

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal**

Section 1. General administrative information

Oregon Fish Screening Project-FY'99 Proposal

Bonneville project number, if an ongoing project 9306600

Business name of agency, institution or organization requesting funding
Oregon Department of Fish & Wildlife

Business acronym (if appropriate) ODFW

Proposal contact person or principal investigator:

Name Roy Elicker
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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
-NA-			

NPPC Program Measure Number(s) which this project addresses.

Measures 7.10, 7.10A.2, 7.10A.3.

NMFS Biological Opinion Number(s) which this project addresses.

N/A

Other planning document references.

John Day Basin: INTERGRATED SYSTEM PLAN FOR SALMON AND STEELHEAD PRODUCTION IN THE COLUMBIA RIVER BASIN, June 1, 1991. Summer Steelhead-Mid Columbia-strategies pg. 89, table 23; Subbasin Limiting Factors pg. 91; Spring Chinook-Mid Columbia -Status of stock pg. 39, Strategies pg.42; pg. 71 actions: include 1-5 summary; Reference 1994 for basin funding, strat. 2 pg. 95;

Water Resources Department, Stream Restoration, Subbasin John Day River, WRD 1991, stream restoration project on upper mainstem John Day River.

Deschutes/Trout Creek Basin: WY-KAN-USH-MI-WA-KISH-WIT, Volume II, page 38; ODFW LOWER DESCHUTES RIVER SUBBASIN MGMT PLAN, pages 1-24, 1-25, 1-34; TROUT CREEK RIPARIAN RESTORATION FINAL REPORT (BPA project no. 83-423) pages 15, 17, 18; Other support - Trout Creek Watershed Council, local landowners, Jefferson County Soil and Water Conservation District, and from nongovernmental organizations like Oregon Trout.

Subbasin.

Oregon Water Basin 6 - John Day River (Middle Fork, North Fork, South Fork)
 B.7 - Umatilla River (Walla Walla R.)
 B.5-Deschutes R: Trout Creek.

Short description.

Construct and install approximately 32 new and replacement fish screening and protection devices, including 2 fishways, in Oregon Water Basins 5,6,&7.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	X	Construction	X	Watershed
*	Resident fish		O & M		Biodiversity/genetics
	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate		Monitoring/eval.	*	Flow/survival
	Other		Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement		Wildlife habitat enhancement/restoration
			Acquisitions		

Other keywords.

fish screens, fish passage, fabrication, installation

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
9703500	Eval. of Watershed and Habitat Resp. to Recent Storms:Effects on ESA Salmon	Fish protection in project areas.
9703400	Monitoring Fine Sediment Levels in Substrate & Overwinter Sediment in Clean	Fish protection in project areas

8402100	Mainstem, Middle Fork, North Fork John Day River - Implementation/O&M	Cooperate with private landowners for fish enhancement activities. Share office space.
8400800	North Fork John Day Habitat Improvement	Fish protection in project areas
9303800	North Fork John Day Area Riparian Fencing	Fish protection in project areas
9605300	North Fork John Day River Dredge Tailings Restoration Project	Fish Protection in project areas
9404200	Trout Creek Fish Habitat Restoration Project:	Habitat Restoration (fencing, instream structures) in project area

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Prioritize basin projects	a	Inventory fish screen structures and/or potential project sites by existing condition, potential juvenile fish mortality, and other factors.
		b	Prioritize projects by location within the watershed, fish species present, potential juvenile fish mortality, and other factors.
		c	Prioritize and schedule individual installations by factors above (1a,1b), water diversion practices, water user cooperation and other factors.
2	Seek water user cooperation and access to project site	a	Correlate usage legalities (water rights) with Water Resource Department.
		b	Contact landowner of each proposed project site location for construction access.
		c	Conduct on-site project reviews with irrigation districts and individual owners and users.
3	Project site surveys	a	Complete project site surveys in coordination with the Oregon Water Resources Dept., NMFS,

			and individual property owners.
		b	Provide site survey document to NMFS for implementation approval.
4	Preparation and construction of civil works	a	ODFW shop construction crew fabricates specific project forms.
		b	ODFW field construction crew constructs concrete support structures at project site.
5	Component fabrication (ODFW Fish Screening Shop)	a	ODFW fish screening shop crew fabricates project fish screening components, including mechanical drum and drive systems as needed.
		b	ODFW field fabrication crew installs drum and drive components into project structure.

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	2/1999	3/1999	5.00%
2	3/1999	7/1999	10.00%
3	2/1999	7/1999	5.00%
4	3/1999	10/1999	40.00%
5	2/1999	11/1999	40.00%
			TOTAL 100.00%

Schedule constraints.

Schedule constraints may occur if: ODFW seasonal employees are not rehired in a timely manner; weather conditions prevent project access; site restraints due to landowner cooperation complications.

Completion date.

Completion date 2009.

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel		\$130,323
Fringe benefits	OPE	\$50,826
Supplies, materials, non-expendable property	Service & Supplies	\$240,035
Operations & maintenance	-NA-	
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	-NA-	
PIT tags	# of tags: -NA-	
Travel	Per Diem	\$3,900
Indirect costs	-NA-	
Subcontracts	-NA-	
Other	Administrative Overhead	\$97,769
TOTAL		\$522,853

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	\$540,000	\$560,000	\$585,000	\$605,000
O&M as % of total	10.00%	10.00%	10.00%	10.00%

Section 6. Abstract

This project provides immediate and long term protection for anadromous and resident fish species in Oregon Water Basins 5,6&7 by the installation or replacement of fish protection and passage devices on private irrigation diversions. It directly follows the 1994 Columbia Basin Fish and Wildlife Program Measure 7.10-Provide Passage and Protective Screens on Tributaries, particularly measures 7.10A.2 and A.3, which mandate:

- a. Screening and passage criteria based on NMFS standards;
- b. The use of existing expertise of federal, state, and private entities to accelerate implementation of fish screening and passage measures; and,
- c. The maintainance of a prioritized list of tributary screening and passage facility improvements – which will include both the construction of new facilities, and the upgrading and maintenance of existing facilities.

The expected outcome over the next ten (10) years will include the construction and/or replacement of 450 individual fish screening and passage devices or projects. Select individual fish screening and passage projects will be monitored and evaluated on an annual basis.

Section 7. Project description

a. Technical and/or scientific background.

This project provides immediate and long term protection for anadromous and resident fish species in Oregon Water Basins 5,6&7 by the installation or replacement of fish protection and passage devices on private irrigation diversions. It directly follows the 1994 Columbia Basin Fish and Wildlife Program Measure 7.10-Provide Passage and Protective Screens on Tributaries, which states in part:

During the last 50 years, state and federal entities initiated water diversion screening programs and passage improvements in several parts of the Columbia River Basin. Hundreds of screens have been installed on important fish-producing streams. Unfortunately, salmon and steelhead are still being lost in diversions throughout the basin. A large number of diversions, including many on the Salmon and Grande Ronde rivers and other streams that support weak stocks, remain unscreened. In addition, many of the existing screening facilities are in need of maintenance or other improvements.

Unscreened or poorly screened diversions result in the loss of many juvenile salmon and steelhead that have survived the rigors of natural rearing only to be killed at the beginning of their journey to the ocean. This effort has a high probability of reducing salmon and steelhead mortality and will require the use of all available resources for funding, design, construction, and installation.

FWP measures 7.10A.2 and A.3 are particularly relevant since they mandate, first, that screening and passage criteria be based on NMFS standards and criteria, developed in concert with agencies and tribes. For this project, all fish screening and passage construction will meet established NMFS criteria. ODFW has a long history, over 50 years, in the construction and installation of fish protection devices and has the expertise to insure that these individual projects will be completed and operated as efficiently as possible, for the benefit of the water user and fishery resources.

Second, the use of this existing ODFW expertise will accelerate the implementation of fish screening and passage measures, in conjunction with current federal Mitchell Act activities (see below).

Third, ODFW has consistently maintained a prioritized list of tributary screening and passage facility improvements needed within the Columbia River Basin, which will be further upgraded by the information collected as part of this overall project. Use of BPA funding will further accelerate the construction and upgrading of fish protection devices began years ago by the state of Oregon and federal Mitchell Act funding.

The Mitchell Act (Public Law 75-502) was passed by Congress in 1938, and was designed to fund salmon restoration activities in the Columbia River Basin. As a result of the Mitchell Act, the federal government began funding fish screening activities in northeast Oregon in 1952. This government funding for all aspects of fish screening devices, including maintenance, has made the program readily accepted by water users.

Annual operation and maintenance cost of Mitchell Act fish screens are about 10% of the initial implementation price. Mitchell Act and BPA funds support the three fish screening shop facilities involved in this project, located at Enterprise, John Day, and Madras. These facilities operate year round with a total of nineteen permanent and twenty-four seasonal employees. These shop facilities provide the fish passage program with the ability to be 100% self sufficient, meaning that all phases of fish screen implementation, including operation and maintenance, is performed by ODFW technicians.

In recent years, however, Mitchell Act funding has been reduced to only encompass simple operation and maintenance of existing fish screening and passage devices. This reduction has meant that there is now no funding to replace the many now outdated and inefficient fish screening devices still in use. In the John Day basin, in particular, the vast majority of the 293 fish screening devices currently in use were installed in the 1950's, and were originally designed for juvenile smolt protection only. This includes all of the 165 fish screening devices in the John Day located in critical spawning and rearing areas for wild stocks of chinook salmon and steelhead. Because of their age and design, these old systems are deteriorating to the point where simple day-to-day maintenance can not keep them in operation.

b. Proposal objectives.

1. Increase fish survival rates of wild stocks of chinook salmon and steelhead by the fabrication and installation of thirty two new and replacement fish screening and passage structures in the John Day, Walla Walla, and Deschutes River (Trout Creek) basins.
2. Increase survival rates for resident fish species, including sensitive salmonids and non-game fish, by the completion of Objective 1.
3. Provide education and knowledge of fish protection needs through landowner cooperation and participation with new project implementation.
4. Prepare and distribute reports of program operations and project completions on a monthly, quarterly, and annual basis.
5. Provide interagency coordination and public outreach.

6. Evaluate select individual fish screening and passage project efficiency (including survival rates) by monitoring and other methods.

c. Rationale and significance to Regional Programs.

During irrigation season (April 1-September 30) stream flows decline at a very rapid rate throughout the John Day basin. Due to the geographic location the John Day basin is classified as a dry climate, with very little rainfall and limited higher elevation water storage capabilities. Heavy irrigation practices, high evaporation rates, and high water temperatures have adversely affected salmonids throughout much of the John Day subbasin. The Trout Creek sub-basin also has a similar dry climate, with heavy agricultural use of existing surface water through gravity irrigation systems.

In the John Day system, hatchery supplementation has been dismissed as an option for increasing salmon and steelhead populations. Habitat improvement and fish passage is presently the only option for increasing populations.

In the John Day and Trout Creek basins, ODFW, local watershed councils, and other private, state, and federal entities have aggressively implemented riparian recovery projects. These projects have improved vegetation, improved stream bank stability, instream habitat diversity and better water quality and quantity. These habitat improvements have increased salmonid natural production.

All of the proposed fish screen implementation projects are located in the same priority location as these improved habitat projects. It is essential to the survival of the salmonid fish species to provide protection from irrigation diversions for these fish during migration and while inhabiting their spawning and rearing areas. Without adequate protection fish populations will never reach natural production carrying capacity.

d. Project history

On April 18, 1997, Bonneville Power Administration and the Oregon Department of Fish and Wildlife entered into an agreement to fabricate and install twenty-nine new and/or replacement fish screening and passage devices. The primary goal of the project was to provide adequate fish protection for anadromous and resident fish species from irrigation diversions during migration and while inhabiting their spawning and rearing areas.

This project provided for implementation of program measure # 738, (1), action item 5, strategy 3, actions including 1-5, pg. 71, of the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program (NWPPC 1987) to maintain and improve proper screening of water diversions. The project (new # 9306600) consisted of numerous project locations throughout the upper mainstem and middle fork subbasins of the John Day River, and two in the Trout Creek basin (Deschutes River). Project access

was established with private landowners, but it took extensive time to develop cooperation and gain acceptance of screen implementation and resource benefits.

In the John Day basin in 1997, 27 dilapidated rotary fish screening devices were replaced, primarily in the upper mainstem. In the Trout Creek basin, one major fish passage and screening construction project was completed in 1997, the Marston diversion above Ashwood (Creek Mile 37). Due to the late date that this project was funded last year, however, no construction could begin on a second project, the Lower Trout Creek diversion (CM 7.5). Engineering design is now complete on this project, as well as the acquisition of tools and materials, and construction will proceed in 1998.

e. Methods.

Determine priority listing of existing structures or unscreened diversions by geographic location in relation to fish species present. This process will be prioritized by evaluating methods of instream water diverting methods which include percentage of time diversion operates on an annual basis, approach velocities, and fish bypass outfall. All entities are related to the percentage of effectiveness of the existing structure (Fish mortalities).

Conduct landowner contact for access and project implementation. This process includes on site engagements with irrigation districts, individual owners and users, and coordination with Water Resource Department.

Complete on site survey forms for each proposed project. This site survey form is required by National Marine Fisheries Service. Information contained on the form include location, size of structure, geographic location, diversion premeditation, structure and fish bypass elevations.

Construct project forms for concrete structure implementation. Structure forms are built in the construction facility by the ODFW form construction team, or in the case of certain large fish passage projects, built on site.

Construct concrete structures in the field. Construction is performed by an ODFW field construction crew.

Fabricate fish screening drive components for each structure implemented in the field. All components are fabricated by an ODFW fabrication shop crew.

Install fish screening components into concrete structures in the field. This task is performed by ODFW field fabrication crew.

The description of proposed priority project implementation is in sequence and must be carried out for each individual project.

The benefits of providing fish protection in irrigation diversions by implementing effective fish screening devices has been well documented. Current criteria fish screens provide immediate and long term protection for all life stages of anadromous and resident fish species while they inhabit their spawning and rearing areas and during migration periods.

f. Facilities and equipment.

The Northeast Oregon Fish Passage Program currently operates annually with two shop facilities. The John Day shop is principally an implementation, operation and maintenance facility. Enterprise has a satellite shop which performs operation and maintenance.

The Trout Creek shop, located in Madras, will be primarily responsible for the fish screening and passage projects targeted for the Trout Creek basin (Deschutes River).

John Day Shop

The John Day facility has the full capability of executing all phases of rotary fish screen implementation internally. The Current John Day program operates with two shop facilities located on 6.45 acres. In 1994 BPA funded the construction of the new fabrication and office facility and in addition an existing shop facility that was on the property. The breakdown of the purchase and value include: fabrication shop/office facility - \$1,500,000.00; form construction facility - \$218,000.00, and land - \$232,000. The facilities and property are valued at \$1,950,000.00

The John Day program currently has sufficient equipment to adequately implement the proposed fish screen projects. The equipment include both shop and field.

<u>Fabrication & Office Facility</u>	<u>Form Construction Facility</u>	<u>Heavy Equipment</u>
Building Dimensions 155ft.x 109ft.	Building Dimensions 100ft.x 50ft.	Two Backhoes Three Forklifts 2-Ton Flatbed 2-Ton Boom Truck
Truck		

Shop Equipment

Paint Booth
Trailer
Bead Blast Booth
Equipment Trailer
Iron Worker
Three Welders
Plasma Cutter
Metal Break
Three Drill Presses

Shop Equipment

Drill Press
Cut Off Saw
Torch
Welder
Misc. Hand & Power Tools
Two Table Saws
Two Radial Arm Saws

Two Cut Off Saws
Two Track Torches
Overhead Crane
Metal Lathe
Five Ton Press
Misc. Hand & Power Tools
Metal Bender

Motor Pool Vehicles

3/4 Ton Utility Vehicle
1-Ton Utility Vehicle

Trout Creek Shop

Facilities:

Office Space 800 sq. ft.
Shop Space 700 sq. ft.
Yard space 3,000 sq. ft.

Of this space BPA only pays for 1/2. Federal Mitchell Act picks up the remainder.

Equipment:

3 Vehicles (2-3/4 ton trucks, 1 S10 blazer)
3 ATVs (1986 Honda, 1987 Yamaha, 1986 Polaris)
2 Computers
2 Printers
Wood Post Driver
Rock Drill
Power Auger
Camera

g. References.

Agencies and Indian Tribes of the Columbia Basin Fish and Wildlife Authority, June 1991, Integrated System Plan for Salmon and Steelhead Production in the Columbia River Basin.

ODFW 1995-1997 Biennial Report on Fish Screening Activities, Oregon Fish and Wildlife Department, 1997.

Findley, Gary & Moulton, Coby. ODFW, 1995, 1996, 1997, Mitchell Act - Northeast Oregon Fish Passage Program, Annual Reports.

Schumacher, Adam, ODFW. A Proposed Long-Range Plan for Fish Screening in Northeast Oregon.

Northwest Biological Consulting 1983. Trout Creek Restoration, Project No. 83-423. Phase 1 Final Report. Bonneville Power Administration, Portland, Oregon.

Section 8. Relationships to other projects

This project proposal compliments riparian and fish habitat improvement efforts underway on ODFW BPA habitat and stream restoration and on surrounding US Forest Service and Bureau of Land Management property by assuring anadromous fish protection from diversion mortality, by continuing their restoration efforts for spawning, rearing, and during migration.

Oregon Water Resource Department depends on this project for fish protection in private diversions, to comply with Oregon State Law 498.301.

The local watershed council depends on the project to coincide with restoration efforts.

Natural Resource Conservation Service (NRCS) depends on this project for their water diversion and dam structure improvement projects.

This project will help to coordinate and develop additional projects with several NGO's and various other state and federal agencies (i.e. Oregon Trout, SWCD, Trout Creek Watershed Council, BOR, Water Resources, OSP, DOF, BLM, USFS, Corps of Engineers, et.al.). This project also works with and shares resources with the Fifteenmile project located in The Dalles. Also there are additional projects that have been jointly developed with the Watershed Council, SWCD, and ODFW. Our manpower and technical expertise has been instrumental in assisting the development of further restoration efforts in the basin. This project is also tied together with the NE Oregon Screens Project (Project 093-66). Personnel, equipment, facilities, and expertise from the Trout Creek Habitat project and the Mitchell Act project are utilized in execution of the screening projects.

Trout Creek is the uppermost eastern tributary in the Deschutes River basin below the Pelton-Round Butte complex. The headwaters of Trout Creek are in the North slope of the Ochoco Mountains north of Prineville, and generally flows north through the communities of Ashwood and Willowdale. Trout Creek is approximately sixty miles long and enters the Deschutes River at river mile 88. The Trout Creek watershed covers approximately 750 square miles, and there is an additional 80 stream miles of major tributaries.

The Trout Creek Watershed has historically been overgrazed, heavily channelized and diverted for irrigation withdrawal, and extensively managed for timber production. This

has resulted in severe flood damage, low summer flow, high summer stream temperatures, increased sediment delivery, and habitat simplification.

The Trout Creek Habitat Restoration project began in 1982, the first phase of the project was a three year survey of the entire basin to determine the feasibility of restoration efforts in the basin. The survey analyzed cost/benefit ratios and habitat enhancement possibilities. On the ground construction began in 1986, and continued until about 1991. Since 1993 the project has concentrated on maintaining the existing work. Recently, additional effort has been placed in acquiring funding from other sources to complete supplementary projects in the basin.

Within the last year the basin has formed a Watershed Council that is comprised of landowners throughout the basin along with several other agencies. Other agencies besides ODFW that are involved with the council and/or have assisted in on the ground projects include: Oregon Trout, Oregon Water Trust, Jefferson County SWCD, ODFW Restoration and Enhancement, ODFW Access and Habitat, Bureau of Reclamation, Governor's Watershed Enhancement Board, US Forest Service, National Marine Fisheries Service - Mitchell Act Funds, and Fisheries Across America.

Section 9. Key personnel

Principal investigator

Roy Elicker, Oregon Department of Fish and Wildlife
Program Manager,
Fish Screening and Passage Program

Education

J.D., Northwest School of Law, Lewis and Clark College, Portland, Oregon. 1982
M.S., Wildlife Biology, Rutgers University, New Brunswick, N.J. 1982
B.S., Wildlife Biology, Rutgers University, New Brunswick, N.J. 1975

Training

NMFS Fish Passage and Diversion Structures
State of Oregon DAS Core Curriculum Training for Managers and
Supervisors
Northwest Fish Screening and Passage Workshops, 1996, 1997

Experience

(1) 1996 to present, ODFW, Program Manager, Fish Division
Fish Screening and Passage Program

Duties

Responsible for overall management of federal and state wide fish screening and passage programs, including budget, personnel supervision, coordination, and legislative responsibilities.

(2) 1993 to 1996, ODFW, Program Coordinator,
Habitat Conservation Division
Watershed Health Program

Coordinated and administered the Watershed Health Program for ODFW
Facilitated program participation among federal, state, and local agencies and governments
Responsible for administration, and state agency team mgmt.

(3) 1992 to 1993, Trust for Public Land
Project Manager, Oregon Field Office

(4) 1987 to 1992, The National Wildlife Federation
Regional Counsel
Pacific NW Natural Resources Center

Project Leader – John Day and Walla Walla Basins

Coby Moulton, Manager of the John Day Fish Passage Program.

Duty responsibilities include manage and supervise all aspects of the John Day Fish Passage Program. Overseeing the operation of two shop facilities, and providing supervision to twenty technician employees and one Office Specialist. This is accomplished either directly or through an assistant manager and foreman leadworkers. Work with Portland, Regional Management, Fish District staff and other agencies. Set priorities and schedule project implementation. Maintain 293 fish screening devices in the John Day basin. Provide support to the Statewide and Watershed Health programs by completing all or portions of fish screen implementation projects. Manage and administer budgets, and perform administrative requirements such as the completion of the last seven annual reports. Plans, supervises, monitors, coordinates, and as necessary conducts operations concerned with intra department and public relations.

Qualifications: Employed with the Oregon Department of Fish & Wildlife for 16 years, from 1982 to 1997. During this time period duties have been performed directly in the fish passage program. Involved in every phase of the fish screening and fishway program. As John Day Fish Passage Manager supervision was given directly or indirectly to over 150 rotary fish screen implementation projects at various locations throughout the state of Oregon.

Recent Job Accomplishments: During fiscal year 1997 the John Day Fish Passage Program implemented 51 new rotary fish screening devices under five separate programs.

Bonneville Power Administration - John Day Basin - 27 projects, Statewide Cost Share - 8 projects, Governor's Watershed Health , Rogue River - 7 projects, Mitchell Act (ESA) Salmon - 7, US Forest Service Bulltrout -2.

Project Leaders – Trout Creek Basin

<u>Personnel</u>	<u>Title</u>	<u>Department</u>	<u>FTE</u>
Allen (Chip) R. Dale	Special Program Leader	ODFW	0.125
No Resume Available			
Ray Hartlerode	Project Leader	ODFW	0.33

Education

1979 - 1983 Oregon State University; Corvallis, Oregon
 Degree: B.S. in Fisheries Science

Training

AFS Riparian Restoration Workshop
 NMFS Fish Passage and Diversion Structures Training
 State of Oregon DAS Core Curriculum Training for Managers and Supervisors
 Northwest Fish Screening and Passage Workshops

Experience

1991-Present, Oregon Department of Fish & Wildlife; Project Leader on Fifteenmile, Trout, And Buckhollow Creek Habitat Restoration Projects. Project Leader on N.E. Oregon Screens Trout Creek Passage Project, Project Leader for NMFS Mitchell Act Fifteenmile/Trout Creek Fish Screens Project.

Duties

Fiscal management of project budgets, supervision of project personnel to implement and maintain fish habitat projects, preparation of proposals, work statements, contracts, leases, and reports, coordination of habitat projects with other agencies and organizations performing conservation programs in the watershed, identified stream reaches with altered habitat conditions that lack necessary habitat types to sustain natural production of fish populations, determines appropriate fish habitat restoration/ improvement actions, negotiates with government and private landowners for cooperation and permission to conduct habitat restoration projects, develops program direction in the form of standards and guides for all regional habitat programs; including, but not limited, Bonneville Power

Administration (BPA) National Marine Fisheries Service (NMFS) and state funded fish habitat and screening projects.

1987-1991 - Oregon Department of Fish & Wildlife. Assistant Project Leader, Trout Creek Habitat Restoration Project

Duties

Conducted fish habitat surveys, recommended habitat restoration treatments, developed habitat restoration construction contracts, inspected construction contracts, negotiated landowner riparian leases, wrote landowner riparian leases, performed maintenance on riparian improvements such as riparian fencing and instream habitat structures.

Section 10. Information/technology transfer

Interagency information transfer occurs between ODFW Region - La Grande, ODFW Fish Division - Portland, ODFW Trout Creek Project - The Dalles, National Marine Fisheries Service, Bonneville Power Administration. Fish screening and fishway improvement projects through yearly meetings, tours, and quarterly and annual reports.

Information/technology transfer between Idaho Fish & Game, California Fish & Game, Washington Department of Fisheries, Bureau of Reclamation, US Forest Service, and through the Tri-States Fish Passage meetings that are held on an annual basis.