
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Assess Habitat And Passage For Anadromous Fish Upriver Of Chief Joseph Dam

BPA project number: 20038
Contract renewal date (mm/yyyy): Multiple actions?

Business name of agency, institution or organization requesting funding
Colville Confederated Tribes

Business acronym (if appropriate) CCT

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses
4.1B, 7.6A.2, 7.4A.1

FWS/NMFS Biological Opinion Number(s) which this project addresses
new project

Other planning document references

Short description

To provide an estimate of the amount of spawning and rearing habitat for indigenous, anadromous salmonids between Chief Joseph Dam and Grand Coulee Dam. To determine the feasibility of providing passage for adult/juvenile fish through Chief Joseph Dam.

Target species

spring, summer and fall chinook and summer steelhead

Section 2. Sorting and evaluation

Subbasin

Upper Mid-Columbia Mainstem

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
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Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input checked="" type="checkbox"/> Anadromous fish <input type="checkbox"/> Resident fish <input type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Multi-year (milestone-based evaluation) <input type="checkbox"/> Watershed project evaluation	<input type="checkbox"/> Watershed councils/model watersheds <input checked="" type="checkbox"/> Information dissemination <input type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input checked="" type="checkbox"/> Research & monitoring <input type="checkbox"/> Implementation & management <input type="checkbox"/> Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Estimate salmonid production upriver of Chief Joseph Dam	a	Assess the quantity and quality of spawning habitat for indigenous anadromous stocks between Chief Joseph Dam and Grand Coulee Dam in the mainstem.
		b	Assess the quantity and quality of spawning and rearing habitat for indigenous anadromous stocks for connected tributaries between Chief Joseph Dam and Grand Coulee Dam

		c	Estimate production for indigenous anadromous stocks between Chief Joseph Dam and Grand Coulee Dam and connected tributaries.
2	Provide passage for adult/juvenile anadromous fish through Chief Joseph Dam	a	Compile Chief Joseph Dam physical specifications and normal hydrological flow requirements
		b	Develop a series of feasible alternatives for providing passage for juvenile/adult anadromous salmonids while meeting the hydrological flow requirements for normal operation at Chief Joseph Dam

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	5/2000	12/2005			92.00%
2	2/2000	12/2001			8.00%
				Total	100.00%

Schedule constraints

Receiving funding for this project in October may delay the project from being initiated until the following spring (May 2000).

Completion date

2005

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	2 full time employees; 1 parttime employee; 1 seasonal employee	%28	78,500
Fringe benefits	30% of salary (based on 1997 or 1998 figures)	%8	23,550
Supplies, materials, non-expendable property	Office supplies, computer, boat, motor and trailer, underwater camera, hydraulic weights, etc.	%19	53,650
Operations & maintenance	Fuel, vehicle servicing, outboard fuel and servicing	%1	2,924
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	none		
NEPA costs	none		
Construction-related support	none expected during this FY		

PIT tags	# of tags: none		
Travel	Vehicle, meetings (i.e. conferences)	%5	14,888
Indirect costs	39.2% of salary (based on 1997 figures)	%11	30,772
Subcontractor	Feasibility of adult/juvenile fish passage & collection of dam characteristics and hydrologic regime	%25	70,000
Subcontractor	none		0
Other	none		
TOTAL BPA FY2000 BUDGET REQUEST			\$274,284

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
Total project cost (including BPA portion)			\$274,284

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$153,134	\$153,134	\$153,134	\$153,134

Section 6. References

Watershed?	Reference
<input type="checkbox"/>	Groves P. A. and A. D. Garcia. In press. Two carriers used to suspend an underwater video camera from a boat. North American Journal of Fisheries Management.
<input type="checkbox"/>	Heinith, R. and M. Karr. 1997. Restoration of anadromous salmon to the Canadian Columbia River Basin. Initial assessment. Canadian Columbia River Inter-Tribal Fisheries Commission. 73 pages.
<input type="checkbox"/>	Thompson, K. 1972. Determining stream flows for fish life. Pages 31-50 in Proceedings, instream flow requirements workshop. Pacific Northwest River Basins Commission, Vancouver, Washington.
<input type="checkbox"/>	Smith, A. K. 1973. Development and application of spawning velocity and depth criteria for Oregon salmonids. Transactions of the American Fisheries Society 102:312-316.
<input type="checkbox"/>	Hunter, J. W. 1973. A discussion of game fish in the State of Washington as related to water requirements. Report by the Washington State Department of Game, Fishery Management Division, to the Washington State Department of Ecology, Olympia.
<input type="checkbox"/>	Reiser, D. W., and R. G. White. 1981. Effects of flow fluctuation and redd dewatering on salmonid embryo development and fry quality. Idaho Water and Energy Resources Research Institute, Research Technical Completion Report, Contract DE-AC79-79BP10848
<input type="checkbox"/>	Erickson, A. W., Q. J. Stober, J. J. Brueggeman and R. L. Knight. 1977. An assessment of the impact on wildlife and fisheries resource of Rufus Woods Reservoir expected from the raising of Chief Joseph Dam from 946 to 956 FT. M. S. L. U of WA, Seattle
<input type="checkbox"/>	Neilson, J. D., and C. E. Banford. 1983. Chinook salmon (<i>Oncorhynchus tshawytscha</i>) spawner characteristics in relation to redd physical features. Canadian Journal of Zoology 61:1524-1531.
<input type="checkbox"/>	Burner, C. J. 1951. Characteristics of spawning nests of Columbia River salmon. U. S. Fish

	and Wildlife Service Fishery Bulletin 52(61):97-110.
<input type="checkbox"/>	Northwest Power Planning Council (NPPC) Fish and Wildlife Program. 1995.

PART II - NARRATIVE

Section 7. Abstract

Upper Columbia River summer steelhead (*Oncorhynchus mykiss*) was listed as an endangered specie on August 11, 1997. Chief Joseph Dam (CJD) was completed in 1958, and blocked passage of anadromous salmonids, including summer steelhead, to upriver reaches in the Columbia River and connected tributaries.

One alternative to improve anadromous salmonid stocks in the Upper-Columbia River would be to provide passage for adult/juvenile passage through CJD. This project would include assessing passage by juvenile/adult anadromous salmonid passage while meeting hydrologic flow and energy generating requirements. Also, to warrant the evaluation for fish passage at CJD, estimates of anadromous salmonid production upriver of CJD will be generated.

If passage is provided through CJD, the results may strengthen the decline of anadromous salmonids in the Upper Columbia River by providing access to habitat that has been blocked by human development activities and restore eliminated populations as addressed in subsections 7.6A.2 and 7.4A.1, respectively, of the 1994 Columbia Basin Fish and Wildlife Program.

Section 8. Project description

a. Technical and/or scientific background

The construction of Chief Joseph Dam (CJD) began in 1949 and was completed in 1958. Chief Joseph Dam is the tenth dam on the Columbia River and is located approximately 600 miles upriver from the mouth. Chief Joseph Dam does not provide upstream passage by anadromous salmonids and is identified, in conjunction with Hells Canyon Dam, as blocking an area that once produced 4 million salmon and steelhead (NPPC 1995). The nine downstream dams provide fish passage. Chief Joseph Dam combined with Grand Coulee Dam (GCD) contributes approximately 30% of the Columbia River system generating capacity (Heinith and Carr 1997).

Erickson et al. (1977) describes Rufus Woods Reservoir (CJD pool) as “retaining characteristics of the original free flowing river”. Since Rufus Wood Reservoir is a re-regulating type, velocities are typically more similar to riverine environments than storage reservoirs. Therefore, the flow regime in Rufus Woods Reservoir would be more conducive to spawning and rearing for anadromous salmonids than flows associated with storage reservoirs. In addition, some fishery biologists, familiar with Rufus Woods Reservoir, have observed areas similar in substrate and flow to that of a natural flowing reach in the Columbia River (Hanford Reach). The Hanford Reach is considered by many as one of the most productive areas for reproduction of anadromous salmonids particularly chinook salmon. Also, area fish biologists suspect there is suitable spawning habitat for anadromous salmonids near islands in Rufus Woods Reservoir, particularly Nespelem and Buckley Bar and “break points” or point bars further upriver towards GCD.

This project would assess spawning and rearing habitat for anadromous salmonids between CJD and GCD and provide an estimate of production within this reach of the mainstem Columbia River (approximately 52 miles) and connected tributaries (estimated > 30 miles). In addition, this project would include the evaluation of the feasibility and an assessment of alternatives for adult and juvenile fish passage at CJD. This project would address the 1994 Columbia Basin Fish and Wildlife Program under subsections 7.6A.2 and 7.4A.1.

b. Rationale and significance to Regional Programs

The significance of this project is to strengthen anadromous fish stocks of the mid and upper Columbia River Basin. According to the NPPC (1995) one main factor to the decline of anadromous salmonids in the Columbia River Basin was the construction of Chief Joseph Dam and consequently creating a barrier to several hundred miles of anadromous fish habitat. One fish stock that may increase due to providing fish passage through Chief Joseph Dam is summer steelhead, a species that was listed as endangered on August 11, 1997 by the National Marine Fisheries Service and spring chinook salmon, a species that is expected to be listed as endangered during 1999.

c. Relationships to other projects

none

d. Project history (for ongoing projects)

not applicable

e. Proposal objectives

1) Assessment of spawning and rearing habitat between Chief Joseph Dam and Grand Coulee Dam for anadromous stocks including summer steelhead, spring chinook salmon, summer chinook salmon, and fall chinook salmon. Parameters evaluated will include substrate composition, water depth, and velocity based upon preferences for each species (Smith 1973; Thompson 1972; Reiser and White 1981).

2) Provide and estimate of production based upon the evaluation of available spawning habitat, redd size depending upon species (Neilson and Banford 1983; Reiser and White 1981) and required space (Burner 1951).

3) Evaluate alternatives for providing anadromous salmonid passage for juvenile and adult through Chief Joseph Dam.

f. Methods

Objective 1. Estimate salmonid production upriver of Chief Joseph Dam.

Methods for Task a. Assess the quantity and quality of spawning and rearing habitat for indigenous anadromous stocks between Chief Joseph Dam and Grand Coulee Dam in the mainstem. Suitable substrate will be evaluated in Rufus Woods Reservoir. Substrate will be evaluated to a depth of 25 feet or less. Fall chinook salmon at the Hells Canyon Dam tailrace have not been observed spawning at a depth greater than 22 feet (J. Chanler, Idaho Power Company, personal communication). The use of an underwater camera will be used to evaluate the quality and quantify the amount of suitable spawning substrate. The camera will be mounted on the boat (Groves and Garcia in press). In conjunction with the camera a velocity meter will be connected. To assess the area the boat will cover the area in a zig-zag pattern. The results will provide an estimate of potential spawning habitat for each indigenous anadromous species.

Methods for Task b. Estimate production for indigenous anadromous stocks for connected tributaries between Chief Joseph Dam and Grand Coulee Dam in the mainstem Columbia River. Habitat assessments for connected tributaries will be based upon Habitat Enhancement and Restoration (SSHEAR) Division Revised Physical Survey Methods and the Northwest Indian Fish Commission Timber Fish and Wildlife Ambient Monitoring. Surveys will include habitat typing (pool, riffle), Wolman pebble counts, velocity measurements, residual pool depths, and frequency of large wood. The result will provide an estimate of available spawning habitat and amount of pool habitat utilized for rearing.

Methods for Task c. Estimate production for indigenous anadromous stocks between in the mainstem between Chief Joseph Dam and Grand Coulee Dam and connected tributaries. Based upon the estimates of suitable spawning habitat from Task a and Task b, estimates for expected fry production for each species

will be evaluated according to redd size for each species (Neilson and Banford 1983; Reiser and White 1981) and required space (Burner 1951).

Objective 2. Provide passage for adult/juvenile anadromous fish through Chief Joseph Dam.

Methods for Task a. Compile Chief Joseph Dam physical specifications and normal hydrological flow requirements. The method to accomplish this task will include the gathering of current available information describing the physical measurements of Chief Joseph Dam. Physical measurements/specifications would include dam height, dam thickness, etc. and expected flow regime to meet energy generation requirements.

Methods for Task b. Develop a series of feasible alternatives for providing passage for juvenile/adult anadromous salmonids while meeting the hydrological flow requirements for normal operation at Chief Joseph Dam. Based upon the information obtained and analyzed in Task a, a series of feasible alternatives which provide juvenile and adult fish passage for indigenous anadromous salmonids at Chief Joseph Dam. Alternatives may include fish passage way, surface collector, trap and haul, trap and haul/barge, and others.

g. Facilities and equipment

The facilities that would be used for this project would be the Fish and Wildlife Department of the Colville Confederated Tribes. The field biologist would be provided with an office complete with office equipment (desk, computer, etc.). Field equipment would include, but not limited to, a boat, motor, boat trailer, underwater camera (monitor, cable), hydraulic weights, sounding reel, personal gear (floatation device, rain gear, etc.).

h. Budget

Personnel would include 1 full time fishery biologist at a hourly rate of \$16.50. This person would assist in collecting pertinent field information, analyze data, and develop summary reports. This project if funded would include one part time employee (three months) at a hourly rate of \$17.17 and would provide coordination between the field biologist and funding agency and initiate the project. This project would fund a one full time fishery technician at an hourly rate of \$11.50. This fishery technician would support the information gathering effort and data input. Also one seasonal employee (six months) would be funded to assist in collecting field data. Fringe benefits (30%) and indirect costs (39.2%) are associated with CCT-salaries.

Supplies would include both office supplies and field collection data. Office supplies would include a micro-computer (\$1,500), desk (\$500), and phone (internet \$250; long distance \$100/month). Field equipment would require a vehicle (GSA \$10,000), 20 foot boat, motor and trailer (\$25,000), underwater video camera (\$13,000), hydraulic weights (\$700), USGS sounding reel (\$1,000), and personal gear (floatation device, rain gear, hib boots, etc. (\$500)). Presently, the CCT-Fish and Wildlife Department Enforcement Office own a jet boat, which because there is no propellor submerged, has been found to be advantageous to conduct underwater camera work. Therefore, the purchase of the boat, motor and trailer may not be necessary.

Operations and maintenance included \$0.19/mile at an average of 60 miles per day for 8 months. This would equal \$9,600 for fuel. Outboard fuel was estimated at \$100/month for 8 months. This would equal \$800. An additional \$300 would include three tune-ups and winterizing.

Travel will include 3 meetings/conferences for the field biologist and coordinator with the funding agency. An additional trip will be funded for the field biologist, coordinator and the fishery technician to receive initial training in the use of underwater camera technology and associated sampling techniques.

Estimates to meet objective two was provided by a field engineer knowledgeable regarding the requested tasks. It is expected this work to be completed within a year.

Section 9. Key personnel

Chris Fisher, Anadromous fisheries biologist, FTE/480 hours - CCT, coordinator for the

research project of potential spawning and rearing habitat for anadromous fish stocks upriver of Chief Joseph Dam.

Other personnel will be hired if project is funded.

Christopher J. Fisher

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Ph: (509) 422-7427

Education: University of Georgia South Dakota State University
School of Forest Resources Dept. of Wildlife and Fisheries Sciences
B. S. Forest Resources 1990 M. S. Wildlife & Fisheries Science 1996
minor Fisheries management (Fisheries option)

Experience:

Job title: Anadromous Fisheries Biologist II
Employer: Colville Confederated Tribes, Nespalem, WA 99155

Duties: My duties include the management of anadromous fish stocks for population viability and subsistence for tribal members. I conduct and evaluate creel surveys, analyze catch data and develop regulations. I also participate planning and implementation for watershed restoration projects. I prepare correspondences and reports (monthly, quarterly, annually, and conditionally) needed to maintain good communications within the Tribal organization and Federal, State, and Tribal fishery agencies. I develop budget contract proposals, modifications, and reports as required by Tribal policy or established under contract agreements.

Job title: Fisher biologist
Employer: U.S. Forest Service, Okanogan National Forest (Jan 96 to Mar 97)
U.S. Forest Service, Boisen National Forest (Apr 94 to Nov 95)

Job title: Fishery technician
Employer: Idaho Department of Fish and Game, McCall (Jun 90 to Nov 91)

Job title: Research technician
Employer: School of Forest Resources, University of Georgia (Apr 88 to Sep 89)

Expertise:

By acquiring my education in the southwest and midwest and being employed by both state and federal agencies in three different regions of the country my experience in fisheries is extensive and diverse. My wide range of experience has provided me with expertise in collecting, analyzing and interpreting a variety of data and the ability to communicate the results of management activities and research to professional and civic groups via technical reports or presentations.

Section 10. Information/technology transfer

Information will be routed between key personnel by personal communication, memo, or email transfer. Updates between agencies or departments will be routed by personal communication or inter-agency meetings.

Congratulations!