

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

Section 1. General administrative information

**Warm Springs Reservation 1999 Watershed
Enhancement Project**

Bonneville project number, if an ongoing project 9138

Business name of agency, institution or organization requesting funding
The Confederated Tribes of the Warm Springs Reservation of Oregon

Business acronym (if appropriate) CTWSRO

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
Salmon Corps	PO Box C	Warm Springs, OR 97761	Zach delNero

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

Measures: 7.6A.1., 7.6A.2, 7.6B.1, 7.6B.3, 7.6B.4, 7.6B.6

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

Other planning document references.

Project is consistent with: Wy Kan Ush Me Wa Kush Wit, The Integrated Resources Management Plan of the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Deschutes River Subbasin Plan (NPPC, 1991). Project is supported by

the Confederated Tribes of the Warm Springs Reservation of Oregon, the Mutton Mountain Grazing District and private landowners, the Bureau of Indian Affairs, Natural Resources Conservation Service.

Subbasin.

Deschutes River Subbasin, (Warm Springs River and Shitike Creek subwatersheds)

Short description.

Protect and enhance key habitat for anadromous and resident fish using passive techniques and continue collecting information on habitat quality and stock status in tributaries to the Deschutes River.

Section 2. Key words

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

Other keywords.

water quality improvement, sediment control, habitat inventory, monitoring and evaluation.

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj	Task

1,2,3	Objective	a,b,c	Task
1	Continue inventories of anadromous and resident fish habitat in the Warm Springs River and its tributaries.	a	Contract with Aquatic Inventories Project (Kim Jones, Oregon Department of Fish and Wildlife).
		b	Conduct habitat inventories
2	Improve water quality of the north fork Warm Springs River by reducing sediment input from roads.	a	Obliterate .5 miles of the W247 road along the north fork Warm Springs River.
		b	Obliterate .25 miles of the W244 road at its junction with the north fork Warm Springs River.
		c	Rock 1.5 miles of the W240 road.
3	Improve the stability of Charley Canyon subwatershed to improve water quality in the Warm Springs River	d	Implement prescribed fire on 640 acres of uplands in the Charley Canyon watershed near the S210 and S212 roads to remove existing Medusa-head mats.
		a	Seed the burned area with native grasses using range drilling techniques.
		b	Fence the project area to exclude livestock.
		c	Monitor vegetation recovery using condition and trend plots and photo points.

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	10/1998	9/1999	33.00%
2	10/1998	9/1999	13.00%
3	10/1998	9/1999	54.00%
			TOTAL 100.00%

Schedule constraints.

Completion date.

1999

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel		\$51,100
Fringe benefits		\$11,753
Supplies, materials, non-expendable property		\$95,000
Operations & maintenance		\$ 0
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		\$ 0
PIT tags	# of tags:	\$ 0
Travel		\$2,500
Indirect costs		\$74,666
Subcontracts		\$121,100
Other		\$ 0
TOTAL		\$356,119

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	\$ 0	\$ 0	\$ 0	\$ 0
O&M as % of total				

Section 6. Abstract

The CTWSRO is proposing to implement BPA funded watershed enhancement activities on the reservation in conjunction with activities funded by CTWSRO and other entities. Objectives include restoration activities designed to reduce sediment input into the Warm Springs River and completing habitat inventories. BPA would fund approximately 85 percent of the project and the remaining 15 percent would be contributed by the CTWSRO, BIA, NRCS and others.

The project will benefit native populations of spring and summer/fall chinook salmon, summer steelhead, Pacific lamprey, rainbow trout, bull trout and other resident fish species in the Warm Springs River, Shitike Creek and Deschutes River watersheds. The Warm Springs River and Shitike Creek, support the only naturally spawning population of spring chinook salmon in the Deschutes River and one of the last truly wild populations in the region. No hatchery produced fish are allowed to spawn above the weir at rivermile ten.

Road eradication and improvements and upland prescribed fire and seeding are proposed

to treat watershed conditions that contribute significant sediment to the fish bearing Warm Springs River. Habitat inventories are proposed and data collected will be incorporated in tribal watershed assessment efforts such as the Ecosystem Diagnosis and Treatment process and the Cumulative Impact Analysis.

Section 7. Project description

a. Technical and/or scientific background.

The Deschutes Basin is the second largest watershed in the state of Oregon. Water quality varies in the Deschutes from pristine to degraded, with some areas experiencing high water temperatures. The most recent and definitive water quality study in the Deschutes Basin was a collaborative effort between the Confederated Tribes of Warm Springs (CTWSRO) and the Environmental Defense Fund (EDF). The study indicates that there are environmental problems in the basin that affect natural resources, the quality of life and the economic future of the basin (EDF, 1995). Present environmental conditions reflect that natural resources are used in the basin extensively for irrigation, grazing forestry hydropower generation, urban developments and recreation.

The only remaining naturally spawning populations of spring chinook salmon in the Deschutes River are in the Warm Springs River and Shitike Creek, both located on the Warm Springs Reservation. Protection and restoration of habitat in these areas is critical to maintaining these native populations. In addition, native populations of summer/fall chinook, summer steelhead, bull trout, Pacific lamprey, mountain whitefish, sculpin spp, chiselmouth, dace spp rainbow trout and other resident fish are located in streams on or adjacent to the Warm Springs Reservation and will benefit from the proposed objectives. The CTWSRO is interested in protecting habitat for all fish populations as they all play a role in the ecosystem and in tribal culture.

To provide the Deschutes basin with a watershed management framework, the CTWSRO are implementing the Ecosystem Diagnosis and Treatment (EDT) process for the Deschutes basin. EDT is an applied ecosystem analytical tool that integrates existing information on environmental conditions with natural life cycles (anadromous and resident fish) by stream reach and life stages methodology (Lastelle 1996). The EDT method is a science-based approach to analyzing data and actions to maintain or improve the production of fish resources. Results of EDT will provide CTWSRO with indications of where fish life histories have been compromised due to environmental conditions. This will indicate where and what restoration treatments are most likely to succeed. Initial results are expected in 1999.

As a natural system, watersheds can and do recover from the effects of management activities. However, if activities are crowded together in time and space, natural recovery cannot keep pace. A Cumulative Impact Analysis (CIA) Methodology has been developed in order to match the timing of management activities with those of the natural system. It is used on the Reservation to monitor threshold values indicating a watersheds

capacity to withstand management activities without incurring significant damage from a major storm event. CIA threshold values have been determined for most watersheds on the Reservation.

The cumulative runoff acreage (CRA) is a value that measures the percentage of compacted soil, bare ground and other impacts of management. Higher values indicate greater impacts have occurred in the watershed. Most watersheds have a CRA threshold of 25 percent, but those containing highly erosive soils may have a threshold of 20 percent or less. In watersheds where the current CRA value exceeds the designated threshold value from CIA analysis, actions have been taken to mitigate degraded areas. This has included road and skid trail eradication, and erosion-control seeding and projects deemed necessary to bring CRA values below threshold values within a reasonable time frame.

Data collected indicates that all reservation streams meet the tribal chemical water quality standards but temperatures exceed required standards for many weeks during the late summer and early fall months. Sediment and turbidity levels are also a problem in streams with unstable banks within the Warm Springs River watershed, especially during runoff events. Current CRA values for segments of the Warm Springs River range from 7.2 in lower reaches to 26.4 in the upper reaches. Aquatic habitat inventories were initiated on the reservation in 1997 using the methodology in section 7.e. Data from the inventories confirm that accelerated sediment delivery in the Warm Springs River is of concern. This data confirms the CRA watershed stability estimates. Objectives are proposed to address some significant sources of sediment delivery. Additional habitat inventories are proposed (objective #1) for 1999 to complete surveys of most major fish bearing streams on the reservation. Information from the inventories will be used in conjunction with EDT and CRA to further define where watershed restoration activities should be focused.

Wolman pebble count data and results of the 1996 habitat inventory (ODFW-Aquatic Inventories Project 1997) show that the north fork of the Warm Springs River currently exhibits sediment levels above the optimum (i.e. >30 percent surface fines). Roads have been identified as the primary source of sediment. There are currently 11 miles of riparian roads in the north fork drainage. Most of the roads are native surface roads. Soil types vary and include erosive ash/sandy loam/clay complexes. The soils are somewhat stable in vegetated areas but erosive in steep, unvegetated areas. The proposed objective (objective #2) will eradicate two short road sections and stabilize a main riparian road to reduce direct point sources of sediment. Immediately downstream of the project areas are Warm Springs Meadows. The Warm Springs Meadows contains the highest quality spawning and rearing habitat in the Deschutes River systems (redd counts and Aquatic Inventories Project, 1997) and is used by spring chinook, summer steelhead, bull trout and other resident species for rearing and spawning. Reducing the potential for sediment delivery (and subsequent degradation of habitat) into the meadows is a priority for the CTWSRO. Significant cost share of road eradication and improvement will be provided by the CTWSRO and the Bureau of Indian Affairs (BIA) (see section 7b).

Another area of concern for sediment deliver lies within the Charley Canyon watershed. Vegetation in this watershed is comprised primarily of annual grasses (Medusa-head and cheatgrass) and shrub species (rabbit brush and buckwheat). The watershed is in a low-seral stage and was heavily grazed by sheep and cattle from the 1890s to the 1930s. Soils within the watershed are comprised primarily of heavy red clay and clay/loam and are highly erosive in nature. Precipitation runoff from the Mutton Mountains and low-frequency high intensity storms generally deposit heavy sediment loads into the Warm Springs River, visibly turning the river red. This contributes to the low CIA values for the lower Warm Springs River. The Charley Canyon watershed enters Warm Springs River at rivermile eight. The heavy soil losses can be attributed to the shallow root depth of Medusa-head dominated plant communities. The proposed objective (#3) will stabilize a section of the uplands, reduce soil input and act as a demonstration project to encourage more local landowners to participate in similar future programs. Significant cost share will be provided by the CTWSRO (see section 7b).

Completing the habitat inventories for the major fish bearing streams on the Reservation is a high priority given that the spring chinook salmon population on the Reservation is one of the few truly wild, naturally producing population left in the Columbia River Basin. Hatchery produced spring chinook are removed from the spawning population at the Warm Springs National Fish Hatchery weir and only wild fish are allow to proceed upstream. The wild population is currently depressed. In addition, probable Endangered Species Act (ESA) listings for summer steelhead, bull trout and Deschutes River fall chinook add to the importance for completing the inventories. The inventories will allow fisheries managers a greater understanding of current habitat conditions and risks and increase the potential for successful restoration.

b. Proposal objectives.

Objective 1. Continue inventories of anadromous and resident fish habitat in the Warm Springs River and its tributaries.

Deliverable/results: A contract will be established with ODFW (Aquatic Inventories Project) to inventory 97 miles of Mill Creek and Badger Creek tributaries to the Warm Springs River and Shitike Creek. Data collected will be used to determine where fish habitat conditions are degraded and restoration or protection activities will be developed to address them. This objective is a high priority due to the spring chinook salmon population being in a depressed state and also being one of the last purely wild populations in the region. The inventories are of high priority also due to probable ESA listings for summer steelhead, bull trout and Deschutes fall chinook. A final report detailing the results will be provided to CTWSRO by ODFW that will present the information collected in summary and graphic form as well as specific reach data.

Objective 2. Improve water quality of the north fork Warm Springs River by reducing

sediment input from roads. Reduce the amount of soil erosion from native surface roads by road eradication and stabilization.

Deliverable/results: Two road segments will be eradicated and one road segment stabilized which will result in a decrease in sediment delivery to the north fork of the Warm Springs River. This will benefit anadromous and resident fish by reducing the embeddedness of gravel thus producing more suitable spawning habitat and reducing the risk of smothering eggs in the gravel during runoff events. Monitoring and evaluation will be conducted by CTWSRO to evaluate success of reducing sediment delivery to the stream (\$2000 value). Cost share of road eradication/improvement program for 1999 will be \$28,000 by the CTWSRO and BIA.

Objective 3. Improve the stability of Charley Canyon subwatershed to improve water quality in the Warm Springs River.

Goals:

1. Improve perennial seedling regeneration potentials through the reduction of the Medusa-head litter “mats” by 60 percent. This will require a prescribed burn to reduce the existing litter layer by 60 percent over 75 percent of the area.
2. Reduce young junipers by 80 percent within the existing plant communities.
3. Reduce the current years growth of annual grasses within the community 80 percent through the application of fire.
4. Reduce soil loss from treated upland ranges by 30-50 percent within a five year time frame.
5. Establish a perennial-dominated plant community and improve soil holding overland flows and sediments entering the Warm Springs River system.

Deliverable/results: 640 acres of Charley Canyon will undergo prescribed fire, drill seeding and will be excluded from grazing. This will benefit anadromous and resident fish in both the Deschutes and lower Warm Springs rivers by reducing the embeddedness of gravel thus producing more suitable spawning habitat and reducing the risk of smothering eggs in the gravel during runoff events. Monitoring will be conducted and reported. Labor for implementation will be provided by CTWSRO at an in kind value of \$18,520. An in kind value for the prescribed fire will be provided by the BIA at a value of \$692.

c. Rationale and significance to Regional Programs.

This project is consistent with all known tribal and federal laws. This project is consistent with several areas of the NPPC’s Fish and Wildlife Program, and the sponsors submit it as a watershed project that will benefit both anadromous and resident fish. Specifically it is consistent with Section 6 of the Fish and Wildlife Program that calls for watershed based habitat restoration focusing on protection of wild and natural populations.

The project will compliment other past and ongoing watershed restoration work in the Deschutes River. The CTWSRO, Oregon Trout, Bring Back the Natives (Trout Unlimited), the Environmental Protection Agency (EPA), the Natural Resources Conservation Service (NRCS), private landowners and others have been working together, in some cases for several years, to improve watershed health on the Reservation. The CTWSRO have also been working with ODFW, the Deschutes River Conservancy, several watershed councils, private landowners and others on restoration efforts for the Deschutes River.

In 1986 the Warm Springs Tribal Council adopted Resolution 7410 (Ordinance 74) that called for an integrated planning approach to natural resource management. An Integrated Resource Management Plan (IRMP) for the forested area of the reservation was implemented in 1992 and the IRMP for the non-forested and rural areas is currently under public review. The IRMP provides management direction for natural resources on the reservation and establishes resource goals, objectives and desired future conditions. It also established standards and best management practices for management.

Since 1992 the CTWSRO has collaborated with the Environmental Defense Fund (EDF) to promote sustainable development and the protection of ecosystems in the Deschutes River Basin, with an emphasis on water and fisheries resources. In 1995, the CTWSRO and EDF prepared "Restoring the Deschutes River" which presents research and analysis to document environmental conditions and trends in the Basin, focusing on instream flows and water quality. It is likely that project benefits will persist over the long-term as management direction established by Warm Springs Tribal Council continues to promote watershed protection and restoration in the basin. Objectives proposed for 1999 are consistent with all the programs described above and were selected using new information from the Aquatic Inventories Project (habitat inventories) and from CTWSRO water quality monitoring efforts. These objectives were also selected to implement IRMP recommendations to treat all areas of the watershed to restore watershed health. Anadromous and resident fish will benefit from the proposed objectives as the objectives address water quality and sediment.

d. Project history

BPA funded work began in 1981 and continued through 1990 (project #81-108). Work included riparian fencing and instream work (log weirs, boulder placement, juniper revetment) Monitoring and evaluation of this work funded by BPA continued through 1990 (Fritsch, 1995). Monitoring and evaluation is ongoing and funded by the CTWSRO. This project encompassed 26 km of key anadromous habitat on the Reservation.

Tribally funded restoration work began in the mid-1980's and included fencing, road eradication, seeding and planting, and streambank stabilization.

Additional BPA funded habitat restoration began in 1996 with the funding of the Early Action watershed projects. Efforts resulted in 11 miles of riparian fencing along the Deschutes River and 7.4 miles of the Warm Springs River. Seven solar pumps with troughs have been installed along the Deschutes and Warm Springs rivers in association with the riparian fences.

Other current restoration efforts on the Warm Springs Reservation include a three phase restoration program in the Seekseequa Creek watershed funded by the NRCS through the Environmental Quality Incentive Program (EQIP) to bring the watershed within CRA values. This project will fund road eradication, fencing and seeding with native grasses. The Governors Watershed Enhancement Board (GWEB), EPA, Bring Back the Natives, Oregon Trout, Bureau of Indian Affairs and others have contributed funds for riparian fencing, solar water developments and instream enhancement work that will benefit anadromous and resident fish by improving water quality and fish habitat. Additional EQIP funding will be sought for 1999 to address watershed health issues in tributaries of Beaver Creek, a tributary to the Warm Springs River.

A watershed restoration proposal was submitted to BPA for 1998. Included in the proposal were objectives to continue aquatic habitat inventories and treat degraded riparian conditions in the rangeland on the reservation.

e. Methods.

Objective 1. Continue inventories of anadromous and resident fish habitat in the Warm Springs River and its tributaries.

Habitat inventories (ODFW , modified Hankin and Reeves methodology) began on the reservation in 1996 with 30 miles of the mainstem Warm Springs River inventoried. Fifty-five miles of inventories in Beaver Creek, a tributary to the Warm Springs River were proposed in a watershed project proposal for 1998. For 1999 we propose to complete all remaining major streams. These include Badger Creek and Mill Creek, both tributaries to the Warm Springs River and Shitike Creek, a tributary to the Deschutes River.

Stream surveys will be conducted using methods described in Moore et al (1995). The collection and analysis of the stream survey information is based on a hierarchical system of basins, streams, reaches and habitat units. The survey teams collect field data based on stream, reach and habitat units. Crews estimate the length and width of each habitat unit. At every unit, attributes are estimated or measured to describe gradient, substrate, woody debris, shade, features of instream cover and bank stability. Crews will survey the streams by walking the stream from mouth to headwaters.

Habitat features are summarized by stream, watershed and basin. The data will be compiled into a comprehensive database that describes key attributes of instream habitat, riparian structure and channel morphology. The surveys data will be dynamically

segmented in a geographic information system (ArcInfo) onto a 1:100,000 scale digitized stream layer to display habitat features and combinations of habitat features relative to location of streams, reaches and habitat units in the watershed. The information will be used to describe current status of habitat throughout the basin and the potential to support fish populations. The data sets will be used for developing restoration strategies that target stream reaches, streams and watersheds.

Objective 2. Improve water quality of the north fork Warm Springs River by reducing sediment input from roads.

For each road segment to be eradicated, a dozer and forest cultivator will be used to turn over the soil on the existing road grade to a depth of 24 inches. Immediately following ripping the area will be broadcast seeded with a hybrid, fast germinating grass seed mixture. Species include Orchardgrass, Timothy and Wheatgrass and Covar sheep fescue. This seed mixture was selected for its fast germination rate and its ability to successfully germinate at moderate elevations. After seeding, natural vegetation/debris will be scattered by hand over the area to provide protection for the seed and to protect exposed soil. The road will be closed using natural barriers such as earth mounds and debris (logs/stumps).

For the road segment to be stabilized, four to six inches of three inch minus crushed rock will be applied to 1.5 miles of the existing road bed. The rock will be packed in place.

Monitoring and evaluation will occur through continuation of the water quality monitoring currently conducted by the CTWSRO. Sediment input will be measured in the project reach and below by conducting Wolman pebble-counts and using Whitlock-Viber boxes. Both methods estimate surface and inter-gravel fine sediment levels.

Objective 3. Improve the stability of Charley Canyon subwatershed to improve water quality in the Warm Springs River.

The target area for the pilot project will be fenced using a five strand barbed wire fence to exclude livestock. Existing fences will be utilized when possible to enclose the area and minimize cost. The fence will be built to NRCS specifications and will be contracted to the Warm Springs Salmon Corps crew.

A prescribed fire will be applied during the month of September to 640 acres of upland in Charley Canyon, near the S210 and S212 roads. The fire will be implemented by the CTWSRO/BIA fire management crews. Existing roads will be used as fire breaks. The fire will be hand ignited. The purpose of prescribed fire is to eliminate mats of non-native Medusa-head and cheatgrass and prepare the soil for seeding. Replacing the non-native grasses with native species will provide more stable soils through their deeper root structure.

Seeding will occur immediately after burning. No soil preparation other than burning

will be utilized to avoid excess disturbance which could result in additional spread of Medusa-head. A native seed mixture will be used to seed the area, consisting of bluebunch wheatgrass, Idaho fescue, bluegrass, squirreltail and vetch. A range drill will be used for seeding. The drill will be pulled behind a tractor. Thirty seeds per square foot will be applied to a depth of 1/4"-1/2".

Monitoring and evaluation of objective 3 will include range and riparian condition and trend measurements and photo points. Visual foliage cover estimations and Daubenmire cover measurements will be employed. (Smith, 1989 unpublished report). Plots are established on the surface of the ground in upland areas and species composition and percent ground cover of various types of vegetation are estimated. Changes over time, measured every year, in species composition and percent cover will be recorded. Photo records will be established to provide visual estimate of vegetation changes over time.

f. Facilities and equipment.

Objective 1. No special facilities or equipment needed.

Objective 2. All equipment to be used is owned by CTWSRO or BIA including standard dozers (D-8 size catapillar) and a winged forest cultivator. No facilities will be constructed.

Objective 3. All equipment to be used is owned by CTWSRO or BIA. Standard tractors and range drill will be utilized. The rangeland drill is a specialized seed application machine designed to seed adverse, rocky terrain. It allows for separate seed boxes for the combined application of both large and small seed species. Each planter (drill) is hinged separately for independent action. The seed arms are solid plated on the underside to free brush and serve as a skid plate over rocks. Each drill arm floats independently, digs a furrow and deposits a metered amount of seed. A drag, usually a heavy iron bar, is drug behind to cover and pack soil around the seed.

No facilities will be constructed.

g. References.

Columbia River Inter-tribal Fish Commission. 1995. Wy-Kan-Ush-Mi-Wa-Kish-Wit, The Spirit of the Salmon. Columbia River Inter-tribal Fish Commission, Portland, Oregon.

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- Fritsch, M.A. 1995. Habitat Quality and anadromous fish production on the Warm Springs Reservation. Final Report. DOE/BP 32564-1, Bonneville Power Administration, Portland, Oregon.
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- Smith, D. 1990. Condition and Trend Measurement Methodology, Warm Springs Indian Reservation. Department of Natural Resources Department Document. Warm Springs, Oregon.
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Section 8. Relationships to other projects

This project does not conflict with any other currently funded under the NPPC Fish and Wildlife Program.

The IRMP I and II, Lower Deschutes Management Plan, the Tribal Restoration Plan, EDF Report and the Deschutes Subbasin Plan all identify the need for enhancing water quality and riparian habitat within the Deschutes watershed. Objectives 2 and 3 are on-the-ground objectives selected to improve water quality and fish habitat necessary for anadromous and resident fish production.

Objective 1 addresses the need for additional information needed to complete ongoing assessments of watershed health (CRA, EDT process, IRMP I and II).

Efforts to restore watershed health in the Deschutes River are ongoing. Cooperative efforts between many federal, state and private entities are key to success of the efforts. The CTWSRO is currently working to restore watershed health with: Americorp, The State of Oregon, Oregon Trout, Bring Back the Natives (Trout Unlimited), Deschutes Resources Council, five active sub-watershed councils, NRCS, Wasco SWCD, USFS, BLM, PGE, and private landowners.

Section 9. Key personnel

Project contact:

Patty O'Toole

Duties include project administration, planning, design, implementation, coordination and monitoring and evaluation of watershed restoration projects.

B.S. Zoology, Oregon State University, area of emphasis: Organismal Biology, 1989

Employed by the Confederated Tribes of the Warm Springs Reservation of Oregon.

Eight years in fisheries management, project planning and implementation (production, management and habitat). Lead preparer for the Hood River Production Project Master Plan, Master Agreement and Environmental Impact Statement. Contributor to IRMP I and II.

Other qualified project personnel will be assigned/hired/contracted when contract is established with BPA.

Section 10. Information/technology transfer

Information collected will be made available via Streamnet and informational reports will be available detailing project specifics. Site visits with government and private groups will be held and information will be presented at watershed, range and fisheries workshops.