Bonneville Power Administration
Fish and Wildlife Program FY98 Watershed Proposal Form

Section 1. General administrative information

Title # Kalispel Tribe Resident Fish

Bonneville project number, if an ongoing project 9500100

Business name of agency, institution or organization requesting funding
Kalispel Tribe of Indians

Business acronym (if appropriate) KNRD

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
WDFW	8702 N. Division	Spokane, WA 99218	Ray Duff
Northwest Marine Technology, Inc.	P.O. Box 427, Ben Nevis Loop Road	Shaw Island, WA 98286	Pete Burgman

NPPC Program Measure Number(s) which this project addresses.
Section 10.8B.14,15,16,18 and 19

NMFS Biological Opinion Number(s) which this project addresses.
Does Not Apply

Other planning document references.
Kalispel Natural Resource Department (KNRD). 1997. Fish and Wildlife Management Plan.

Resident Fish Managers Caucus. 1997. Multi-Year implementation plan for resident fish protection, enhancement and mitigation in the Columbia River Basin. Columbia Basin Fish and Wildlife Authority. Portland, OR.

Subbasin.
Pend Oreille

Short description.
Assess trout habitat of the tributaries to the Pend Oreille and implement recommendations for enhancement. Provide bass habitat in the mainstem of the Pend Oreille and supplement the population.

Section 2. Key words

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

Other keywords.

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
9106001	Kalispel-Pe Oreille Wetlands Acquisition	The bass rearing sloughs, homesite, raceway and hatchery building are on the premises.
9990059	Yellow Perch Aquaculture Facility	Unfunded resident fish substitution project.
9700400	Resident Fish Stock Status Above Chief Joseph and Grand Coulee Dams.	Provide fish populations data.
9700300	Box Canyon Watershed Project.	Cooperative development and implementation to protect and/or restore fish habitat and water quality

		in the watershed.

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Increase quantity and quality of salmonid habitat in tributaries.	a	Assess habitat conditions in the tributaries.
2	Increase bull trout and cutthroat trout populations.	b	Develop recommendations for habitat enhancement measures.
3	Increase overwintering bass habitat in the Pend Oreille.	c	Implement habitat enhancements.
4	Increase largemouth bass population in the Pend Oreille.	d	Provide artificial habitat in the Pend Oreille.
		e	Operate and Maitain largemouth bass hatchery.
		f	Supplement largemouth bass to the Pend Oreille.

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	1/1995	12/2010	25.00%
2	1/1995	12/2010	25.00%
3	5/1997	12/2010	10.00%
4	5/1997	12/2010	40.00%
			TOTAL 0.00%

Schedule constraints.
Identifying schedule constraints is virtually impossible given the limitless supply of stochastic events that can alter population production.

Completion date.
2010+.

Section 5. Budget

FY99 budget by line item

Item	Note	FY98

Personnel		$90,000
Fringe benefits	33%	$29,700
Supplies, materials, non-expendable property		$20,000
Operations & maintenance		$25,000
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		$10,000
PIT tags	# of tags:	$0
Travel		$5,000
Indirect costs	28.7%	$51,574
Subcontracts		$54,726
Other		$0
TOTAL		$ 0

Outyear costs

Outyear costs	**FY99**	**FY00**	**FY01**	**FY02**
Total budget	$297,000	$303,000	$309,000	$315,000
O&M as % of total	41.00%	40.00%	40.00%	40.00%

Section 6. Abstract

The Kalispel Resident Fish Project (NWPPC program measures10.8B.14,15,16,18 and19) was designed to assess and determine the habitat conditions in the tributaries to the Pend Oreille that are limiting to the native bull trout and cutthroat trout populations. Based on the habitat assessments, recommendations for enhancement measures were developed to increase the quality and quantity of habitat for these native salmonids. All enhancement measure sites were subjected to an intensive pre-assessment of habitat and fish populations that will be used in comparison to three years of post assessments to determine the types of enhancement that provide the most benefit to habitat conditions.

In conjunction with the tributary enhancement efforts, this project has a mainstem enhancement component. A largemouth bass hatchery has been constructed to facilitate the production and rearing of juvenile bass for supplementation and thereby increase the production of harvestable bass within the reservoir. To enhance the overwinter survival of juvenile bass, artificial habitat is being added to the almost structure free reservoir. Subsequent habitat and population assessments will be used to determine the effectiveness of enhancement measures toward meeting the established biological objectives for both the tributaries and mainstem.

Section 7. Project description

a. Technical and/or scientific background.

Aboriginally and historically the Kalispel relied heavily upon anadromous salmonid fish of the upper Columbia River and its major tributaries. Per capita consumption estimates of anadromous fish for the Kalispel range from 100 lbs to 658 lbs annually (Hewes 1973, Scholz *et al*. 1985). With the construction of the Grand Coulee Dam, all migration of anadromous stocks were precluded from the upper Columbia River system, removing this resource from Kalispel exploitation. The Kalispel incurred additional losses in a cultural sense, as these fish also served ceremonial and religious functions.

Resident fisheries were at least as, if not more, important to the Kalispel than their anadromous fishery (Bonga 1978, Smith 1983, 1985). Ethnographic data indicates that the Kalispel had an elaborate technology used for the exploitation of resident fishery resources. Gilbert and Evermann (1895) reported that in 1894 bull trout (*Salvelinus confluentus*) were abundant in the Pend Oreille River and specimens as large as twenty-six inches long and weighing five pounds or more were in the possession of individual Kalispel. The subsequent construction of Box Canyon and Albeni Falls Dams in the 1950's furthered the decline in the resident fishery by causing a shift in fish populations from predominantly trout, char and whitefish to predominantly squawfish and suckers (Glen Nenema, Chairman, Kalispel Tribe. Stan Bluff, Kalispel Tribal Council Member pers. comm.). The dams forever changed the habitat in this reach from that of a cold water fast-moving river, to a warm and shallow reservoir, with velocities ranging from 0.1 feet-per-second (fps) during summer low flows to upwards of 2.0 fps during high flows (Falter *et al*. 1991). The slow moving reservoir created by these dams, with its artificially fluctuating depths, creates habitat unsuitable for the native salmonids once contained in this reach.

Land-use practices within this system have further degraded both the habitat and community dynamics of native fish. While these changes have been detrimental to the native fish in this system, they have created an environment conducive to introduced non-native fish populations (Behnke 1979). Introduction, whether through entrainment or stocking, of non-native fish to the Pend Oreille River exacerbated the already declining native fishery. These exotic species stress the native fish by both competing for their habitat and by possible hybridization, lessening the genetic integrity of the native populations (Leary *et al*. 1993). These combinations of effects have led to an overall depletion in the native fish resources in this system.

Bull trout populations are on the decline in most bodies of water they inhabit (Ratliff *et al*. 1992, Brown 1994). In many aquatic systems, bull trout have been limited to small areas of suitable habitat (Brown 1994). Effects such as, habitat degradation, hybridization, competition between native and non-native salmonids and overharvest have limited bull trout populations throughout their range (Ratliff *et al*. 1992). The requirements of bull trout for very cold water and high quality habitat make them a valuable barometer of ecosystem integrity and health (Ratliff *et al*. 1992). Historically abundant populations of bull trout have decreased in numbers sufficiently to give cause to recognize bull trout as an endangered species in this region.

Westslope cutthroat (*Oncorhynchus clarki lewisi*) are another of the native species affected by the altered conditions in this region and throughout their historic distribution. It has been estimated that 99% of the original population of westslope cutthroat have

already been lost (Behnke 1972). Overexploitation, introgression, competition with introduced salmonids and degradation or loss of habitat have all led to the decline of their population (Liknes and Graham 1988). The life history of these fish require specific habitat quality that, in many cases, is no longer available (Liknes and Graham 1988). It is the concern over this loss that has lead to the current listing of westslope cutthroat as a Category 2 candidate species under the federal Endangered Species Act within the Pend Oreille River system.

In an attempt to partially mitigate for the resident and anadromous fish losses caused by hydropower development and operation, the Northwest Power Planning Council (NWPPC) called for recommendations to develop a program that would provide measures to protect, mitigate and enhance fish and wildlife affected by the construction and operation of hydroelectric facilities located on the Columbia River and its tributaries. The Kalispel Tribe, in conjunction with the Upper Columbia United Tribes (UCUT) Fisheries Center, undertook a three year assessment of the fishery opportunities in the Pend Oreille River (Ashe *et al*. 1991) to provide the NWPPC with their recommendations. The recommendations were adopted and incorporated into the 1994 resident fish and wildlife section of the NWPPC's Columbia River Basin Fish and Wildlife Program (NWPPC 1994) and further revised in the NWPPC 1995 program.

In 1995 the Kalispel Natural Resource Department (KNRD) and the Washington Department of Fish and Wildlife (WDFW) began the development of the Kalispel Resident Fish Project. The biological objectives developed by the KNRD and WDFW for this project were then adopted into the NWPPC's program during the 1995 amendment cycle. Data collected through the 1995 field season by the KNRD and the WDFW were evaluated to identify specific limiting factors of habitat to resident fish populations in the Box Canyon reach and its tributaries. These limiting factors were used to develop specific enhancement objectives for each tributary in order to address the biological objectives adopted by the NWPPC's program (NWPPC 1995).

Enhancement measures will focus on habitat and population restoration for native bull trout and westslope cutthroat trout within the priority tributaries of the Pend Oreille River and largemouth bass within the mainstem. Cee Cee Ah Creek, Mill Creek, Indian Creek and the LeClerc Creek systems were selected as priority tributaries for enhancement, based on their higher potential for restoration. Habitat and population enhancement for bull trout and cutthroat trout will focus on restoring riparian areas, instream restoration and exotic brook trout (*Salvelinus fontinalis*) removal. Subsequent monitoring and evaluation of these measures will determine the effectiveness of actions taken toward meeting each tributary's individual objectives, as well as, the overall biological objectives for the Box Canyon Reach. Habitat and population enhancement for largemouth bass will be accomplished by supplementation of bass and the addition of artificial habitat structure. Monitoring and evaluation of the prescribed measures will judge their scientific merits and aid in the institution of this project's adaptive management approach.

b. Proposal objectives.

1. Increase the biomass of harvestable largemouth bass in the Box Canyon Reservoir from current 6lbs/acre to an interim target of 8lbs/acre by 2003 and final target of 12lbs/acre by 2008.
2. Increase 0+ largemouth bass overwinter survival from current levels of 0.4-3.9 percent to approximately 15-20 percent. This increase in overwinter survival will contribute to the goal of 12lbs/acre of harvestable bass.
3. Attain densities of 9.8 bull trout/100 square meters in the upper one third of each major tributary system. This equates to 97,410 bull trout (all age classes) in approximately 250 miles of suitable tributary habitat in the system by 2016.
4. Attain population of 242,212 adult fish in 500 miles of suitable cutthroat trout habitat in the system by 2016.

c. Rationale and significance to Regional Programs.

The Kalispel Resident Fish Project addresses multiple measures in the Power Planning Council's program and is one of the first attempts in the region to partially mitigate for anadromous and resident fish losses. Hydroelectric facility construction and land use practices have so drastically altered habitat conditions to have eliminated, endangered or threatened many of the native fish stocks once found in the Pend Oreille system. The Box Canyon reservoir itself no longer provides suitable salmonid habitat with its low flows, high temperatures and almost completely sand substrate it has forced the Tribe to manage for an already naturalized warmwater species. The same warm temperatures that allow for the propagation of bass within the reservoir act as a thermal barrier to the native salmonids within the tributaries, creating two separate types of management strategies. The biological objectives established for both management strategies will begin to partially compensate the losses incurred through the habitat alteration and help to reintroduce a once healthy sport and subsistence fishery. This project also addresses management strategies outlined in The Kalispel Natural Resource Department Fish and Wildlife Plan (1997) and the Resident Fish Manager's Caucus (1997).

d. Project history

The Kalispel Resident Fish project began in 1995 with the selection of the study tributaries and the assessment of fish populations and habitat conditions in those tributaries. Based on the assessments taken during that initial field season, a process was developed to filter out the reaches of these tributaries that contained the most numerous limiting factors to fish habitat quality and quantity. A set of recommended enhancement measures were subsequently developed for each of these reaches that are intended to address the specific habitat shortcomings. This list of recommendations was implemented during field season 1996 and became the core for additional recommendations for 1997 and 1998. Field season 1997 began the second year of implementation for recommended enhancement measures for the seven designated study tributaries. This season also began the first year of a three year post assessment for all implemented recommendations. The

post assessment data will be used to determine which enhancement measures provide the greatest increase in habitat quantity and quality to be able to provide recommendations for enhancement beyond the seven study tributaries.

In 1995 the planning for the construction and operation of a low cost bass hatchery also began. Construction of the hatchery began in the summer of 1996 and was completed in October of 1997. Bass were introduced into the hatchery that same month and the first scheduled round for production is slated for 1998. All of the planning, implementation and monitoring/evaluation for the Resident Fish project are contained within annual reports submitted to BPA beginning in 1995. The funding for the previous three years is as follows: 1995-$239,901, 1996-$955,083 and 1997-$643,304

e. Methods.

The generalized methodology is to assess current habitat conditions and fish populations' size and composition. Based on these assessments, critical limiting habitat factors for the populations are filtered out and recommendations are developed for enhancement measures designed to address these limiting factors. Implementation of these recommendations followed by a monitoring and evaluation process will determine the effect of each measure. The complete methodology for the project appear in The Kalispel Resident Fish Project Annual Report to BPA for 1995, 1996 and 1997.

f. Facilities and equipment.

The habitat portion of this project will be supported by the Kalispel Natural Resource Department office, vehicles and equipment. The details of the entire hatchery complex can be found in the 1995 Kalispel Resident Fish Project Annual Report.

g. References.

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Behnke, R.J. 1972. The rationale of preserving genetic diversity: examples of the utilization of interspecific races of salmonid fishes in fisheries management. Proceedings of the Annual Conference Western Association of Fish and Wildlife Agencies 52:559-561.

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Falter, C.M., C. Baines and J.W. Carlson. 1991. Water quality, fish and wildlife characteristics for Box Canyon Reservoir. Department of Fish and Wildlife Resources, University of Idaho Section 2 of Completion Report 1989-1990.

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Northwest Power Planning Council. 1994. Columbia River Basin Fish and Wildlife Program 94-55.

Northwest Power Planning Council. 1995. Columbia River Basin Fish and Wildlife Program. Resident Fish and Wildlife Amendments 95-20.

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Scholz, A.T., K. O'Laughlin, D. Geist, D. Peone, J. Uehara, L. Fields, T. Kleist, I. Zozaya, T. Peone and K. Teesatuskie. 1985. Compilation of information on salmon and steelhead total run size, catch and hydropower related losses in the Upper Columbia River Basin, above Grand Coulee Dam. Upper Columbia United Tribes Fisheries Center Fisheries Technical Report No 2. Eastern Washington University, Cheney, Washington.

Smith, A.H. 1983. Traditional Kalispel fishing localities. Washington State University Department of Anthropology, Washington.

Smith, A.H. 1985. Affidavit of Allen H. Smith. United States of America and Kalispel Indian Tribe v. Pend Oreille County Public Utility District No. 1 and The Department of Natural Resources, State of Washington. Docket No. C-80-116-RMB.

Section 8. Relationships to other projects

This project works in concert with Joint Stock Assessment 9700400 and the Box Canyon Watershed Project 9700300. The data collected from our fish and habitat surveys will help to fill in data gaps for the joint stock assessment, giving all local resource managers a better understanding of how to approach local management decisions. The collaborative effort between the resident fish project and the watershed project give access to land use management plans that can benefit the upland habitat which in turn provides instream benefits. The permitting process required to implement enhancement recommendations involves landowner and Tribal consent for all measures. This process gives joint ownership in enhancement efforts to the Tribe and other local resource managers, as well as private landowners.

Section 9. Key personnel

People working on this project will require a wide range of professional requirements and skills. All people (including subcontractors) working on this project will meet or exceed specific qualifications needed to implement this project as outlined by the Kalispel Tribe of Indians.

Section 10. Information/technology transfer

All information concerning this project can be found in annual reports to BPA and is periodically summarized in presentation form.