

SUMMARY

Purpose and Need

The Northwest Power and Conservation Council (NPCC, www.nwcouncil.org) recommended that the Bonneville Power Administration (BPA) study and consider funding a Chinook salmon production program and hatchery proposed by the Confederated Tribes of the Colville Reservation (Colville Tribes). The proposal intends to increase returns of adult summer/fall Chinook by raising and releasing juvenile fish in the waters of the Okanogan River, and in the Columbia River below Chief Joseph Dam and above its confluence with the Okanogan River. The proposed program would construct, operate and maintain a hatchery below the Chief Joseph Dam on the Columbia River and several fish acclimation and release ponds on the Okanogan River and Omak Creek in Okanogan County, Washington (Figure S-1). These facilities may also be used to produce and reintroduce spring Chinook salmon to historic habitats in the Okanogan subbasin. This Environmental Impact Statement (EIS) presents the preliminary design of the project and a summation of its probable environmental effects to inform the public and guide BPA's consideration of this possible undertaking as required by the National Environmental Policy Act (NEPA).

The proposed project is needed to assist in the protection and mitigation of summer/fall Chinook salmon (*Oncorhynchus tshawytscha*) populations in the Okanogan River and the Columbia River between the Okanogan River and Chief Joseph Dam that are affected by the Federal Columbia River Power System (FCRPS). BPA comes by this protection and mitigation responsibility under the Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act, 16 U.S.C. Sec. 839 et seq). The proposed project would be one more element of a continuing effort by BPA, the Colville Tribes and several other partners and cooperators to protect and manage existing anadromous fish populations and mitigate for effects of the FCRPS in these waters.

BPA has defined the scope of the proposed action and any viable alternatives in terms of four primary purposes to be met:

1. The proposal's objective is to increase abundance, distribution, and diversity of naturally spawning summer/fall Chinook within their historical Okanogan subbasin habitat and in the Columbia River between the Okanogan River and Chief Joseph Dam. As well as helping to protect the species and mitigate for the FCRPS, the proposal is integrated with and complementary to the myriad of other local and regional fishery improvement efforts (habitat improvements, fish passage, water rights programs, harvest controls, etc.) in these waters.
2. Operation of the FCRPS, particularly Chief Joseph Dam, must remain unaffected by the proposal (e.g., spill, timing, dissolved gases, etc.). Power system operational flexibility must not be diminished or otherwise adversely affected.

3. The action must not adversely affect populations listed under the Endangered Species Act (ESA) (e.g., through mixed stock harvest, reducing productivity, or otherwise) such that it creates a greater mitigation, protection or recovery burden on BPA. The proposal must not be contrary to FCRPS biological opinions, ESA recovery objectives, or the Council on Environmental Quality (CEQ) strategy on federal hatcheries (pp 3-5 of: http://www.salmonrecovery.gov/reports_and_papers/biop_remand_2004/Docs/206/JLC_Salmon_Speech_1.25.06.pdf).
4. The Colville Tribes, as project sponsors and proponents, want to produce adequate adult salmon returns to support a tribal ceremonial and subsistence fishery. BPA supports this goal to augment anadromous fish populations so as to enhance the potential for tribal ceremonial and subsistence harvests and a recreational fishery for the general public, though BPA has no authority to permit or regulate harvest.

This EIS is the second step in a 3-step project planning process outlined by the NPCC. The first step was preparation of a fish production and hatchery master plan that was released to the NPCC in May 2004 and for public review in August 2004 (Chief Joseph Dam Hatchery Program Master Plan, <http://www.nwcouncil.org/library/Default.htm>, incorporated by reference in its entirety in this EIS). The third step would be the implementation of the production program, including the final design and construction of the hatchery and acclimation ponds. BPA will use this EIS to decide whether or not to fund the hatchery and fish production program as proposed by the Colville Tribes and recommended by the NPCC. The BPA Administrator will issue a Record of Decision (ROD) following public, agency and tribal review and comment on the Draft EIS and after preparation of a Final EIS responding to any relevant comments received. The U.S. Army Corps of Engineers (USACE), as administrator of the site where the hatchery is proposed, and the State of Washington, as administrator of sites where some other project facilities are proposed and as co-manager of the area's fisheries, may also issue decision documents based on this EIS to serve their environmental and public review responsibilities.

In order to identify initial concerns and issues with the proposed project and any potential alternatives to the proposed action, BPA scoped the project with the public, agencies and Northwest tribes during August and September, 2005 through a combination of open meetings and informative mailings.

Five key issues surfaced from scoping that guided the development of this EIS.

1. The effect of the fish production program on the quality of surface waters and wells in the vicinity of the hatchery and acclimation ponds
2. The effect of the production program, hatchery and acclimation ponds on water quantity and use, especially FCRPS dam operations and irrigation and municipal withdrawals

3. The effect of the production program and facilities on aquatic organisms including additional stocking of hatchery-bred fish into the Okanogan subbasin and the Columbia River below Chief Joseph Dam
4. The effect of the production program and facilities on terrestrial organisms and resources including key wildlife species, plants and their habitats in the area
5. The effect of the production program and facility construction on local communities and BPA electric power ratepayers

The substance of the public issues did not indicate that another alternative needed to be developed to compare with or replace the proposed action. It was generally acknowledged that a fish production program supported by a local hatchery is needed and desired to complement other ongoing efforts and increase adult salmon returns in the Okanogan subbasin. Therefore only the proposed action and the No Action alternative required by NEPA are analyzed in the EIS.

As preliminary planning progressed, numerous improvements to the original proposed project were made to address cost, physical feasibility, and environmental concerns. Some examples are: local public utility districts offering to cost-share the program; eliminating the ideas of locating the hatchery water supply pipe above ground or submerging it in Rufus Woods Lake in favor of a less obtrusive buried pipeline; eliminating potential hatchery and pond locations associated with high property or environmental costs; rejecting less desirable fish rearing and spawning reaches; designing hatchery components and operations to avoid impacts from and to operation of Chief Joseph Dam; and selecting between housing sites for hatchery personnel based on cost and distance from the hatchery in case of an operational emergency.

The Proposed Project

The proposed production program has three components. These components could be adopted in part or as a whole.

- Component 1 is a program designed to increase abundance, distribution, run timing and diversity of naturally spawning summer/fall Chinook salmon within their historical Okanogan subbasin habitat. This supplementation program would produce 1,100,000 hatchery smolts annually.
- Component 2 would produce an additional 500,000 early-arriving and 400,000 late-arriving summer/fall Chinook hatchery smolts primarily for harvest purposes. When combined with Component 1, this would enhance the potential to support tribal ceremonial and subsistence fisheries and provide recreational fishing opportunities for summer/fall Chinook.
- Component 3 is a spring Chinook program that would produce 900,000 smolts in an effort to return naturally spawning spring Chinook to their historical Okanogan subbasin habitat and in the Columbia River between the Okanogan River and

Chief Joseph Dam. This component could also enhance the potential for tribal ceremonial and subsistence fisheries and recreational fishing opportunities. Hatchery fish surplus to recovery needs in other nearby subbasins would be used to support this component. It may contribute to the recovery of the ESA-listed Upper Columbia River Spring Chinook Evolutionarily Significant Unit (ESU).

The summer/fall Chinook components (Components 1 and 2) of the proposed production program would involve:

- Developing a local Okanogan River brood stock
- Propagating the full historical run of summer/fall Chinook by extending the current brood stock collection by two months
- Propagating yearling and sub-yearling life stages to reflect natural diversity and add some necessary flexibility in the program
- Improving spawning distribution throughout their historical habitat
- Controlling the proportion of hatchery-origin fish spawning naturally

To facilitate the Chinook production program, a fish hatchery would be constructed on the Columbia River adjacent to and just downstream of Chief Joseph Dam. Hatchery design and operational parameters were developed in collaboration with the USACE to ensure that it does not interfere with dam operations. Concurrently, dam operations were factored into production program considerations and hatchery design.

Water to the hatchery would come from three sources: Rufus Woods Lake, a relief tunnel that collects seepage from the abutment of Chief Joseph Dam, and a well field. Potable water would come from the same well field supplying the hatchery and would be conveyed in the same buried pipeline. Electric power for the facilities may be provided by Nespelem Valley Electric Cooperative, whose lines span the hatchery site. Sanitary sewer options for the hatchery complex are a new on-site disposal system or a force main connecting to the City of Bridgeport's service. In addition to the hatchery, a housing area for critical hatchery employees would be developed upland of the Lake Woods Golf Course. All fish production program and hatchery employees would be hired and managed by the Colville Tribes.

Summer/fall Chinook salmon and spring Chinook salmon incubated and reared at the hatchery would be released from there into the Columbia River or transported to ponds along the Okanogan River and Omak Creek for final rearing, acclimation and release (Figure S-1). Two new ponds would be constructed (Riverside and Omak), three ponds currently serving a double purpose as irrigation settling ponds and fish acclimation ponds would be improved to function better (Ellisforde, Bonaparte and Tonasket), and one existing acclimation pond would receive minor upgrades (St. Mary's Pond).

A comprehensive monitoring and evaluation plan would be developed to evaluate general program success. The plan would be coordinated with existing programs and forums to share information and ensure integration with monitoring and evaluation efforts in this and other subbasins of the Columbia Cascade Province and the Columbia River Basin.

The proposed project includes two vital research and monitoring studies. The first study consists of radio-telemetry research to determine where and when summer/fall Chinook migrate, where they congregate, the extent to which they are spatially separated from other population components, and whether the timing of passage over Wells Dam is related to timing and location of subsequent spawning. This information is essential to the development of successful brood stock collection protocols and subsequent acclimation of their progeny.

The second research study would test the viability of live-capture, selective fishing gear for local brood stock collection. Methods being evaluated include use of tangle nets, beach seines, floating trap-nets, fish wheels, and dip-nets. The success of the live-capture, selective fishing methods would provide the ability to control the ratio of hatchery to natural fish on the spawning grounds. In addition, the use of live capture techniques would reduce impacts to other native fish species incidentally collected at the facilities. This two-year investigation is on-going, with first year results expected to be available in early 2007 and final results in late 2007.

Comparison of Alternatives and Summary of Potential Effects

Table S-1 compares the Proposed Project and the No Action Alternative to the stated purposes of taking action.

Table S-2 summarizes potential environmental consequences of the Proposed Project and the No Action Alternative.

Table S-1. Comparison of Alternatives to Stated Purposes of Taking Action

Purposes of Action	Proposed Action	No Action
1. Increase abundance, distribution, and diversity of naturally spawning summer/fall Chinook within their historical Okanogan subbasin habitat and in the Columbia River between the Okanogan River and Chief Joseph Dam.	Would meet this purpose by acclimating fish to underutilized habitat. Implementation of all components of the production program would provide the greatest potential to protect and enhance the summer/fall Chinook population and mitigate for the effects of the FCRPS.	Would meet this purpose to the extent of ongoing efforts of fish habitat and passage improvements, water rights programs, harvest control programs. Rearing program at Similkameen Pond would continue.
2. Operation of the FCRPS, particularly Chief Joseph and Grand Coulee dams (e.g., spill, timing, dissolved gases, etc.), must remain unaffected by the fish production program.	Hatchery design and operational parameters were developed in collaboration with the USACE to ensure that the hatchery does not interfere with dam operations. Concurrently, dam operations were factored into design of the hatchery.	Would meet this purpose by not changing the current situation and having no effect or risk to dam operations.
3. The program must not adversely affect populations listed under the ESA (e.g., through mixed stock harvest, reducing productivity, or otherwise) such that it creates a greater mitigation, protection or recovery burden on BPA.	The production program is designed and would be implemented and monitored to ensure listed species are not adversely affected.	Ongoing habitat, passage, water rights, and harvest control efforts would contribute to this objective. Existing facilities would continue to support the limited ongoing Chinook production program in the Okanogan River. Current risks, insufficiencies, and limitations associated with the existing situation would continue.
4. Increase Chinook salmon populations to enhance the potential for tribal ceremonial and subsistence harvests and a recreational fishery for the public.	Has the greatest potential to enhance adult fish returns of summer/fall and spring Chinook in historical habitat to sustain naturally spawning populations and tribal ceremonial and subsistence or public recreational fisheries.	Unlikely to sustain a harvestable fishery as the current situation has insufficient and downward-trending adult returns. Would not change the depleted spring Chinook situation.

Table S-2. Summary of Environmental Consequences of Alternatives

Environmental Feature	Proposed Action	No Action
<p>Fish and Aquatic Habitat</p> <p>(EIS Section 3.2 and Issue #3)</p>	<p>Implementing the three production program components should produce greater diversity, abundance and distribution of summer/fall and spring Chinook in the Okanogan subbasin. These returns should complement other on-going salmon protection and mitigation efforts.</p> <p>Some individual fish of all species could experience short-term stress and possible mortality from live fish trapping gear and subsequent capture and handling. Competition and predation between aquatic species at all life stages including hatchery-bred fish would not threaten viability of any species. Some increase in aquatic nutrients is likely from decaying spawned-out salmon carcasses.</p> <p>During construction, site and channel alterations would create minor, localized, temporary disturbances that would not measurably affect the viability of any aquatic species. Water withdrawals during operation of ponds would have an immeasurable effect on habitat in the immediate reach of each diversion for the season of the withdrawals. Fish released from hatchery and rearing facilities would have a low potential to introduce pathogens to other fish populations.</p>	<p>Current risks to salmon population viability would continue but would likely diminish slightly in the long-term due to the other on-going complementary protection and mitigation efforts (habitat and passage improvements, harvest controls, water rights programs).</p> <p>Current conditions of habitat and population viability of other aquatic species should remain unchanged.</p>
<p>Wildlife</p> <p>(EIS Section 3.3 and Issue No.4)</p>	<p>No state or federally listed animal species are known to nest or breed at or near project sites, so no adverse effects are expected.</p> <p>Salmon carcasses may provide a long-term seasonal food source for many large and small scavenger and predator species and certain insects.</p> <p>Animals may be displaced or disturbed in the vicinity of construction activities and during facility operations and occupation (noise, presence of humans and machines, outside lighting). New power lines at the hatchery, housing and Omak Pond sites may provide perches or minor collision risks for certain birds.</p>	<p>No changes to current trends, conditions or protection status are expected for any animal species.</p>
<p>Vegetation, Wetlands, Geologic Hazards and Soils</p> <p>(EIS Sections 3.4 & 3.5, and Issue No. 4)</p>	<p>No state or federally listed plant species occur at or near any project sites, so no effects are expected.</p> <p>At the hatchery site, about 25 acres of non-native vegetation shrub steppe habitat would be disturbed of which about 20 acres would remain permanently developed. At the housing site, about 10 acres of native vegetation shrub steppe habitat would be disturbed of which about 5 acres would be</p>	<p>On-going disturbance and habitat conversion would continue at current rates.</p> <p>Exotic plants and weeds would continue to exist and be subject to control</p>

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	<p>permanently developed.</p> <p>Developing Riverside Pond would convert about 4 acres of hay fields and Omak Pond would convert about 2 acres of pasture to development. Work at all other pond sites would disturb little to no additional habitat.</p> <p>Less than 1 acre of riparian habitat near new water intakes and discharge features at the hatchery and Omak and Riverside ponds would permanently be affected. Formal wetland delineations and compensatory wetland mitigation would occur as required in consultation with regulatory agencies if the project proceeds to final design and construction.</p> <p>A temporary increase in exotic plants and weeds at all disturbed sites is likely. All disturbed areas would be replanted with native species and maintained to control weed species.</p> <p>No known landslide-prone areas exist at the project sites. There is negligible to no potential for slope instability at any sites although temporary, localized erosion could occur during construction. No active faults are known within 5 miles of the sites, so potential for earthquake damage is very low.</p>	as in the past.
<p>Hydrology, Floodplains and Water Quality (EIS Section 3.6)</p> <p>Water quality (Issue #1)</p> <p>Water quantity and use (Issue #2)</p>	<p>Localized, temporary, construction-related runoff and sedimentation could occur at construction sites but would be controlled through application of typical Best Management Practices (BMPs). Long-term water quality would remain within limits of applicable laws and NPDES permits at all sites. A long term, minor increase in river water nutrients would be likely from decaying spawned-out salmon carcasses. No detectable effect to groundwater quality is expected near any of the sites.</p> <p>Typically from October to April, Okanogan River stream flow would be reduced about 4 to 6% between the intakes and discharge points of the new ponds (Riverside and Omak). No change to stream flow would occur at ponds currently being used for fish acclimation (Ellisforde, Bonaparte, Tonasket, and St. Mary's). Irrigation withdrawals and other surface water uses typically occur during other times of the year, so this program would have no effect.</p> <p>Groundwater conditions are unlikely to be affected at any sites.</p>	<p>Water quality would not change. Nutrients from increased numbers of spawned-out salmon would not be contributed.</p> <p>Water quantity and in-stream flow regimes would not change.</p>

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Environmental Feature	Proposed Action	No Action
Floodplains	<p>The hatchery well field is not in proximity to other wells that could be affected. For example, Lake Woods Golf Course withdraws irrigation water from Rufus Woods Lake. Potable water for Bridgeport State Park is supplied by a well that is over 500 feet upstream of the proposed project well field.</p> <p>Hatchery and acclimation facilities have been designed to have no effect on FCRPS dam operations or municipal or private surface or groundwater uses.</p> <p>The two new ponds (Riverside and Omak) and their intake and discharge structures would be located in the Okanogan River's 100-year floodplain. Upland sites are infeasible. Ponds possibly could be inundated in a 100-year flood event, but the facilities would likely receive little damage and have little effect on downstream flood dynamics.</p> <p>The hatchery's fish ladder entrance and discharge would be in Columbia River waters directly below Chief Joseph Dam. They are designed to be compatible with dam operations and water flow regimes. No effect on dam operations is expected.</p>	Floodplains remain unchanged. The existing ponds are within 100-year floodplains with potential for inundation with the exception of St. Mary's Pond which is not in a mapped floodplain.
<p>Land Use, Transportation and Recreation</p> <p>(EIS Section 3.7 and Issue #5)</p>	<p>Facility construction, operation, occupancy, and use would be consistent with applicable local zoning, laws and regulations. Necessary permits would be pursued if the project proceeds to final design and implementation.</p> <p>During construction, traffic would increase locally for workers, equipment, and delivery of supplies and materials. No new public roads or changes to existing public transportation system would occur. Long-term traffic increases related to fish transport and worker commutes would be minor.</p> <p>If the production program is successful, there could be a long-term increase in recreation traffic and activities related to salmon viewing and fishing. Public environmental education opportunities may increase through hatchery site visitation.</p>	No change to current land use, transportation or recreation is predicted.
<p>Cultural Resources</p> <p>(EIS Section 3.9 and Issue #5)</p>	<p>Potential long-term sustainable tribal ceremonial and subsistence fishery and recreational fishery would most likely be restored if all components of the production program are implemented. If only Component 1 is implemented, it is unlikely that more than a modest ceremonial and subsistence fishery would result.</p> <p>Possible adverse effects at one of the pond sites on known cultural materials potentially eligible for listing in the National Register of Historic Places would be mitigated by investigative and curation actions taken in agreement with the Tribal Historic</p>	No change from current conditions at any site is expected. The current fishery is inadequate for even modest ceremonial and subsistence purposes, or recreational fishing. It is unlikely that a sustainable tribal ceremonial and subsistence fishery or

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Environmental Feature	Proposed Action	No Action
	<p>Preservation Officer.</p> <p>Known archaeological sites would be avoided at all other project sites, so no effects are expected. If evidence of cultural materials is found later, activity would cease until the finds could be properly assessed.</p> <p>Traditional tribal fishing at the base of Chief Joseph Dam would be temporarily disrupted while installing the hatchery fish ladder and water pipeline.</p>	<p>recreational fishery would result through currently on-going fishery improvement efforts.</p>
<p>Aesthetics</p> <p>(EIS Section 3.11 and Issue #5)</p>	<p>The scenic qualities of all sites would remain typical of the region. Aesthetic attributes are not remarkably distinctive, scenic or unique. Although the proposed hatchery site is adjacent to the Columbia River, it is in close proximity to Chief Joseph Dam and would appear congruent with the existing complex of development there. The housing site is an undeveloped upland setting but not within a popular viewshed. The acclimation ponds are all in rural settings and would their low profile would not conflict with the setting.</p>	<p>No change to any sites.</p>
<p>Socioeconomics</p> <p>(EIS Section 3.8 and Issue #5)</p>	<p>Negligible increase to population overall. Some hatchery employees would reside at the hatchery housing site near Bridgeport. Employment opportunities would be created for up to 100 temporary positions during hatchery and housing construction. Long-term new employment for 8 to 15 workers would support hatchery operations.</p> <p>Construction would entail expenditures of about \$23 million in the region with a long-term payroll for hatchery operations of about \$600,000 annually.</p> <p>Some benefit to local economy could be realized if Chinook recover and stimulate fishing and related recreation and tourism. No measurable effects to area housing, utilities, schools, law enforcement, or tax base are predicted.</p> <p>No impact to BPA ratepayers would occur since the project funds would be part of an established program of annual investment in protection and mitigation of fish and wildlife related to FCRPS facilities and operations.</p>	<p>No project-induced changes to local economies, communities or BPA ratepayers are likely. The potential for some adverse effect on local economy remains if salmon stocks continue to decline.</p>
<p>Air, Noise and Public Safety</p>	<p>Dust and vehicle exhaust would increase locally during construction with no long-term effects at any sites.</p>	<p>No change in air quality, noise, or public safety would occur at any sites.</p>

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Environmental Feature	Proposed Action	No Action
(EIS Section 3.10 and Issue #5)	<p>Temporary increase in noise would occur during construction at all sites, but would meet State standards. Long-term noise from new traffic, operations and residences would be negligible.</p> <p>An increase in demand for public services (medical, hospital, sheriff, fire, etc.) during construction is possible. New safety risks to the public would be short term and mainly associated with construction traffic encounters.</p>	

ABBREVIATIONS AND ACRONYMS

APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
BA	Biological Assessment
BAMP	Biological Assessment and Management Plan
BPA	Bonneville Power Administration
BMP	Best Management Practices
C	Celsius
CEQ	Council on Environmental Quality
cfs	cubic feet per second
CJHP	Chief Joseph Hatchery Program
CO	carbon monoxide
CTCR	Confederated Tribes of the Colville Reservation
DART	Data Access in Real Time
DO	dissolved oxygen
DPS	Distinct Population Segment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FCRPS	Federal Columbia River Power System
FEMA	Federal Emergency Management Agency
Fpp	Fish per pound
FPPA	Farmland Protection Policy Act
gpm	gallons per minute
HCP	Habitat Conservation Plan
HGMP	Hatchery Genetics Management Plan
HPA	Hydraulic Project Approval
IAC	Interagency Committee for Outdoor Recreation
kv	kilovolt
LFA	Limiting Factor Assessment
NAAQS	National Ambient Air Quality Standards
NATURES	Natural Rearing and Enhancement System
NEPA	National Environmental Policy Act
NFH	National Fish Hatchery
NOAA	National Oceanic and Atmospheric Administration
NPCC	Northwest Planning and Conservation Council (formerly NPPC)
NPDES	National Pollution Discharge Elimination System
NPPC	Northwest Power Planning Council (now NPCC)
NPS	National Park Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit
NVEC	Nespelem Valley Electric Cooperative
OID	Okanogan Irrigation District
OTID	Oroville-Tonasket Irrigation District
Pb	lead