

The Washington State Conservation Commission's Watershed Data Pilot Project

Executive Summary

Salmon have been an important part of Washington's cultural and economic history since the area's first residents came to the shores of Puget Sound. Unfortunately, over the years, many species of salmon have declined to levels so low that they are now listed under the Endangered Species Act. One significant factor leading to this decline has been a century of poor land-use decisions that seriously damaged fragile salmon habitat and breeding grounds. For the past decade, government, tribal, and private entities have invested heavily in restoring degraded salmon habitat. Until recently, however, the measures of progress and success of these efforts and investments have been difficult to track and obtain.

From July 2005 through June 2007, Washington Conservation Districts had the responsibility to manage over \$50 million in habitat restoration and conservation investments. They determined that a data repository needed to be created to track and measure the effectiveness of habitat restoration investment activity throughout the state.

This required real-time, site-specific information to be gathered and collected through various remote Conservation District workers implementing the projects throughout the state. The Washington State Conservation Commission provides support, coordination, and advocacy for the Conservation Districts which are independent, locally organized agencies. While Conservation District employees are uniquely trained to design and build salmon habitat projects, they are generally not able to create and manage the data system necessary to store and analyze information critical to the successful implementation of habitat restoration efforts.

The Washington State Conservation Commission's Watershed Data Pilot Project resulted in the implementation of a Web-based solution available statewide to help Conservation Districts consistently and remotely capture data and better manage habitat restoration projects. The resulting statewide project database, consolidated with Geographic Information System-based watershed information from state natural resource agencies, provides valuable information to support local and state decisions on \$50 million investments in habitat restoration.

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The Challenge

The Washington State Conservation Commission (WSCC) needed an efficient, accurate, and timely way to tie together the raw data collected from the remote, on-site employees from various local Conservation Districts which would:

1. Help the state's Conservation Districts track planned and actual habitat restoration efforts to support good project management and reporting to stakeholders. This includes tracking the funding, progress, and the measurable actions (stream miles or acres restored) from each project, many of which are located in remote areas
2. Allow consistent data collection and intuitive reporting using maps and charts to enable state level decision makers to understand what has been done, how much has been done, and what is left to be done to restore salmon habitat
3. Allow collection of habitat monitoring data to enable objective measurement over long periods to better inform decision makers on the effectiveness of projects so investments can be targeted to proven restoration efforts

The Solution

An extensive planning effort coordinated the identification of several state and local natural resource agencies' information needs and existing systems with useful Geographic Information System (GIS) layers. Business processes for habitat monitoring and restoration were defined and a data model for needed information was developed. On behalf of the state's 47 Conservation Districts, WSCC acquired a web-based software-as-a-service system provided by ENKON. The ENKON Envirolis system, used primarily by companies and governmental agencies to manage environmental monitoring and improvement projects, was selected and customized over a three month period to meet the unique needs of habitat restoration projects.

Ten Conservation Districts and the WSCC served as initial system users and have captured nearly 1,000 habitat projects statewide since July 2006 through data imported from state agency grant management systems and direct data entry.

Information collected and functionality supported includes:

- Project ownership, purpose, and other basic information
- People and organizations involved in the project with contact information
- Project photos and document images
- Specific well defined practices (habitat and land use improvements) implemented including specific measures of impact, such as stream miles restored, acres of land protected, numbers of trees planted, etc.
- Geographic coordinates of the activities
- Monitoring measurements made to measure habitat health and project effectiveness
- Navigation of projects and practices using GIS maps, searches, and information trees
- Import of GIS layers from other natural resource agencies to show comprehensive views of water quality, fish species, and other sources of projects in a watershed
- Local agency and statewide reporting on practices implemented and funds spent
- System administration and security to assure confidentiality of landowner information

Being a vendor-hosted web-based solution, it was readily available to all pilot users and is easily maintained by the limited number of WSCC staff located in Olympia, Washington.

Hardware/software

The solution utilizes Microsoft .NET development and Web server tools, MS SQL Server 2005, and ESRI ARC SDE GIS services. It is hosted in a secure private facility with hardware redundancy, high speed connections to the Internet, and strong protection against intrusions and viruses.

Timing

The project, which began in July 2005, was funded as a pilot through June 2007. The recently approved 2007-09 Biennial Operating Budget includes funding for the long-term operation of the system and expansion to additional Conservation Districts.

Outreach Efforts

Extensive stakeholder communication contributed to the success of the project. While the Watershed Data Pilot Project was specifically appropriated by the Legislature, many legislative, state agency, and stakeholders had different expectations of the project. To develop a common vision and consistent understanding of the project, its governance and communication strategies emphasized:

- A steering committee that represented several state natural resource agencies and local Conservation Districts
- Active interaction and sharing of ideas with other groups and agencies with similar interests including the WSCC, the Salmon and Watershed Information Management Technical Advisory Committee, the Interagency Committee on Outdoor Recreation, and the Department of Fish and Wildlife Habitat
- Publishing the project's charter, communications, and progress reports on a public web site
- Establishing an e-mail list to notify a broad range of stakeholder on project updates
- Several briefings for legislative and natural resource agency staff to show the project concepts and its evolution during development and implementation
- Collaboration in completion, publishing, and wide dissemination of the legislative report on the project

Benefits and Results

Governor Gregoire named environmental health as one of her top priorities for *Moving Washington Forward* during the upcoming biennium. The Governor believes protecting the health of Washington's environment is essential to the state's quality of life and economic strength, and recently stated, "Our natural resources not only provide beauty and recreation, they are the lifeblood of our economy. Washington is also home to a rich diversity of fish and wildlife species and the unique habitats upon which they depend."

The Watershed Data Pilot Program implements a system that consolidates habitat project information, measures outcomes of projects, and combines this information with habitat data to support investment decisions, which directly meets the priorities of the Governor.

This system allows Conservation Districts to conduct analyses identifying which species are in the project area, and map projects against the water impairment maps to determine if trees being planted streamside are in the right locations which are crucial to the success of habitat restoration activities.

To realize these improvements, an information management system must be used on a long-term basis, implemented statewide, and data must be collected over the lifecycle of the habitat projects. This lifecycle may be a few years or a few decades depending on the project

An evaluation of the Watershed Data Pilot by its project partners and users identified both benefits and cost implications. These led to the continued investment in this system.

The operational benefits of the program substantially contribute to the successful outcome of restoration activities in each Conservation District at the local level as well as the overall achievement of the statewide Conservation Committee goals..

Specific operational benefits to operations and investment management include:

- Enabling each Conservation District to be aware of, support, and learn from other projects
- Tracking project participants to see who is involved in which projects
- Recording project baseline measurements for implementation and effectiveness
- Flexibility to track best practices in specific restoration disciplines
- Capturing project notes and due dates
- Flexible reporting to track project progress and obligations
- Capturing and reporting of time spent on various activities
- Tracking and sharing of project photos and documents
- Saving time in keeping records, answering questions, and meeting mandatory reporting obligations
- Creating GIS maps of projects and watersheds useful in project planning for many Districts that currently have no GIS mapping capabilities
- Analyzing project and habitat data together to better plan and select projects
- Tracking and reporting on internal project activities and due dates to better utilize resources and meet commitments
- Reporting on project achievements and costs to be accountable to local and state stakeholders
- Monitoring completed projects to evaluate effectiveness of local practices and project strategies over time

In addition to the benefits of having more accurate and timely data, administratively, these tools directly save Conservation District staff time through easing the time spent on gathering, sorting, and reporting time spent in the field per project, geographical area, and/or budgetary line items, as they manage the projects. At a minimum, it is estimated to save at least 8 hours per employee, per month in administrative time benefits. At an average of \$35 per hour, the estimate of one day per month in savings on average applied to all 47 Conservation Districts yields a target savings of 4,512 hours per year or \$157,920 per year.

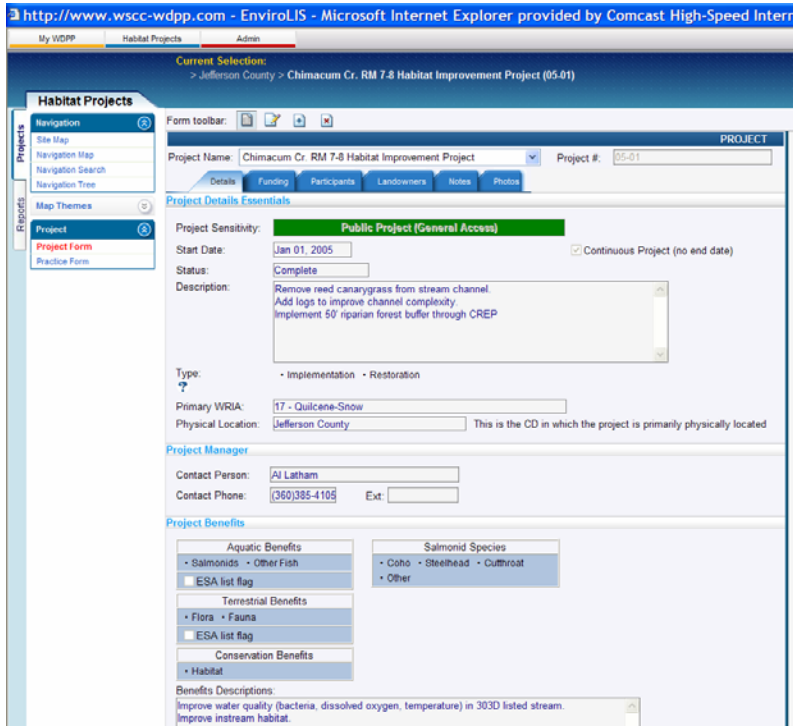


Figure 1 – Basic project data page

This page captures basic project data. This data allows tracking projects by their status or type, whether they are completed or not, their location and managing District, their project manager, and the benefits they are intended to provide.

The "Notes" tab shown above but not illustrated, captures dated notes, attributed to their author, which describe project events and can set dates for future events in support of project management and reporting.

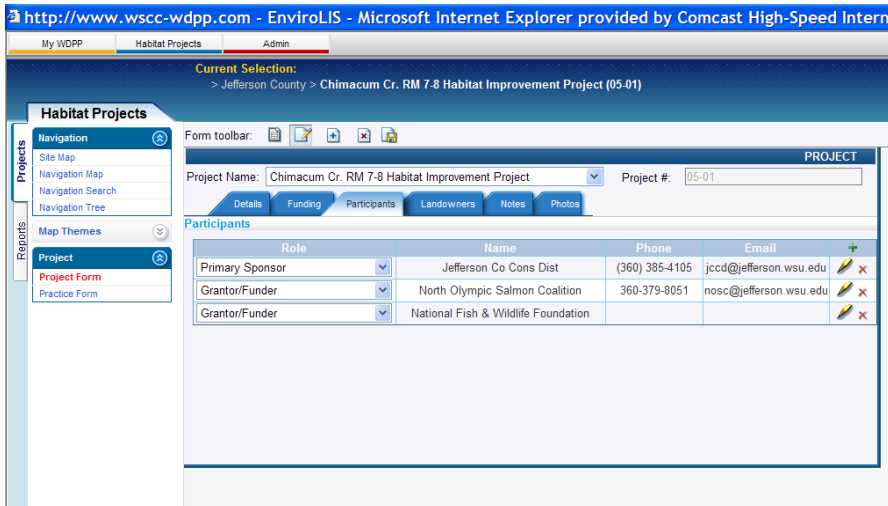


Figure 2 – Project participant page

The system tracks participants as unique parties on a project. This allows reporting on which agencies or individuals are involved in which projects throughout a district, or across Districts. Contact information is captured. The specific role for each party's association with a project is captured.

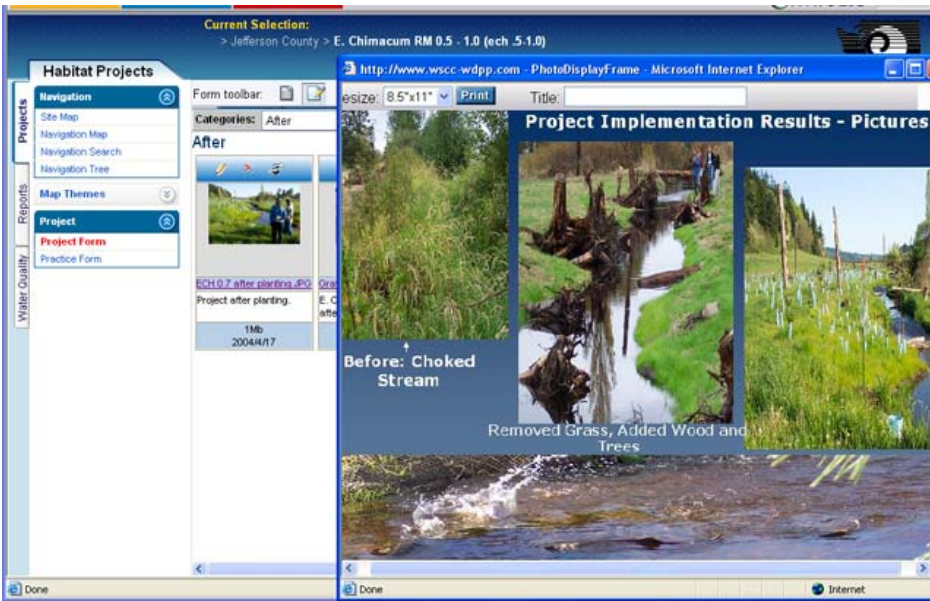


Figure 3 – Photos and documents

This page captures photos and document images. These provide both a record of efforts before and after, and data such as charts and graphs. While documents (files) were not implemented during the pilot, this additional functionality is easily implemented as well.

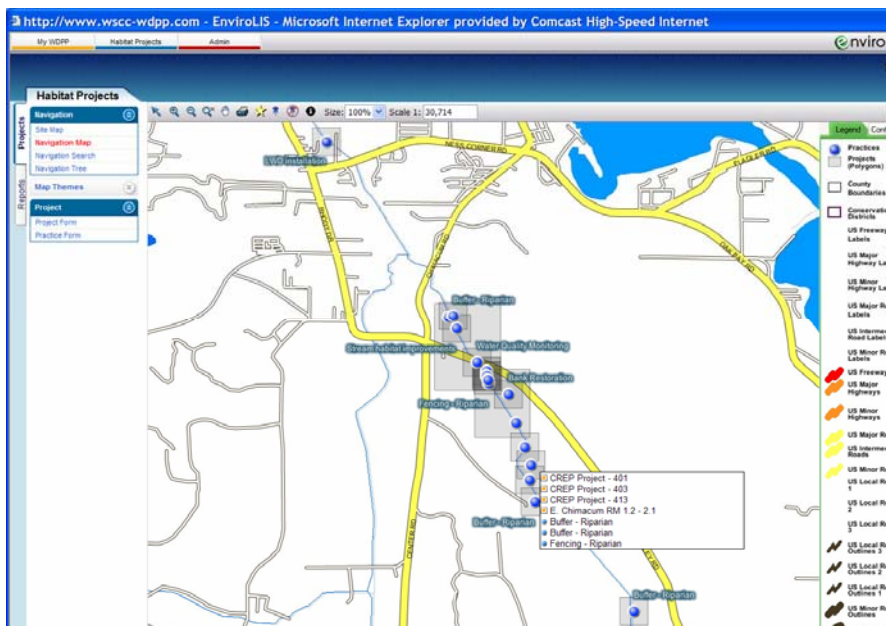


Figure 4 – View of E. Chimacum Creek Projects

Map navigation tools allow zeroing in on an area of interest. This view comes from location coordinates entered by Jefferson District for its E. Chimacum Creek habitat restoration projects. It is generated by the system's GIS capability linked to the repository database of project data. Clicking on a project box on the map identifies the projects in the area and the practices they have implemented. The GIS view shows water, roads, and other references and can also include an aerial photo background to aid in location of projects.