Eastmoreland Golf Course and the Johnson Creek Watershed Council:
A Case Study in Cooperative Problem Solving

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Eastmoreland golf course is located in southeast Portland, Oregon. An 18-hole municipal course, it sits amidst a mélange of city parks, businesses, and residential lots. Among its central features is Crystal Springs Lake, formed by the damming of a branch of Crystal Springs Creek, a tributary to Johnson Creek. Before 2000, this dam prevented fish passage into the lake, which could otherwise provide high-quality refugia and spawning habitat for native steelhead, cutthroat trout, Chinook salmon, and Coho salmon. Elsewhere on the course, other tributaries to Crystal Springs Creek had been altered through underground culverts and much of the creek was either mowed to its banks or choked with non-native blackberry shrubs; further limiting habitat for salmonids. In response to declining native fish runs and these potential restoration opportunities in the Crystal Springs Creek sub-basin, the Johnson Creek Watershed Council (JCWC) partnered with Steve Hoiland, golf course superintendent, along with many other individuals and groups, to make Crystal Springs a more inviting place for salmon.

The Johnson Creek Watershed Council submitted a Restoration and Enhancement Program proposal to the Oregon Department of Fish and Wildlife (ODFW). In April of 1997, ODFW approved $33,700 for the two year project that had a total budget of $69,950 and was implemented at the Eastmoreland Golf Course and neighboring Crystal Springs Rhododendron Gardens in southeast Portland. Key features of this proposal included:

- restoration of 8-acres of wetlands on the golf course
- 300-ft of stream and lake bank stabilization
- placement of more than 50 in-stream structures
- creation of 300-ft of an artificial fish bypass that allowed Coho salmon, steelhead, and cutthroat trout to access traditional spawning and rearing habitat in springs located at the Crystal Springs Rhododendron Gardens.

These aquatic enhancements now provide golfers and garden visitors with the rare opportunity to view native salmon and steelhead spawning in an urban environment.

Strategically placed signs describe fish habitat needs, project design, watershed management, and participation opportunities.

A combined work team consisting of JCWC staff, professional contractors, and volunteers implemented the project. The project budget included significant quantities of in-kind material and labor contributions. The JCWC was responsible for ongoing maintenance at the site and mobilizing teams of local volunteers.

Steve Hoiland was happy to have the golf course be a restoration site. Since becoming superintendent, he has taken numerous steps to improve habitat in Crystal Springs, including planting streamside buffer areas and nearly eliminating the use of herbicides on the course. "Anything for the fish!" he says, provided that costs to the golf course are not prohibitive. Maintenance of the plantings has been the major challenge. Keeping weeds at bay without herbicides is difficult, but well worth the extra work, and some of the older plantings now take care of themselves. Restoration work parties organized by the watershed council also provide periodic maintenance on many of the restoration sites.

Crystal Springs Restoration Projects
1994 - 2006

Golfers on the course were skeptical at first, but as the work progressed, it brought new and more varied wildlife to the golf course. Visitors now enjoy watching the many birds and occasional beaver. Now comments about the restoration and its results are overwhelmingly positive. Moreover, Coho salmon have been seen on the course several times since restoration began, including a sighting of three adults this past fall that attracted local media attention.

Crystal Springs Restoration
Golf Course Project Sites

Restoration Totals:
- 300′ of new stream channel/fish way
- 8 acre wetland enhanced
- 50 in-stream structures placed
- 2,000+ volunteer hours
- ~ 4,500 native plants installed
- 25+ partnering organizations

Site 1: Crystal Springs Main stem
Riparian Enhancement

The banks along this section of the creek were once dominated by a hedge of blackberries and had very little tree cover. Through multiple partnerships and community volunteers, the berries have been cleared, and over 3,000 native shrubs & trees were planted in 2005-06. Funding was provided by FishAmerica Foundation & NOAA Restoration Center.

Site 2: Main stem
Fish Habitat Enhancement

In 1994, three spawning gravel retention structures and a series of four large wood structures were placed in the stream to provide habitat. The project, led by Portland's Bureau of Environmental Services & ODFW, was the first restoration effort to take place on the golf course.

Site 3: Fish way

In 1998, Portland Parks and Recreation took the lead on designing and constructing a fish way to allow fish to access the habitat areas in and above the lake. The 300 foot-long channel also adds habitat as it provides passage around an 8 foot high dam.

Site 4: West Bank of Lake
Revegetation

Gaps in the shoreline vegetation that provided shade have exposed the water to sun and increased water temperature. Also invasive plant species posed a threat in this area. Volunteers planted native trees and shrubs along the riparian and wetland areas.

Project sites 4-8 occurred in 1998-99, led by the JCWC. These efforts were made possible by many community volunteers & donations, as well as, a grant provided by ODFW Restoration & Enhancement program.

Site 5: East Lagoon at Low Bridge
Fish Passage Restoration

Undertaken in 1999, this project in the Crystal Springs Rhododendron Garden reconfigured the spring channel to allow fish to pass through shallow water.

Site 6: Ravine on East Lagoon
Daylight Spring Branches

Prior to construction of Crystal Springs Lake, this area provided key habitat in the form of forested wetlands. Work in this ravine area focused on removing concrete piping and drainage tile with help from Portland General Electric. Key habitat elements such as woody debris and riparian plants were also installed.

Site 7: South Lagoon
Daylight Spring Branch

Johnson Creek Watershed Council worked with Northwest Steelheaders to excavate a buried spring and construct a natural functioning channel. A fish-friendly culvert was installed along with nearly 400 riparian plants.

Site 8: South Lagoon
Revegetation

The south lagoon is one of the biggest contributors of warm water. Installation of 240 native plants with Northwest Steelheaders and Multnomah County Corrections Community Service has helped provide shade and habitat.

The Crystal Springs Lake \ Stream Restoration Project was produced with the cooperation of local neighborhood associations, the U.S. Forest Service, Reed College Green Board, Oregon Department of Fish and Wildlife, Friends of Trees, and David Douglas High School. Other partners have included Portland General Electric and the City of Portland's Watershed Revegetation Project.

***Project Partners*:** Portland Parks and Recreation, SOLV, J. D. White and Associates, Inter-Fluve Inc., Wood-ward Clyde, Greenworks P.C, Oregon Department of Fish and Wildlife, Portland General Electric, Tualatin Chapter of the Northwest Steelheaders, Portland Chapter of the American Rhododendron Society, Ross Island Sand and Gravel Company, Oregon Watershed Enhancement Board, City of Portland Bureau of Environmental Services & Watershed Revegetation Program, Northwest Service Academy, David Douglas H.S., Reed College, Friends of Trees, United States Forest Service, Multnomah County Corrections Services, Eastmoreland Golf Course and Staff, ACF West – Geosynthetic Products, East Multnomah Soil and Water Conservation District, FishAmerica Foundation, and NOAA Restoration Center.