

Restoring Our Resources

The Natural Resource Damage Assessment and Restoration Program

Elliott Bay/Duwamish River, Puget Sound, Washington

When harmful substances enter the environment, fish, wildlife and other natural resources are often injured. The Department of the Interior, along with State, Tribal, and other Federal Partners, act as "trustees" for these public resources. Trustees seek to identify the natural resources injured and determine the extent of the injuries, to recover damages from the polluters, and to plan and carry out natural resource restoration activities. These efforts are possible under the Natural Resource Damage Assessment and Restoration Program, whose goal is to restore natural resources injured by contamination. The Department, along with other trustees, is accomplishing this goal in Puget Sound, Washington, bringing a cleaner, healthier environment to the people of the area.



A Marine Estuary and River

Elliott Bay is a 13-square mile urban embayment in central Puget Sound encompassing the waterfront of downtown Seattle along the southeastern shore of the bay. The inner bay receives fresh water from the Duwamish River which is divided by Harbor Island into the East and West Waterways. The Duwamish River originates 11 miles upstream at the confluence of the Black and the Green Rivers and drains approximately 483 square miles. The river and its tributaries support important recreational, subsistence, ceremonial, and commercial natural resources. Three salmon hatcheries release approximately 10 million juvenile salmon each year into a system which also supports a natural salmon fishery of equal or larger size. The estuary and river system supports federally protected salmon and trout, several commercially important species of flatfish and shellfish, and over 80 species of migratory birds. Two Indian Tribes exercise treaty rights to fish in several areas of the Duwamish River and Elliott Bay.

The Problem

Dredging and filling activities have substantially changed the original course of the Duwamish River channelizing the lower portion into two waterways that discharge into Elliott Bay. Due to urban and industrial development, fish and

wildlife are limited to approximately 2% of the remaining intertidal area of the bay and lower reaches of the river. Over the last 50 years, discharges of industrial and municipal wastewater, storm-water, combined sewer overflows, and uncontrolled spills have occurred. In 1974, a PCB spill was documented to have occurred in the river. Industries that have operated, or continue to operate in the system, include cargo shipping and handling, ship building and repair, wood treating, oil and chemical manufacturing and storage, wastewater handling, and general manufacturing.



Combined sewer outfall on the Duwamish River. Photo by King County, 1992.

Contaminants released include metals, semi-volatile organic compounds, PCBs, chlorinated pesticides and solvents, and others. Contaminants of concern include dioxin and furans, arsenic, lead, zinc, mercury, tributyltin, PCBs, phenols, phthalates, and PAHs. PCBs have been detected 1,000 -10,000 times higher than background levels. Over 200 potential sources, or responsible parties, have been identified including private companies and individuals, public utilities, and local, state and federal agencies and governments.



The lower Duwamish River entering Elliott Bay in Seattle, Washington. Photo by EPA.

In 1983, the Environmental Protection Agency (EPA) placed Harbor Island, a 400-acre site at the mouth of the Duwamish River on the southern edge of Elliott Bay, on the Superfund list. The island, created from sediments dredged from the waterways and river, was divided into four cleanup areas and completed in 2005. In 1994, the EPA added the 25-acre Pacific Sound Resources site located on the shore of Elliott Bay near the mouth of the Duwamish River to the Superfund list. Offshore from this former wood treating facility, approximately 100 acres of marine sediments were found to be contaminated with creosote, pentachlorophenol, and mixture of copper, arsenic and zinc. Within the corridor of the lower Duwamish River, the EPA listed a 5.4 mile segment for cleanup in 2001 and seven areas were identified in 2003 for early cleanup actions by EPA and the State of Washington. The EPA is also reviewing site information regarding the Lockheed Shipyard 2 site located on the West Waterway of Harbor Island for Superfund listing in 2006. Known and suspected impacts to trust resources include state sediment and water quality standard exceedences, fishery closures and warnings, reduced populations of benthic prey organisms, elevated contaminant levels in fish and wildlife, suppressed disease resistance and growth inhibition, reproductive and behavioral effects, and fin erosion and tumors in fish.



Re-establishing marsh plants on the Duwamish River. Photo by C. Tanner, USFWS.

Restoring the Resources

In 1991, the natural resource trustees, who include the U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration, the State of Washington, and the Suquamish and



Restored intertidal habitat on the former Seaboard Lumber Mill site on the Duwamish River. Photo from NOAA website by J.A. Brennan Associates, PLLC, 2001.

Muckleshoot Indian Tribes, settled with the City of Seattle and the Municipality of Metropolitan Seattle (Metro) for natural resource injuries resulting from the release of hazardous substances into Elliott Bay and the Duwamish River from combined sewer overflow discharges. As a result of the settlement, the Elliott Bay/Duwamish Restoration Program Panel was formed and is responsible for managing and implementing cleanup, habitat development, and contaminant source control. In 1994, the trustees settled with Pacific Sound Resources through bankruptcy proceedings which included damages from the former Wyckoff Eagle Harbor wood-treatment facility on Bainbridge Island in Elliott Bay. In 1998, the trustees completed a pre-assessment screen and began to assess the scale of natural resource injuries to trust resources of the Elliott Bay/Duwamish River area.

A Partnership for Success

Together, the federal, state, and tribal trustees have received over \$29 million in combined damages and assessment costs with \$12 million going towards sediment remediation as directed in the 1991 settlement with the City of Seattle and Metro. Additionally, over 60 acres of important fish and wildlife habitat have been restored along the Duwamish River corridor with six restoration projects completed by the Elliott Bay Restoration Program Panel (Panel).

Cost-share funding of \$420,000 was provided by the U.S. Army Corps of Engineers (ACOE), Trout Unlimited, Mid-Sound Fisheries Enhancement Group and the Muckleshoot Indian Tribe towards the Porter Levee Restoration Site project completed in 1999. The People for Puget Sound, ACOE, and the I'MAPAL Foundation provided approximately \$1.2 million towards the Hamm Creek Restoration Project completed in 2000. Funds to monitor four of the sites for 10 years have been set aside by the Panel. Additional settlements are pending in the Duwamish River corridor and cooperative efforts will be continued to implement new restoration opportunities.

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