

**Statement of Work
for
Fish Habitat Distribution and Fish Passage Barrier
Framework Data Development
2009- 2011 Biennium**

Background

The Oregon Department of Fish and Wildlife (ODFW) currently stewards Oregon Framework standard fish habitat distribution datasets for anadromous salmonid species. ODFW is also in the process of developing the initial version of an Oregon Framework standard fish passage barrier dataset with an expected completion date of September 2009. These datasets represent a substantial compilation of the fish habitat and fish passage barrier information available within the state of Oregon. However, they have shortcomings that if addressed will make them more comprehensive, improve their integration and ultimately their value to the resource agency and public consumers of these data.

Key areas in need of data development addressed by this proposal:

- Incorporation of fish passage barrier data from several federal, state and local entities
- Incorporation of fish habitat distribution data from recently collected fish and habitat observation-based data as well as areas of modeled intrinsic potential (IP) or habitat the fish are expected to occupy in the absence of artificial obstructions
- Integration of the two sets of data on a geometric network to support automated fish passage barrier removal prioritization and habitat restoration performance measurement

Project Description / Proposed Activity

This project proposes to enhance existing fish habitat distribution and fish passage barrier datasets and to improve their integration for supporting natural resource decision making. By furthering the development of multiple Framework datasets and leveraging their individual value through better integration, this project supports OGIC's goals of enterprise GIS development. The project also addresses the governor's natural resource priorities by improving the quality and completeness of information that supports planning for the restoration of Oregon's river systems and the recovery of listed salmon species. ODFW's goals of native fish recovery planning and the further development of a statewide inventory of artificial obstructions to fish passage for prioritization purposes (ORS 509.585) will also be met. OWEB recently approved \$68,470 in funding for ODFW to enhance the fish passage barrier dataset (incorporate USFS and watershed council data) and create a geometric network for barrier prioritization analysis purposes. The data development activities recently funded by OWEB and the activities described in this proposal, when combined, comprise a project that both furthers the development of the individual datasets as well as assembles them together so their collective value can be realized.

A project workplan outline (Appendix A) describes the overarching technical specifications of the data compilation and development effort as well as the detailed steps for each of the three project tasks listed below. A final workplan will be developed contingent upon project funding.

Task 1

The fish passage barrier dataset includes features from every basin across the state, however it is only approximately 50% complete. Key datasets that will be incorporated into the Framework standard fish passage barrier dataset include data from the US Forest Service, Oregon Water Resources Department, Oregon Department of Forestry and local watershed councils. The fish passage barrier dataset (culvert feature type) also relates to the Framework transportation theme and in particular, the road centerline element.

Task 2

The fish habitat distribution datasets for anadromous salmonids are relatively (~85%) complete, however they require ongoing development and maintenance as new information becomes available. Each of the six datasets covers the complete extent of the current habitat for the particular species / run combination. Field survey data, of both fish and habitat observations, from multiple agencies (ODFW, USFS, BLM) that have been collected over the past several years will be incorporated into the Framework standard fish habitat distribution datasets. Additionally, recently developed IP data (ODFW, OSU, USFS, NOAA) will also be incorporated into the coho, steelhead and chinook fish habitat distribution datasets. The intrinsic potential data will add a valuable component to the datasets for assessing habitat quantity upstream of artificial obstructions (presumed historical habitat). IP data coverage of anadromous zones is approximately 95%. Intrinsic potential data are based on DEM-derived models of stream gradient, valley constraint and average flow (contributing area and rainfall). It is important to acknowledge that IP data have limitations, especially when applied at the scale of individual streams. The accuracy of source elevation data may result in both over and under-estimation of fish habitat. While IP data function as a surrogate for field verified fish habitat distribution data, they are the most broadly available data that support *relative* comparisons of available habitat above fish passage barriers.

The current version of the fish habitat distribution data standard does not include historical habitat distribution within its scope, however if this proposal is approved, a workgroup would be reconvened to build that into the scope of the standard.

Task 3

The Framework hydrography serves as the common template for integrating the fish habitat distribution and fish passage barrier datasets. The fish habitat distribution data standard requires the use of Framework hydrography stream ID's while the fish passage barrier data standard has this as an optional element. For fish passage barrier features that have no Framework hydrography attributes, these features need their location referenced to the hydrography to facilitate analysis on the network. OWEB has provided funding for building a geometric network that will enable comparison of fish habitat distribution and fish passage barrier data for barrier prioritization purposes. Developing the geometric network will serve to leverage the value of each of the separate fish habitat distribution and fish passage barrier datasets, enabling the prioritization of fish passage barrier improvement projects.

Numerous agencies and organizations will realize an improved ability to meet their business needs through the development of these data.

Agency	Business Need
NOAA Fisheries	ESA Critical habitat designations
ODFW	Conservation and Recovery planning
ODFW, OWEB, watershed councils	Habitat Restoration
ODFW, NOAA fisheries	Monitoring of fish populations
DSL	Essential Salmonid Habitat designations
ODOT	Transportation Planning
DEQ	Water quality standards enforcement
ODFW, OWEB, ODOT, BLM, USFS, watershed councils	Fish Passage Improvement planning
OWRD	Water Rights planning

The fish habitat distribution element is listed as a very high priority and the fish passage barrier element is listed as a high priority in the current Framework Data Development Strawman list.

Deliverable(s)

Statewide, an enhanced fish passage barrier dataset, fish habitat distribution datasets for coho, winter and summer steelhead, spring and fall chinook and chum salmon and a geometric network tying them all together will provide greater support for resource planning needs. The datasets produced under this project will be made available to the Geospatial Enterprise Office and OSU-INR for populating the NavigatOR data clearinghouse (possible use of SDC resources). ODFW will also host these datasets on currently maintained agency servers.

Item	Description	Cost Detail	Total Cost	Completion Date
Fish passage barrier data enhancements	Incorporation of fish passage barrier data from US Forest Service, Oregon Water Resources Department, Oregon Department of Forestry and local watershed councils	OGIC (\$20,482) OWEB (\$45,400) ODFW (\$8k) OWRD(\$5k)	\$78,882	6/30/10
Fish habitat distribution data enhancements	Incorporation of fish habitat distribution data from recently collected fish and habitat observation-based data as well as areas of modeled intrinsic potential	OGIC (\$59k) ODFW (\$20k) ODOT(\$15k)	\$94,000	1/31/11
Geometric Network	Build a geometric network to integrate fish habitat distribution and fish passage barrier datasets for supporting automated fish passage barrier removal prioritization and habitat restoration performance measurement	OWEB(\$23k)	\$23,000	5/31/11
Metadata	FGDC compliant metadata for all datasets	ODFW(\$2k)	\$2,000	6/30/11
Total Project Cost			\$197,882	

Amount Requested: \$79,482

Total Project Budget

Item	Description	Cost
GIS Specialist (ISS-3)	19 months	\$97,000
GIS Coordinator (ISS-6)	4.5 months	\$40,000
Program Manager	1.5 months	\$16,000
Computer	Desktop	\$2,300
Software	Office	\$320
Overhead	10%	\$7,262
In-kind	Activities covered by internal agency budgets	\$35,000
Total Project Cost		\$197,882

Partners & Amounts Contributed

Partner	Cash	In-Kind ¹	Total Leveraged
Oregon Department of Fish and Wildlife (ODFW)	0	\$30,000	\$30,000
Oregon Watershed Enhancement Board (OWEB)	68,400	0	\$68,400
Oregon Department of Transportation (ODOT)	\$15,000 ²	0	\$15,000
Oregon Water Resources Department (OWRD)		\$5,000	\$5,000
Total	\$83,400	\$35,000	\$118,400

ODFW's in-kind contribution represents staff time for data development under existing contracts. OWEB is providing a cash contribution to the project and ODOT expects to provide a cash contribution to the project. OWRD will be contributing staff time to prepare their dams data for submission and integration into the fish passage barrier dataset.

Stewardship

ODFW will serve as the custodial steward, as well as the horizontal and vertical integrator for both the fish habitat distribution and fish passage barrier datasets. For each dataset, stewardship plans will be developed to ensure that best practices are followed throughout data development, update, maintenance and administration. ODFW will perform the primary role for data development and update, quality control / quality assurance and data integration. A secondary role will be filled by ODFW for providing GIS data and related services while GEO is likely to perform the primary role for this function. Key focus areas for the data development and update include improvement of data completeness and currency, refinement of both spatial and attribute accuracy. One or more web applications will be explored for facilitating update to the datasets and for ensuring tighter feedback loops between the data originators and the framework datasets.

Additional Information

ODFW submitted two separate Framework data development proposals for the 2007-2009 biennium. The Fish Habitat Distribution Data Migration proposal was funded for \$17,000 out of a total project cost of \$42,000. The project was completed on time and on budget. Fish habitat distribution datasets along with metadata were published in February 2009. The Fish Passage Barrier Data Development proposal (\$50,000 requested out of a total project cost of \$148,000) was the highest ranked Framework proposal not approved for funding.

Contact Information

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¹ Estimated value of agency staff time related to fish habitat distribution and fish passage barrier data development which will contribute to the enhancement of these datasets.

² Amount assumes ODOT level funding from current biennium to the 2009-2011 biennium.

Appendix A
Fish Habitat Distribution and Fish Passage Barrier
Framework Data Development Workplan Outline

Overview

This project will work with three separate Framework data elements (fish passage barriers, fish habitat distribution and hydrography), each of which has a data standard in place. The fish passage barrier data standard supports data with varying levels of positional accuracy, however a minimum attribute element requires that the accuracy be described for each barrier feature. The target positional accuracy for each fish passage barrier feature is 40 feet. The precision of coordinates and other attribute values are specified in the data standard. The fish habitat distribution data standard uses a linear referencing model to manage event data tied to the Framework hydrography. Consequently, the positional accuracy of the fish habitat distribution data is dependent upon the accuracy of the hydrography data. The precision of fish habitat distribution event data is specified in the data standard.

Task	Description	Start Date	End Date
	Project Start	10/1/09	
1	Fish Passage Barrier Data Development		
1a	Request / acquire data from fish passage barrier data originators (USFS, ODF, OWRD, watershed councils)	10/1/09	11/30/09
1b	Assess compliance with standard, conduct data quality assurance, develop appropriate cross-walk for conversion and obtain originator approval for conversion methodology	10/15/09	2/28/09
1c	Convert data into framework standard format	12/1/09	3/31/10
1d	Reconcile duplicates between datasets	12/15/10	4/30/10
1e	Document data processing and create metadata	10/15/10	4/30/10
1f	Develop fish passage barrier data stewardship plan	10/1/09	6/30/10
1g	Distribute data and metadata	6/15/10	6/30/10
2	Fish Habitat Distribution Data Development		
2a	Request / acquire fish habitat distribution data, including fish and habitat observation data as well as intrinsic potential data, from data originators (ODFW, USFS, BLM, OSU, NOAA)	5/1/10	6/30/10
2b	Assess compliance with standard, conduct data quality assurance, develop appropriate cross-walk for conversion and obtain originator approval for conversion methodology	5/15/10	8/31/10
2c	Convert data into framework standard format	7/31/10	11/30/10
2d	Document data processing and create metadata	5/15/10	11/30/10
2e	Develop fish habitat distribution data stewardship plan	5/1/10	1/31/11
2f	Distribute data and metadata	1/15/11	1/31/11
3	Develop Geometric Network		
3a	Linear reference barrier features to hydrography (as needed)	2/1/11	2/28/11
3b	Create geometric network. Fish habitat distribution feature classes will be merged with each species managed as a subtype. The fish habitat distribution data will be represented as the edges and the barrier data will be represented as the junctions of the network. If the Framework hydrography data have been integrated with the NHD data model, this network may utilize the NHD model.	3/1/11	6/30/11