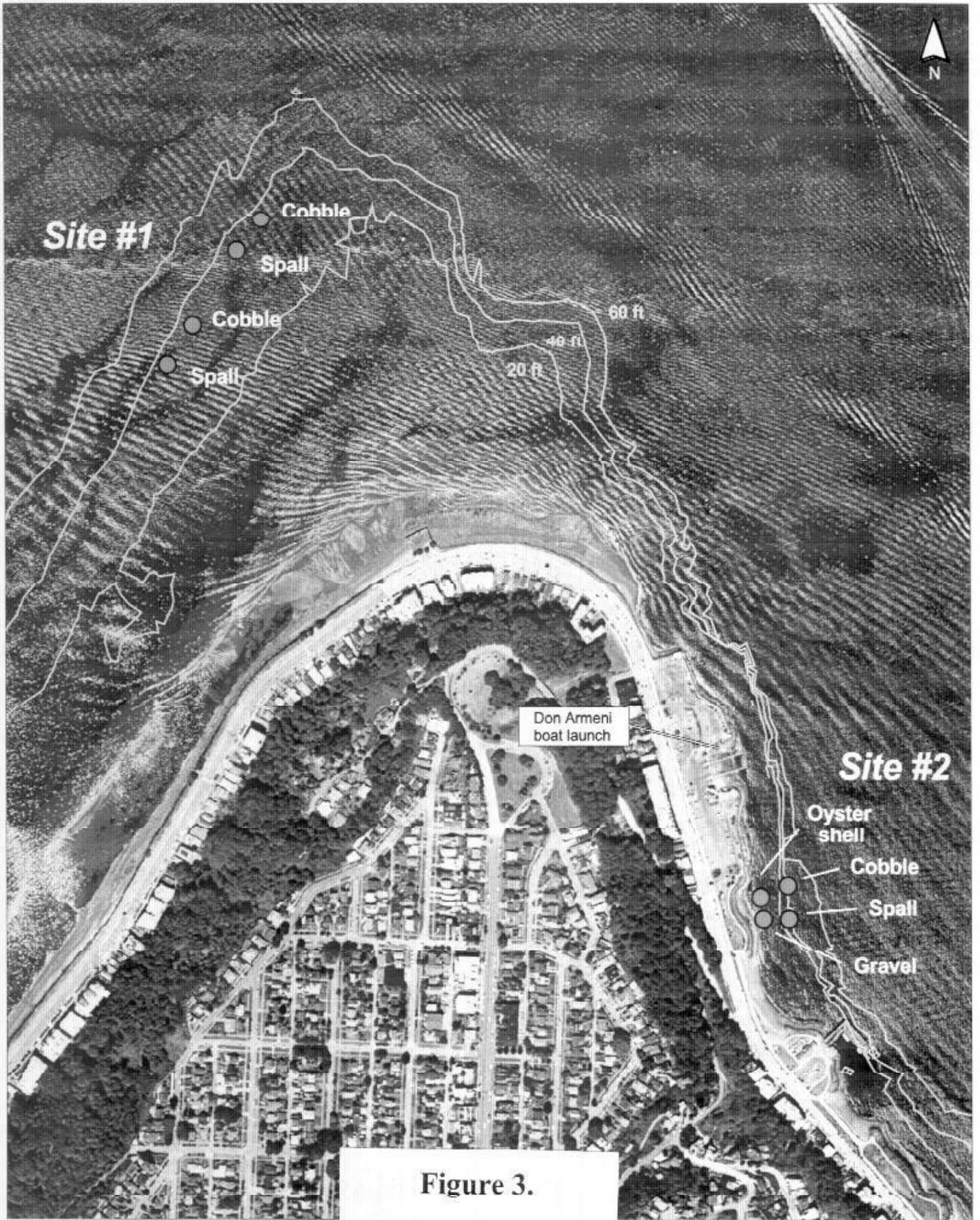


Figure 3.

Elliott Bay Nearshore Habitat Enhancement Project Location

(Related report: *Construction of an Oyster Shell Habitat Plot in Elliott Bay: Evaluation of Crab Settlement and Habitat Utilization in 1998*. Prepared for the Elliott Bay/Duwamish Restoration Program Panel by Paul A. Dinnel, Dinnel Marine Research and Brett A. Hora, November 1998. Panel Publication 19).

Kellogg Island GFA

Seaboard Lumber Project Site (Figure 4)

Project Managers: Linda Hammons, Seattle Public Utilities and Kevin Stoops, Seattle Parks and Recreation Department.

Panel Project Coordinator: Curtis Tanner, U.S. Fish and Wildlife Service.

Project Design and Construction Team: Lead Consultants - Brennan Associates, Seattle, Washington.

The habitat project is located on the site of the former Seaboard Lumber Mill, on the west shore of the Duwamish Waterway at river mile 2, across from Kellogg Island and adjacent to the Terminal 107 restoration and passive-use park area. The Panel tentatively authorized credit of up to \$2.5 million for the City of Seattle to purchase the project site, consisting of 5.7 acres of upland and 11 acres of intertidal and subtidal areas.

Habitat restoration goals identified by the working group for this project include the following: maximizing intertidal habitat, creating a low wave energy environment, providing a perimeter buffer of upland vegetation, and remediation. Secondary project objectives include opportunities for passive park use and environmental education. The design incorporates two viewpoints and a kiosk for interpretive signs with educational information about the natural processes, restored environment, archeological interpretation, and historical aspect of the site area.

Project construction began in the early part of the year. All marine demolition (pier and piling removal) and shoreline armoring activities were completed prior to the March 15, 1999 deadline. Remediation was completed in the summer of 1999, and connection to the Duwamish Waterway occurred in late autumn. The project team anticipates that construction, including site planting, will be completed no later than April 2000.

(Related report: *Seaboard Aquatic Habitat Restoration Project*, August 1999, prepared for the Panel and the City of Seattle by Brennan Associates. The report is on file as part of the Administrative Record.)

Turning Basin GFA

Hamm Creek (City Light North) (Figure 5)

Property Acquisition Lead: King County WLR.

Project Manager: Mike O'Neil, King County DNR.

Panel Project Coordinator: Dr. Robert C. Clark, Jr., NOAA.

Project Design and Construction Team Members: King County, DNR and the U.S. Army Corps of Engineers.

The Panel approved a credit to King County of up to \$750,000 for the acquisition of real property at the City Light North site for habitat purposes. The 6.2 acre aquatic habitat restoration site occupies a portion of a 15 acre parcel of undeveloped property owned by Seattle City Light at river mile 6, in the Turning Basin area of the Duwamish River. The project site is bounded by Seattle City Light's Duwamish Substation to the south and by Delta Marine Industries facilities to the north.

Habitat project goals include a combination of freshwater and tidal wetland restoration as well as stream and riparian corridor improvements for the lower reach of Hamm Creek.

During the first quarter, considerable attention was devoted to discussing easement issues. Due to Corps of Engineers Section 1135 contributions, the project management expected construction cost reductions. By May, a conservation easement had been negotiated between all parties, and an informal gathering to celebrate the approval of the easement purchase and cooperative agreement to daylight Hamm Creek was held on May 18th.

Project construction started on August 9th. Working group members discussed King County's request to release the construction contingency funds for actions such as emergency erosion control. Members subsequently recommended that the Panel approve the request (Resolution 1999-08) and, at the same time, emphasized that erosion control should be part of the project construction budget rather than a contingency item. In November, King County reported on survey coordinate errors that resulted in limited stream channel excavation outside of the approved project boundaries on property being held by Seattle City Light for future development activities. The Corps of Engineers indicated they would update the survey coordinates and make necessary excavation changes to construct the project within the easement boundaries. The intertidal basin was connected to the Duwamish River in early September.

Turning Basin No. 3 (formerly Kenco Marine) (Figure 6)

Project Manger: Roderick Malcom, Muckleshoot Indian Tribe.

Panel Project Coordinator: Joanne Polayes, Ecology.

Project Design Consultants: Fishpro, Seattle, Washington

The 0.82 acre habitat project site is located at the western upstream boundary of the maintained navigation channel at Turning Basin No. 3 of the Duwamish River, bordered on the western edge by West Marginal Way South, by Seattle City Light-Duwamish Substation property to the north, and Coastal America and Port of Seattle habitat project sites to the south.

Habitat objectives for the site include significant gains in intertidal and subtidal mudflats through prohibitions of moorage. The project design entails the removal of existing commercial structures

and recontouring and revegetating the area to provide an enhanced intertidal estuarine wetland area with the creation of intertidal “benches” at various elevations.

The Project Manager informed the working group that construction, estimated to require three months, might begin during 2000 depending upon the permit process with the City of Tukwila. Permit applications for the project were submitted in April of 1999. The Muckleshoot Tribal Cultural Committee continued to consider a name for the habitat project.

North Wind’s Weir (Figure 7)

Project Manager: Michael Lazano, King County Department of Construction and Facility Management.

Panel Project Coordinator: not yet assigned.

Project Design and Construction Team Lead: MacLeod Reckord Landscape Architects, Seattle, Washington.

North Wind’s Weir is south of the Duwamish Waterway Turning Basin No. 3, upstream of the navigable waterway, on the west bank of the Duwamish River at approximately river mile 7. The Panel authorized credit to King County for making available a portion of the 3.1 acre site for habitat development purposes.

Project implementation activities will include the construction of a 1.03 acre intertidal basin, excavated from an elevation of +6 to +15 feet Mean Lower Low Water (MLLW), with connection to the Duwamish River at the northeast end of the property. Project goals include the improvement of riparian conditions, shoreline stabilization, and providing new off-river intertidal habitat to assist migrating salmonids to acclimate on their downstream passage.

Working group members devoted a considerable amount of time to discussing permit process issues concerning the construction of the habitat development portion of the site along with the construction of the adjacent King County Park. The project manager envisioned a concurrent construction schedule in order to realize significant construction management cost savings. Construction was scheduled for the year 2000, pending King County Executive Council budget approval. By June, it was determined that the intertidal habitat project should proceed independently of the park, since the park was not funded for construction in the King County FY 2000 budget. The Project Manager estimated that construction would begin in October 2000. Late in the year, it was announced that King County would agree to a request from the Muckleshoot Indian Tribe to name the park after tribal leader Cecil B. Moses. The Panel will continue to reference the habitat development portion of the park as “North Wind’s Weir.”

Collaborative Activities

The Corps of Engineers reported that construction at the Porter Levee site (Figure 8), which was purchased with Panel funds, was complete. Vegetation was cleared, a notch was made in the dike, and a remnant slough was reconnected to the river. Working group members agreed that the completed project demonstrates successful partnering efforts highlighting the Panel's acquisition and King County and Corps of Engineers construction roles.

People for Puget Sound representatives Jacques White and Tom Dean met with HDTWG members to discuss long-term stewardship of Panel habitat projects along the Duwamish River.

Real Property Acquisitions for Habitat Development Purposes

During the first quarter of the year, working group members agreed to devote attention to review acquisition issues given the funds remaining, program goals, and the desire of the Panel to "sunset" in the near future.

In April, Chris Rogers, of the Trust for Public Land (TPL), requested consideration of a proposal for the Panel to assist in acquisition of the UNOCAL property in downtown Seattle, consisting of three acres that abut Myrtle Edwards Park and extends to Broad Street and Western Avenue.

Following review of the information provided by TPL on the habitat nomination form and information provided by Ecology concerning the status of the project site clean-up, the site was ranked according to site assessment criteria defined in the *Concept Document*. Ecology reported that the largest area of contamination is immediately behind the bulkhead, public utilities are located along the shoreline, and that basically the shoreline configuration must remain unless fill is introduced. This contributed significantly to the low ranking which the project site received.

During the year, working group members received updated information from King County representatives concerning progress on Green River acquisitions, for which the Panel has set aside \$700,000 (Resolution 1997-18). Linda Hanson and Rick Cardoza explained that multiple ownership and the County's Farmlands Preservation covenant posed limitations and constraints, such that a conservation easement was being pursued as an alternative to fee simple acquisition.

Working group member and COE representative Pat Cagney urged the HDTWG to continue to consider the possibility of purchasing or helping to purchase Site #1, across the Duwamish from Cecil B. Moses Park/North Wind's Weir, saying that even though the Panel may not have the full amount required, it might consider matching funds provided by other entities.

Porter (Slaughterhouse) Levee: Phase 1

Location: King County

Cost- Recommended Contribution:
\$390,000 (COE Section 1135, Elliot Bay/Duwamish Restoration Panel)
Other Funds: \$30,000 (Trout Unlimited, Mid-Sound Fisheries Enhancement Group, Muckleshoot Indian Tribe)

Lead Agency: Corps of Engineers

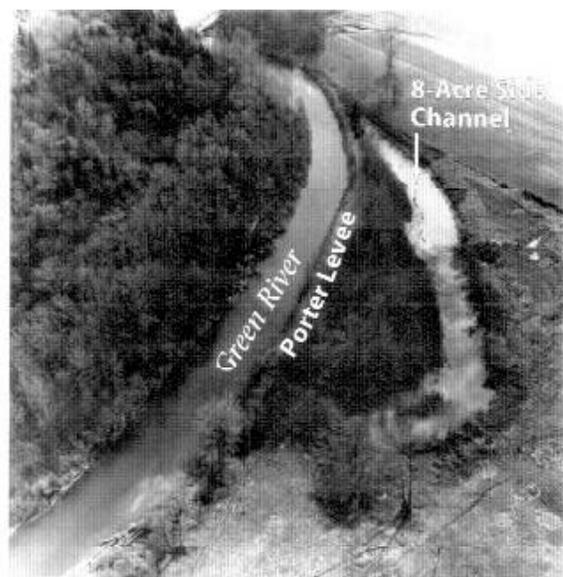
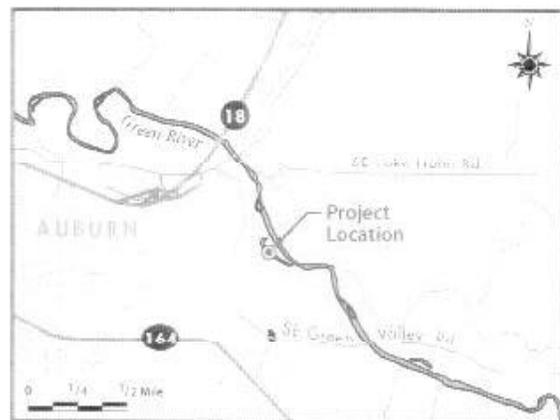
Schedule:	1997	1998	1999	2000
Scoping	Complete			
Acquisition				
Design				
Construction			Or	

This project involves purchasing a 30-acre parcel adjacent to the Green River on the left bank just upstream of Highway 18, and restoring the river's connection to an isolated side channel. The side channel would be connected by excavating a notch in the Porter Levee at the downstream end of the project site, and excavating a channel connection with a possible control weir and log and rock fishway. An upstream connection through a culvert or permeable rock weir may be necessary to provide flow-through. The side channel would then be enhanced through the addition of snags and other habitat features, and the entire site would be replanted in native riparian and wetland vegetation. This reconnection would establish fish access to an 8-acre side channel, and would enhance 13 additional acres of riparian wetland.

Side channel habitat, allowing for salmon refuge from high flows and overwintering habitat for juveniles, is currently extremely limited along the middle Green River. This project would demonstrate an approach to restoring these functions.

The property is currently for sale, and preliminary negotiations are underway. The Elliot Bay/Duwamish Restoration Panel has indicated their interest in purchasing this site. Restoration here has a high level of public support from Trout Unlimited, the Mid Sound Fisheries Enhancement Group, and is also supported by Muckleshoot Indian Tribal staff. Each of these groups has indicated a possible interest in cost-sharing and/or contributing volunteers or equipment.

For further information, contact Noel Gilbrough at (206) 764-3652.



Phase 1 of the Porter Levee project would excavate a channel opening at the downstream end of the levee (bottom center), linking this side channel with the Green River. Purchase of the entire 30-acre parcel would allow for wetland restoration as well.

Figure 8.

**Elliott Bay/Duwamish Restoration Program Panel
Real Property Acquisition Budget Worksheet**

Real Estate/ Habitat Project Site	In-kind Credit		Comments
	Authorized	Apprv'd	
Elliott Bay Geographic Focus Area (GFA)			
Seaboard Lumber	\$2.5 million (City of Seattle)		Res. 1998-05. Sampling and site analysis, appraisal, project management and purchase of 16.7 acre parcel across from Kellogg Island, adjacent to Terminal 107 restoration project. Purchase represents full satisfaction of the City's real property acquisition obligation of (up to) \$2.5 million.
Turning Basin GFA			
KenCo Marine	\$479,200 (King Co.)		Res. 1996-16, 1997-05, 1997-2, 1997-19. The .82 acre parcel includes upland sand intertidal mudflats. Bordered by West Marginal Way South, City Light Duwamish Substation to the North, and Coastal America and Port of Seattle habitat mitigation projects to the South.
Duwamish/Hamm Creek (City Light North)	\$770,000 (King Co.)		Res. 1996-28, 1998-01, 1998-09 (\$750,000) for conservation easement. Res. 1999-06: \$20,000 for costs associated with culvert crossings required for access and condition of purchase of easement.
North Wind's Weir	\$416,000 (King Co.)		Res. 1997-20. Purchase of 1.03 acre of larger parcel for intertidal habitat restoration project.
Site #1 (unnamed)	Funds not yet authorized. Consensus to contribute funds for purchase (amt. to be determined).		4.6 acre site under consideration. Adjacent to the Boeing office complex; shoreline restoration could provide expanded area and enhanced value of nearshore subtidal, unvegetated flats, emergent marsh and riparian habitat types.
Elliott Bay GFA			
Elliott Bay Nearshore	None requested		Washington DNR lease fee for subtidal areas off-shore of Seacrest Park and Duwamish Head waived.
Duwamish River Tributaries (Properties upriver of North Wind's Weir)			
Porter Levee	\$700,000 (King Co.)		Res. 1997-18. Adjacent to Green River, parcel includes riparian and upland forest, river side channels and wetlands.
Burns Creek/ Loans' Levee			Res. 1997-18. Relic side channel habitat, riparian and upland forest, upland agricultural lands.
Total Credits	\$4,865,200		Requests for in-kind credit not yet received
Total real property credits available	\$5 million		Consent Decree ¶30 (amount), ¶27(b) (locations)

Table 1.

Sediment Remediation Technical Working Group 1999 Summary

Chair: Pat Romberg, King County Water and Land Resources Division
Telephone: (206) 296-8251

The sediment remediation technical working group assists the Panel in planning and designing sediment remediation projects and in recommending goals and activities regarding King County's (formerly METRO) and the City of Seattle's source control programs.

1999 Activities

Duwamish/Diagonal CSO and Storm Drain Sediment Remediation Project (Figure 9)

Project Manager: Priscilla Hackney, King County DNR.

Panel Project Coordinator: not yet assigned.

In September, technical working group members received and discussed the Technical Memorandum: Mass Balance Model report prepared pursuant to Panel Resolution 1998-15 for the evaluation of potential recontamination of the proposed project site by phthalates and the completion of the draft Site Assessment Report. The modeling results showed that the site would recontaminate with both of the phthalates, bis(2-ethylhexyl) and butyl benzyl, evaluated in the mass balance model. Results also showed that the required reduction in the discharge from the storm drain (the reduction required for the site not to recontaminate) is dependent upon the background concentration of the constituents. In some cases, even complete source elimination would not be sufficient to achieve compliance with SQS criteria because the background deposition alone would cause exceedences. At the October meeting, Panel members agreed with the working group that the results were sufficient to enable the project team to complete the Site Assessment Report. It was agreed that completion of the Site Assessment Report would be a priority. A resolution approving additional funds to complete the Site Assessment Report was passed at the Panel's October meeting (Resolution 1999-09).

In addition to bis(2-ethylhexyl) phthalate (BIS), a seemingly ubiquitous chemical of concern, mercury and polychlorinated biphenyl (PCB) also exceed sediment criteria at the Duwamish/Diagonal site. Discussions with the Department of Ecology in November resulted in preliminary agreement that a clean-up could proceed on the basis of mercury and PCB removal because the project would focus on "improvement" of the Duwamish/Diagonal site even though recontamination by BIS could occur. The King County project team indicated that actual project implementation could occur in winter of 2001-2002, but that additional planning and design funds may be required to complete the Alternatives Evaluation Report.

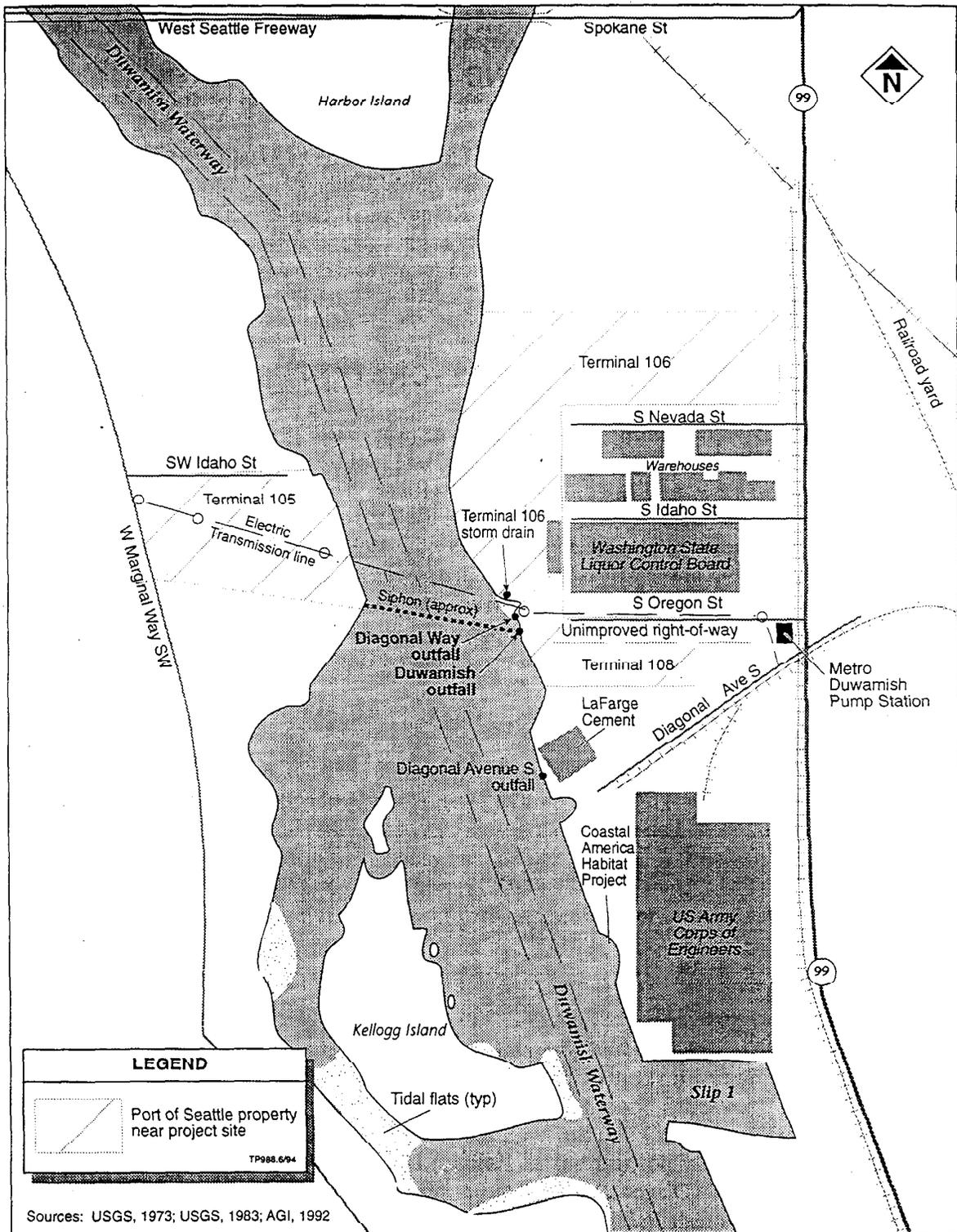


Figure 9. Duwamish/Diagonal CSO/SD

Norfolk Sediment Remediation Project (Figure 10)

Project Manager: Priscilla Hackney, King County DNR.

Panel Project Coordinator: Glen St. Amant, Muckleshoot Indian Tribe.

The Norfolk sediment remediation project was undertaken to remove the contaminated sediment associated with past discharges from the Norfolk Combined Sewer Overflow (CSO). Following an evaluation of bids for the construction phase of the remediation project, a contract was awarded. Project details authorized by permits were reported in the 1998 Annual Report.

The remediation occurred as scheduled and entailed dredging up to 9 feet in PCB “hot spots” and from 3 feet to 6 feet in other less contaminated areas of the site. Comparisons between pre-dredge and post-dredge surveys showed that 1,900 cubic yards of sediment represented by samples with PCB concentrations greater than 45 ppm DW (dry weight) were dredged and disposed of at a TSCA (Toxic Control Substances Act) Subtitle C landfill in Arlington, Oregon, and 3,290 cubic yards of sediment represented by samples with PCB concentrations less than 45 ppm DW were dredged and disposed of at a Subtitle D landfill (Olympic View) in Kitsap County, Washington. Comparisons between post-dredge and post-backfill surveys showed that 6,700 cubic yards of clean sandy backfill were placed, bringing the cleanup area back to its pre-dredge elevations. The Norfolk Sediment Remediation Project Closure Report (Panel Publication 21) documents the work performed and describes dredging, transport and disposal methods that occurred between February and April 1999 (Figure 11).

In August, results of the first sampling event of a five-year monitoring program were presented in the April 1999 Monitoring Report (Panel Publication 22). Four sediment samples were collected within a month of project completion from the surface of backfill material and analyzed to establish a baseline chemical characterization of the material. Station locations were established based on the location of the CSO and storm drain flow channels that existed prior to remediation. Based on sample analytical results, the study characterized baseline conditions of the backfill material as follows:

A fairly even-grained, medium to coarse sand with high percent solids and low organic carbon content;

Metals concentrations that are well below the SQS sediment criteria; and

A lack of organic chemicals with the exception of trace amounts of hexachlorobenzene (one site) and benzo(g,h,i)perylene (two sites), that were well below the LAET sediment criteria (dry-weight normalized) (refer to the April 1999 Monitoring Report, Panel Publication 22).

In July, King County issued a work directive to the EcoChem consultant team to evaluate phthalate source control in the Norfolk CSO drainage basin, pursuant to Resolution 1999-14.

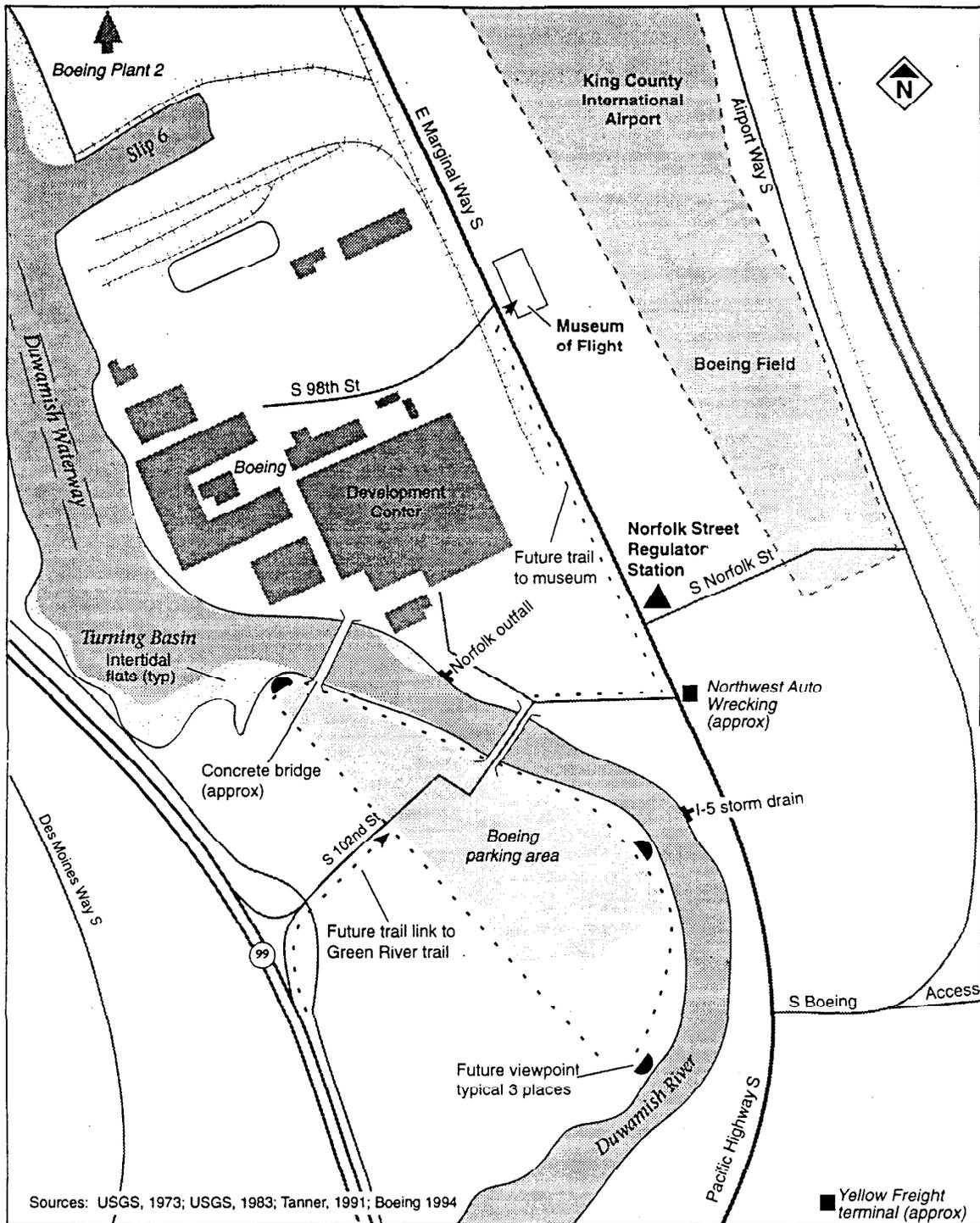


Figure 10. Norfolk CSO

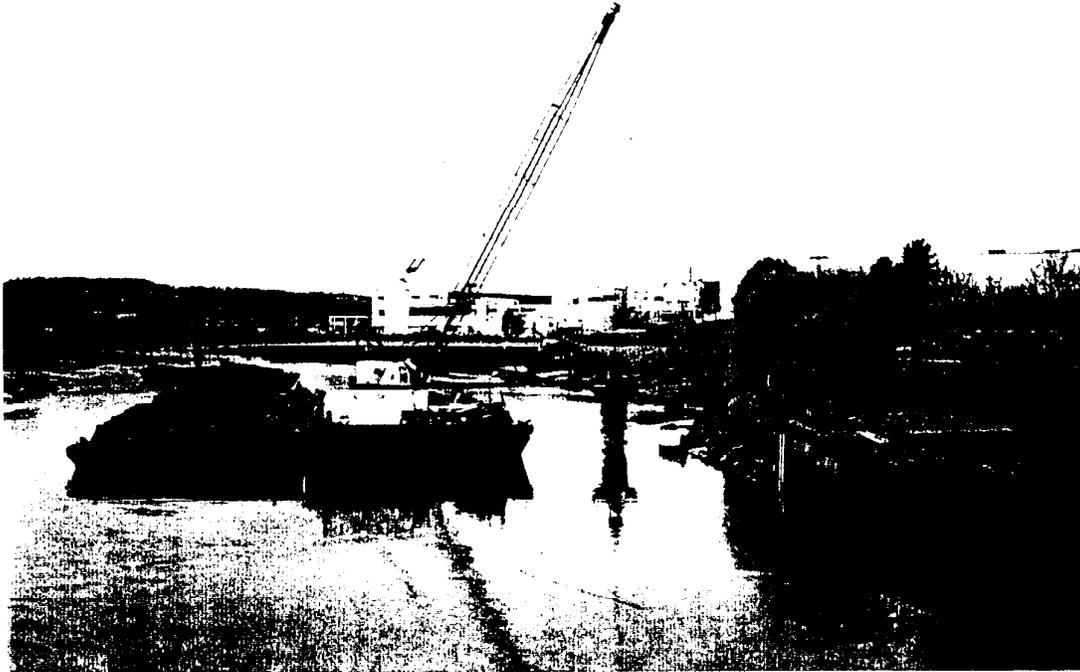


Photo 13 Backfill From Barge Placed With Dredging Crane.

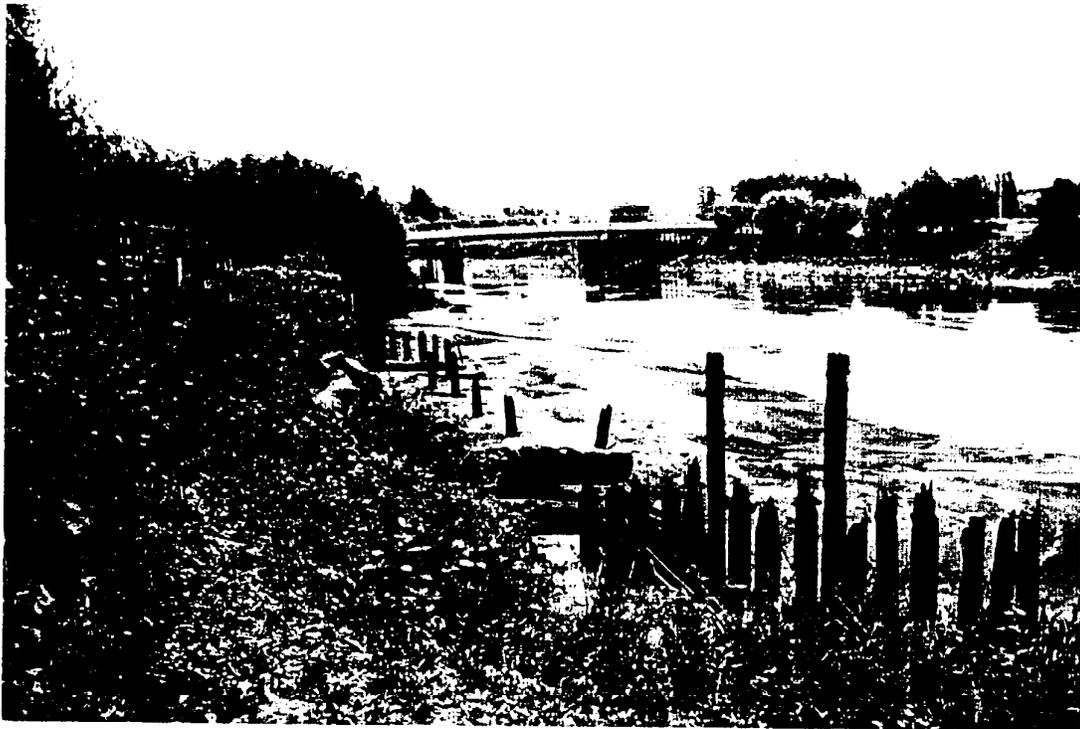


Photo 15 Intertidal Backfill Area Shown At Minus 3-Foot Tide.

Figure 11.

The study was proposed in order to fulfill a commitment of the State of Washington DNR Aquatic Lands Right of Entry Agreement signed by King County. The Aquatic Lands Right of Entry Agreement was effective during the spring of 1999 when the project site was remediated. The Panel anticipated a report of findings by May of 2000.

Pier 53-55 Sediment Cap and Enhanced Natural Recovery Area Remediation Project (Figure 12)

Project Manager: Cheryl Paston, City of Seattle Public Utilities.

Panel Project Coordinator: none assigned.

The Pier 53-55 Sediment Cap and Enhanced Natural Recovery Area sediment remediation project was completed in March 1992. The project entailed clean-up of a 4.5 acre area located offshore of Piers 53, 54, and 55 in downtown Seattle near Colman Dock. The Pier 53 site is on property owned by the Washington State Department of Natural Resources and is at the location of a former deep water sewer outfall which has been abandoned. There is presently a combined sewer overflow adjacent to the site which has been controlled to a maximum of one event per year. There is also a storm water outfall at the same location, at the end of Madison Street.

Monitoring results for 1996 were released in the December 1997 *Pier 53/55 Sediment Cap Monitoring Report*, (Panel Publication 17).

During 1998 the project manager submitted and discussed results of a sampling activities report prepared pursuant to Resolution 1998-08. No phenol or 4-methylphenol contamination was detected.

The next sampling activities and monitoring report for the Pier 53-55 sediment remediation project cap and natural recovery area are scheduled to occur in 2003.

Elliott Bay Central Waterfront Clean-up Study (Figure 13)

Project Manager: Cheryl Paston, City of Seattle Public Utilities.

Panel Project Coordinator: not yet assigned.

In 1993, the Panel initiated and funded the Elliott Bay Waterfront Recontamination Study and selected Teresa Michelsen, then with the Washington State Department of Ecology, as the project manager. The study was designed to evaluate the feasibility of undertaking sediment remediation projects within the central Seattle Waterfront area by 1997. The study encompassed the portion of Elliott Bay along the central waterfront from Pier 45 on the south to Pier 59 on the north. The final report of the two phased study was released in July 1995. Based on results of the field investigation, the Panel was encouraged to separate the study area into two distinct units for remedial design purposes.

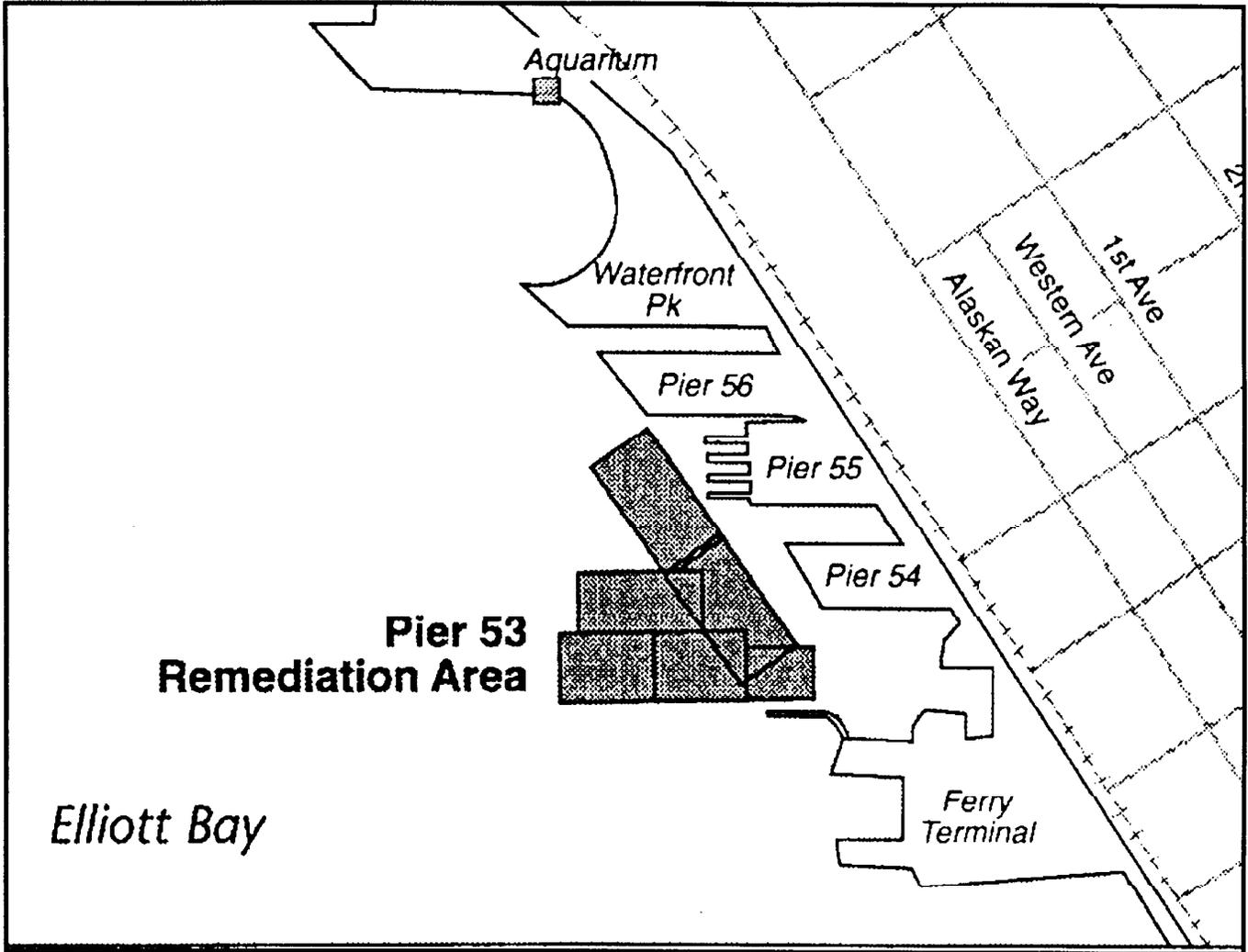


Figure 12. Pier 53/55 Sediment Cap

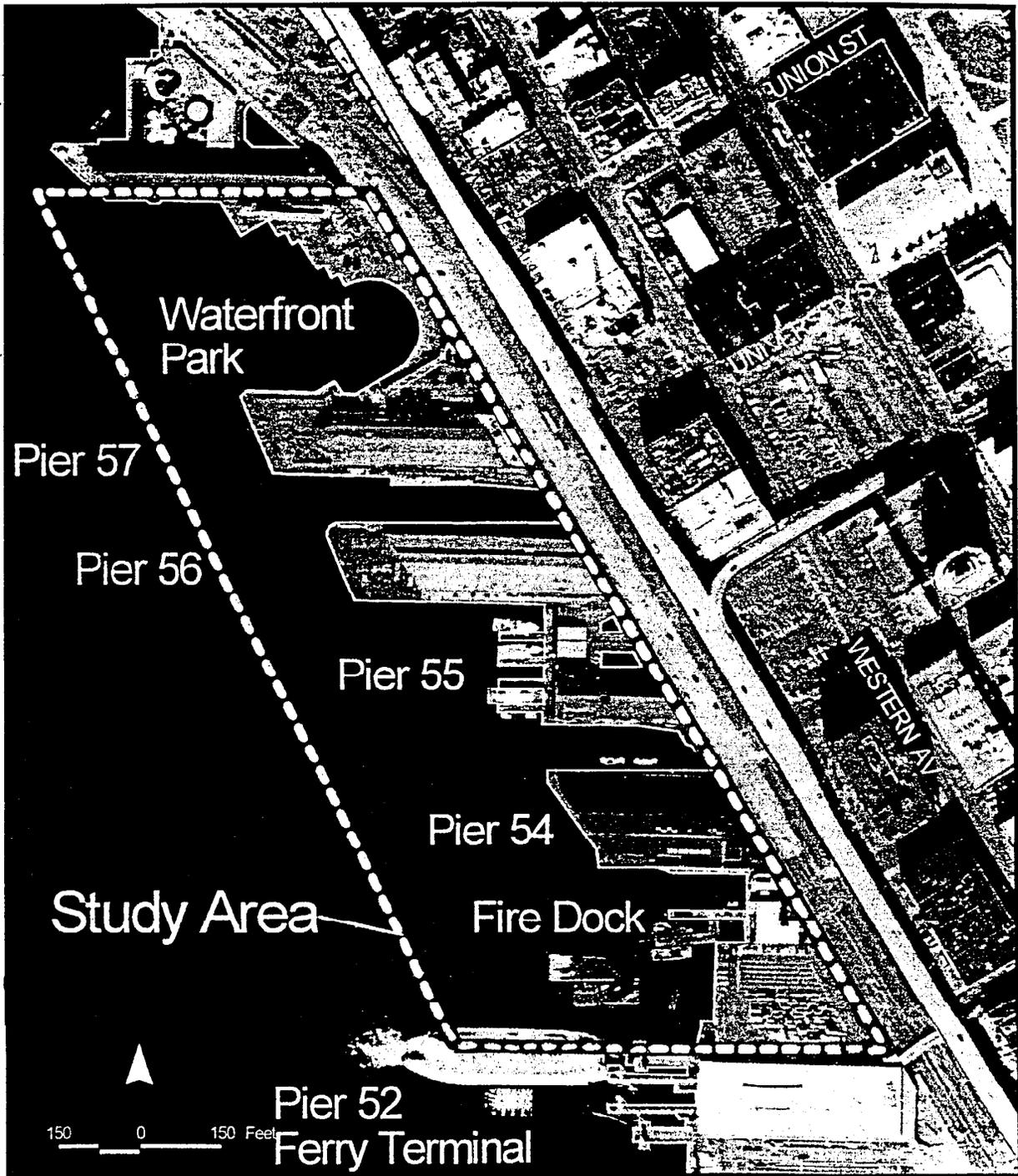


Figure 13. Central Waterfront Cleanup

Following the release of the Waterfront Recontamination Study, the Panel selected the City of Seattle as project manager for a potential remediation project from Colman Dock on the south to Pier 59 on the north. A draft Clean-up Study Work Plan and other draft documents were prepared and released for consideration and public comment in 1996. Additional sediment sampling activities were conducted in 1996 to obtain sediment chemistry data at twenty stations and bioassay testing data at ten of these stations that extended from the south side of Pier 54 to the north side of Pier 57.

Although interest in waterfront sediment remediation possibilities continues, further work on the project was suspended in January 1997 pending the availability of additional planning and design funds (see Budget Committee report).

Source Control 1999 Summary

Project Manager: Cheryl Paston, City of Seattle Public Utilities
Telephone: (206) 684-4609

The Consent Decree establishing the Elliott Bay/Duwamish Restoration Program provides for the development of Source Control Goals to protect natural resources and prevent recontamination of sites selected for sediment remediation and habitat development in the covered area.

In accordance with the settlement agreement, King County Department of Natural Resources and the City of Seattle, through Seattle Public Utilities (SPU), are charged with determining what changes and new activities, if any, are needed in addition to their ongoing source control programs to protect natural resources and prevent recontamination of Panel projects. The two agencies are then responsible for presenting recommendations for changes and actions to the Sediment Remediation Technical Working Group and the Panel for review and comment, and taking actions approved by the Panel. Table 2 lists source control activities authorized by the Panel from 1992 through 1999, along with amounts and resolutions authorizing credits to the City of Seattle and King County.

In 1998, King County presented data which suggested that phthalates from four separated storm drains could potentially recontaminate the Norfolk CSO sediment remediation project. The Panel subsequently passed Resolution 1998-14, which authorized up to \$21,710 in source control in-kind service credits to initiate a phased study of the evaluation of sources and related activities. King County also presented data suggesting that the volume of separated storm water discharged from the Duwamish Pump Station CSO and Diagonal CSO/Storm Drain was nearly double the volume originally reported by the City of Seattle, and cautioned that the larger volume significantly increased the potential for recontamination of the site by phthalates. The Panel subsequently passed Resolution 1998-15 authorizing source control in-kind service credits for additional recontamination modeling.

1999 Activities

Norfolk CSO

Deliberations and source control recommendations concerning potential recontamination of the Norfolk sediment remediation project were postponed pending completion of the work authorized under Resolution 1998-14.

Duwamish Pump Station/Diagonal CSO/SD

In July, the Panel was informed that King County was completing work required to award a contract for the evaluation of recontamination potential and completion of the Site Assessment Report for the Duwamish/Diagonal project site (Resolution 1998-15). Study results were presented to the Sediment Remediation Technical Working Group members in September in a report entitled Technical Memorandum: Mass Balance Model. The study attempted to perform a mass balance between chemicals observed in the site "footprint" and the various sources, including background and discharges from the storm drain and CSO by using direct field observations supplemented by analytical and numerical modeling. The results indicated that phthalates would require significant load reductions to meet SQS levels (up to 95% in one estimate) and that background deposition alone could be high enough to cause exceedences. In October, the Panel discussed the report and agreed with the working group's recommendation that the information was sufficient to incorporate model results and complete the Diagonal/Duwamish Site Assessment Report. The Panel accordingly approved Resolution 1999-09, authorizing up to \$15,000 of source control in-kind service credits for the updating and completion of the Site Assessment Report.

**ELLIOTT BAY/DUWAMISH RESTORATION PROGRAM PANEL
SOURCE CONTROL BUDGET WORKSHEET 1992 – 2000+**

Year	In-Kind Credit		Source Control Activities (S=City of Seattle; KC=King Co.)
	Authorized	Credit Approved	
1992	-	-	No activity
1993			No activity
1994	\$ 31,697	KC \$ 4,994 (1/28/99)	Res. 1994-8: authorizes King Co. to collect and analyze five storm water samples from two locations in the Diagonal Way storm drain
	24,320	S 28,065.64 (1/28/99)	Res. 1994-16: authorizes City (\$18,000) and King Co. (\$6,320) to undertake mathematical modeling to determine whether source control activities at Norfolk and Duwamish/Diagonal are sufficient to prevent recontamination
	13,500	S 1,800.20 (1/28/99)	Res. 1994-17: authorizes the development of source control goals (goals adopted 7/6/95, Res. 1995-14)
1995	20,220		Res. 1995-3: authorizes King Co. to sample, analyze and determine total volume of sediment from Diagonal outfall pipe
	8,000	KC 8,000 (1/28/99)	Res. 1995-15: authorizes King Co. to conduct phthalates literature review
	94,480	S 60,376.67 (1/28/99)	Res. 1995-21: authorizes the City to conduct source control activities, Diagonal and Norfolk storm drain basins
1996			No activity
1997			No activity
1998	5,000		Res. 1998-8 authorizes the City to conduct a literature survey concerning the occurrence of phenols in the marine environment and possible sources and business uses of phenols
	21,720		Res. 1998-14: authorizes King Co. to investigate phthalate sources to separated storm drains connected to the Norfolk CSO
	14,658		Res. 1998-15: authorizes additional recontamination modeling due to larger volume of storm water and potential recontamination by phthalates
1999	15,000		Res. 1999-09: authorizes King Co. to expend up to \$15,000 of source control in-kind service credits for additional contractor and project management support to complete the Duwamish/Diagonal Site Assessment Report by incorporating recontamination potential modeling results
Total	\$ 248,595	S \$ 90,242.51 KC 12,994.00	Reconciliation of Accounting – In-kind Service Credits Res. 1999-02 Res. 1999-01
Total Alloc.	\$2,000,000	\$103,236.51	Per Consent Decree, paragraphs 33 and 34

Table 2.