



US Army Corps of Engineers  
Seattle District

Fall 2003

# LAKE WASHINGTON BASIN

## Ecosystem Restoration General Investigation

Semi-annual Newsletter

This is the first in series of semi-annual newsletters to provide information covering the Lake WA GI study and its basin-wide coordinated restoration efforts. Future issues will announce ways for the public to get involved in the study, through public meetings, EIS public comment periods and local jurisdiction contact information. Current important dates are:

- October 16, 2003 EIS Public Scoping Meeting- open to all members of the public
- January/February 2004- Future public meeting displaying all of the recommended project types and locations

### FOR MORE INFORMATION

call, write or e-mail:

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An example of shoreline restoration by creating a shallow slope, removing rubble and planting vegetation, as shown here in Seattle's Magnuson Park (above).

### WHAT IS THE "GI"?

Over the past 15 years, the Seattle District, Army Corps of Engineers has become more involved in helping communities, counties, tribes, and other non-federal governments in the Puget Sound watershed solve water resource and endangered species issues and take advantage of opportunities to improve the quality of the environment. The "General Investigations (GI) Program" of the Corps has been an effective tool in this endeavor; allowing the District to cost-share with local sponsors to study and develop workable solutions to environmental issues.

One such challenge in the Puget Sound watershed is the declining numbers of salmon species in the Lake Washington Basin, accentuated by the listing in 1999 of the Puget Sound Chinook as a threatened species under the Endangered Species Act (ESA). To study the problem and identify and implement practical solutions, the **Lake Washington Basin Ecosystem Restoration General Investigation Study** was initiated by the District in 1999, at the request of the City of Seattle Public Utilities and King County, who are the study co-sponsors. The study was authorized by Congress under a section 216 Authority (Reauthorization of Existing Project) of the Rivers and Harbors Act of 1970.

Over the last century, the natural ecosystem of the Lake Washington Basin (Basin) has been altered by the effects of forest practices and urbanization. The Basin, which includes Lake Sammamish, Lake Washington, the Cedar River, the Sammamish River, and smaller streams in the Seattle metropolitan area, has undergone vast changes. For example, a water supply diversion dam on the Cedar River was built in 1913; the Cedar River was rerouted from the Black River to Lake Washington in 1913. Lake Washington was lowered when the Lake Washington Ship Canal was built by the Corps of Engineers in 1915; the lower watershed has become urbanized; a new estuary was created and urbanized; and an extensive system of levees and reventments have been built over the years.

### WHY STUDY ECOSYSTEM RESTORATION

In 1991, at the request of the City of Seattle, the Corps initiated a Reconnaissance Study to investigate possible water conservation measures at the Hiram M. Chittenden Locks. The study was curtailed in 1992 so that concerns about minimum flows in the Cedar River could be addressed. In 1997, Seattle and King County requested the Corps study implementing long-term water efficiency improvements at the Locks to improve fish passage. The scope was also expanded to include fish passage enhancement at the Locks and basin-wide restoration. The reauthorization of the project (under Section 216) resulted in the current **Lake Washington Basin Ecosystem Restoration - General Investigation Study**.

### GI STUDY OBJECTIVES

- Restore Spawning, Rearing, and Migration Habitat for Salmonids
- Restore Natural Habitat Complexity
- Eliminate Barriers to Fish Access and Passage
- Restore Stream Channel Floodplain
- Improve water efficiency and fish passage at the Locks

To facilitate work on the GI Study, the Corps divided the Study into two phases, roughly based on the geographic regions of East and West. Phase I emphasizes the eastern portion of the basin, including portions of the Salmon Bay Estuary, Lake Washington, the Cedar and Sammamish Rivers, Lake Sammamish, Issaquah Creek and tributaries to each. Phase 2 encompasses the western portion of the study area, including portions of Lake Washington Lake Union, the Ship Canal, the Locks and the Salmon Bay estuary. In Phase I, many of the restoration solutions are generally well known, whereas in Phase II of the Study, further research and analysis is necessary to adequately establish the area's needs and to develop possible solutions. This phased approach allows for progress through feasibility and detailed, project-specific design in the "East" while further investigations and analysis take place in the "West". By splitting the study, the Corps was able to design projects where solutions are known while continuing to research into the more complex issues related to the Locks.

**"The overall goal of the GI Study is to restore riparian & aquatic habitat that supports natural salmon & steelhead populations within the greater Lake Washington Basin."**



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## HOW DOES THE GI STUDY LINK WITH LOCAL SALMON RECOVERY EFFORTS

The **GI Study** is closely linked with local salmon recovery and habitat conservation planning efforts in the Basin. In the **Lake Washington/Cedar/Sammamish Watershed**, King and Snohomish County and 25 local city governments are jointly funding the development of a long-range plan to conserve salmon habitat in their watershed.



Riverwalk constructed by the City of Redmond, (bottom) serves as an example restoration along the Sammamish River Channel (top)

Recognizing that it will take several years to develop a long-range plan to conserve salmon habitat and that many good measures could be done for salmon based on what is already known about salmon habitat needs, these governments published the **Lake Washington/Cedar/Sammamish Watershed Near-Term Action Agenda for Salmon Habitat Conservation**, in August 2002. The **Action Agenda** provides a range of opportunities that communities in the watershed can undertake in the next 5 years to improve conditions for salmon.

The efforts identified in the **Action Agenda** are based on an initial assessment of the human-caused factors that have been contributing to the decline of salmon habitat, which were compiled in the **Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-Sammamish Basin**, published in September 2001. The **Limiting Factors Report** provides a snapshot of existing salmon species and habitat conditions within the individual sub-basins in the **Lake Washington/Cedar/Sammamish Watershed** that limit the natural production of salmon species.

Two important links between the Lake Washington GI Study and these planning efforts are:

1. Most of the projects submitted by local sponsors that are being evaluated by the Corps for implementation in the GI Study came from the **Near-Term Action Agenda**.
2. The Criteria being used by the Corps to evaluate the projects submitted by local sponsors have been adapted from the **Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-**

## WHAT HASTHE GI STUDY ACCOMPLISHED

*Sammamish Basin and the Near-Term Action Agenda.*

In close coordination with the local sponsors (King County and Seattle Public Utilities) the Corps has completed 3 years of fisheries field studies identifying the "limiting factors" that adversely affect the natural production of salmon species throughout the Basin. These studies have focused on topics such as juvenile and adult survival in migration through the system of rivers and lakes, juvenile mortality due to predators, and adult mortality related to high temperature on the Sammamish River. The Locks and Ship Canal have been a specific area of focus, especially shoreline habitat usage and survival through the Locks. These studies encompass all life stages of the salmon, including rearing, migration and spawning. The study results have contributed to the recommendations in the **Sammamish River Corridor Action Plan (2002)** and the **WRIA8 Near Term Actions Agenda (2001)**. For further information and reports on the technical studies performed in conjunction with the Lake Washington General Investigation, please see <http://www.nws.usace.army.mil/>

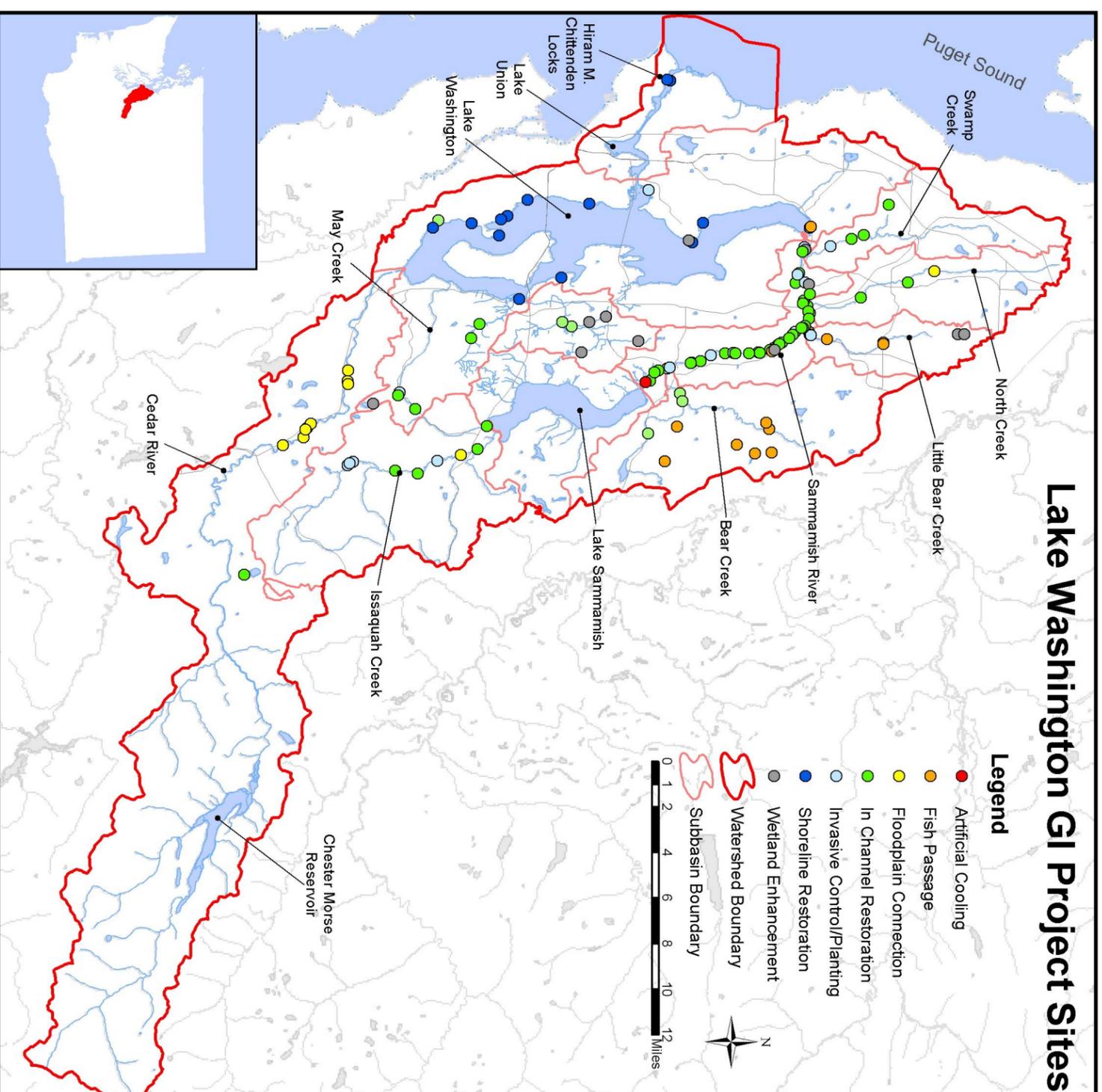
The Corps requested all municipalities within the Basin identify one or more restoration project sites within their jurisdiction that the Corps could evaluate for further study and implementation. Ten municipalities responded by submitting 92 project sites for Corps consideration (see map at right). The Study Team visited each site and developed a project description, benefits, location, design and cost.

### "SPIN-OFF" PROJECTS FROM GI STUDY

- Seward Park, substrate enhancement, Lake Washington, rearing channel, Summer 2001
- Squak Valley, rearing channel, Issaquah Creek, construction Summer 2004
- Issaquah hatchery, fish passage improvement, Issaquah Creek, construction Summer 2004

The Study Team developed a set of **Evaluation Criteria** for ranking the project sites, including biological benefit and implementability. These evaluations are used to help determine priority of project sites within the recommended plan. These recommendations are made in the Feasibility Report and submitted to Congress for approval and funding. The Feasibility Report and associated Programmatic Environmental Impact Statement were initiated this summer. For further information on ranking methods, contact Linda Smith, Corps Project Manager, at 206-764-6721.

## Lake Washington GI Project Sites



## WHAT STILL NEEDS TO BE DONE

There are three main actions yet to be completed in the Phase I portion of the GI Study before implementation can begin. These actions include: (1) Completing the evaluation process for the 92 projects; (2) Completing a Feasibility Report evaluating the projects' benefits, costs, and readiness for construction (3) Completing a Programmatic Environmental Impact Statement and Biological Assessment for the Feasibility Report that will evaluate potential impacts associated with implementing the range of projects types and

locations. In the completed Phase I Feasibility Report, the project list will include up to 20 project sites recommended for construction under the GI authority, utilizing Congressional and local sponsor funding. Approximately 70 projects will be recommended for construction under other Corps authorities, allowing for early action. Phase I is expected to be completed and authorized by Congress in 2004, subject to full project funding in 2003. Phase 2 will continue studies to define the factors affecting fish passage at the Locks and develop alternatives for evaluation with a report of recommendations to be completed in 2006 or 2008, depending on future project funding.