Appendix A
Public Scoping Comments

Appendix A
Public Scoping Comments

The Bonneville Power Administration, the Shoshone-Bannock Tribes, and the U.S. Forest Service conducted a series of public meetings to provide project-related information and to solicit public input regarding the issues and alternatives to be addressed in the environmental impact statement prepared for the Crystal Springs Hatchery Program. These meetings were held as follows:

Tuesday, June 10, 2014
Fort Hall, Idaho

Wednesday, June 11, 2014
Salmon, Idaho

Thursday, June 12, 2014
Challis, Idaho

The public comment period to provide scoping comments on the Crystal Springs Hatchery Program ended on July 7, 2014. The comments presented in this appendix were posted via the Bonneville Power Administration's website for the Crystal Springs Hatchery Program. The website and public comments are available at:

https://www.bpa.gov/applications/publiccomments/CommentList.aspx?ID=233

CSHP14 0001 *(no comment provided)*

CSHP14 0002 – Public

"I do not approve of the crystal springs hatchery. hatcher fish are subject to endless diseases.they are not like wild fish. if you want fish, protect the wild ones and stop killing them off and defiling the environment with energy projects. cheney and bush sure did a number of destruction of the American environment. doe continues in this awful destructive mode. it is useless to grow diseased hatchery fish. you kil lthe birds that come there to catch a few. the whole thing is sickening. and then putting out the diseased fish kills all the wild fish you have left. this is a stupid way to spend American tax dollars."

CSHP14 0003 – Public2

"I do not support hatchery fish, which are weak and diseased far too often. fat better to protect wild fish instead of destroying them as this dept does.

also stop shooting the seals which need the fish to live

get rid of the commercial fish profiteers from the area - ban them totally from this area. this comment is for the public record."

CSHP14 0004 – Public3

"It is a wonderful idea to do what we are doing. His suggestion is to look at a hatchery location in Trail Creek drainage, about 6.5 miles up Panther Creek. 5-7 years ago, the Indian Tribe was considering this as a high priority. Steelhead are going into Trail Creek and spawning. For years, the Tribe has put fingerlings in ponds. He can show us where the fish are going. He supports a fishery in Panther Creek. It is long overdue. He has a summer home on Panther Creek."

CSHP14 0005 – Baker/Houghland Farms, Inc.

See attached document for comment.

Law Offices of
BAKER & HARRIS

Dwight E. Baker
Jared M. Harris *
Jonathan W. Harris
* Also Admitted in Utah

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June 3, 2014

VIA FACSIMILE - (503) 230-4019

Bonneville Power Administration
Public Affairs - DKC-7
PO Box 14428
Portland, OR 97293-4428

Re: KEC-4 / Crystal Springs Hatchery Program / Comment from Houghland Farms, Inc.

To whom it may concern:

This law firm represents Houghland Farms, Inc., and submits this letter on its behalf. Please consider this as a comment to be considered as a part of the review process for the proposed Crystal Springs Hatchery program.

Houghland Farms, Inc., previously owned the property, and continues to own an easement for an irrigation line, recorded as Instrument No. 376312, records of Bingham County, Idaho, and also is the owner of water right license 35-7142A, the point of diversion of which is on the subject property. Lastly, there is a power line which traverses the west edge of the property, running from the north southerly to the irrigation pump located in the southwest corner of the subject property.

Negotiations are presently underway with interested persons to move the point of diversion of the water right closer to the north edge of the property in close proximity to the artesian spring from which Crystal Springs originates. As a part of that process, it is contemplated that the easement for pump and water line referred to above would be modified, greatly limiting the burden on the remaining Crystal Springs property. Additionally, it is contemplated the power line would be largely removed from the west edge of the property, and the point of diversion for water right 35-7142A would be modified.

It is the purpose of this comment to simply advise the decision makers of the ongoing plans to accomplish these changes as a part of the positive development of the Crystal Springs hatchery.

Very truly yours,

BAKER & HARRIS

Dwight E. Baker
DEB/bc
cc: Houghland Farms, Inc., c/o John Houghland

CSHP14 0006 *(no comment provided)*

CSHP14 0007 – Kampwerth/U.S. Fish and Wildlife Service

"Appreciate the opportunity to attend the scoping meeting at Fort Hall.

Based on what I understand to be the proposal, the Service offers a preliminary species list for consideration during the planning, EIS development, and consultation process.

Those include Ute's Ladies Tresse, Yellow Billed Cuckoo, Bull Trout, migratory birds, and bald and golden eagles.

Take care,

David Kampwerth, Field Supervisor
Eastern Idaho Field Office

See attached letter"

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Eastern Idaho Field Office
4425 Burley Dr., Suite A
Chubbuck, Idaho 83202
Telephone (208) 237-6975
http://IdahoES.fws.gov

Don Rose, Environmental Coordinator
Bonneville Power Administration-KEC-4
P.O. Box 3621
Portland, Oregon 97208-3621

Subject: Bonneville Power Administration's Proposed Crystal Springs Hatchery Program (#FF01EIFW00-2014-TA-0614) (ER14-0336)

Dear Mr. Rose:

The Fish and Wildlife Service (Service) is writing in regards to Bonneville Power Administration's (BPA) Notice of Intent to prepare an Environmental Impact Statement (EIS) for a proposal to fund the Crystal Springs Hatchery Program on the Fort Hall Reservation.

National Environmental Policy Act (NEPA) regulation 40 CFR § 1503.1(a)(1) states the action agency shall obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. As such, we are responding to your request for concerns and comments for use and consideration in your EIS and to assist BPA in meeting its requirements under NEPA. Comments provided also are in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended.

The Service understands BPA is proposing to fund the construction, operation, and maintenance of the Crystal Springs Hatchery by Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho (Tribes) in Bingham County, Idaho, as well as two fish trapping (weir) facilities on U.S. Forest Service (USFS) lands along the Yankee Fork of the Salmon River and Panther Creek in Custer and Lemhi Counties, Idaho. The Yankee Fork fish trapping facility would include construction of the Yankee Fork weir and associated facilities and relocation of a section of the Yankee Fork Road. The Panther Creek fish trapping facility would be limited to construction of a weir. Operation of the hatchery would include the collection of adult spring/summer Chinook salmon (*Oncorhynchus tshawytscha*) for broodstock from existing hatcheries, incubation and rearing of juvenile Chinook salmon, and release of smolts into the Yankee Fork and Panther Creek. Broodstock would be collected at the Yankee Fork and Panther Creek weirs. The hatchery would also produce Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) for release in an isolated oxbow lake within the Fort Hall Reservation permit fishing area.

On June 10, 2014, the Service attended a meeting hosted by BPA to discuss the Crystal Springs Hatchery Program. At the meeting, a general overview of the project description was provided

and discussed. Based on the information provided at the meeting, the Service has a number of concerns we recommend be addressed in the BPA's EIS.

Proposed Action and Alternatives
The proposed action and alternatives should be thoroughly described in the EIS. All impacts prior to and throughout construction and operation should be described, as well as the anticipated effects of those impacts. Descriptions of hatchery construction and operation should include hatchery design, water filtration system, and all ancillary facilities; including transportation and electrical infrastructure. The descriptions of fish trapping facilities construction and operation should include the number and design of weirs, the schedule for checking weirs, and protocols for releasing non-target fish.

Each alternative should:

- describe and consider the impacts of increased duration and intensity of light, vibration and noise resulting from construction and operation
- discuss how sensitive fish and wildlife habitats and/or seasons would be avoided or protected
- describe best management practices that would be implemented for the containment and use of chemicals and petroleum-based products, introduction and mitigation of invasive species, and erosion and sediment control.

The project areas should be thoroughly described and include the areas that may be impacted by additional electrical transmission lines, and roads or trails. The EIS should state time frames for completion of each element of the program.

Ute Ladies'-Tresses (*Spiranthes diluvialis*)
Ute ladies'-tresses, a species listed as threatened under the ESA, is known to occur along the Snake River on the Fort Hall Reservation. Consequently, the Service has interest in potential effects to Ute ladies'-tresses throughout the construction process, including pre and post construction and recommends incorporation of surveys for Ute ladies'-tresses as part of all alternatives. Detailed inventory and mapping of threatened and endangered plant species in and near construction areas could identify potential problems. Disturbance of Ute ladies'-tresses and adjacent habitats increases fragmentation, inhibits pollination, and potentially removes foraging habitat for pollinators of Ute ladies'-tresses. Each alternative action should describe measures to be taken to avoid Ute ladies'-tresses.

Bull Trout (*Salvelinus confluentus*)
Threatened bull trout occur in the Yankee Fork and Panther Creek drainages. The Service has interests regarding potential changes to Yankee Fork and Panther Creek habitats as a result of the proposed action and recommends all impacts to bull trout be considered and addressed accordingly within the EIS, including but not limited to, incidental trapping avoidance of bull trout in weir systems, changes to nutrient levels, changes to sedimentation, changes to flow rates above and below construction sites, competition and predation from introduced species, and short-term and long-term impacts of changes to biomass in the Snake River, Yankee Fork, and Panther Creek drainages.

Yellow-Billed Cuckoo *(Coccyzus americanus)*
Yellow-billed cuckoo are currently proposed for listing under the ESA. Yellow-billed cuckoo are dependent on large areas of riparian ecosystems, thus actions occurring in or near riparian areas should consider effects to nesting, brood rearing, and habitat fragmentation which may impact health and vigor of Yellow-billed cuckoo.

Greater Sage-Grouse
Proposed actions within sagebrush habitat should be carefully planned to avoid or minimize potential impacts to Greater sage-grouse (*Centrocercus urophasianus*), a candidate species. The Service recommends the *Guidelines to Manage Sage Grouse Populations and their Habitats*, which was written to assist land managers in managing sage grouse habitats and populations (Connelly et al., 2000).

Water Quality and Quantity
The EIS should address potential impacts of sediment deposition and erosion in project areas. Changes to water quality and quantity such as turbidity, velocity, nutrient levels, and chemicals have varying effects on habitats and should also be addressed for potential impacts to the Snake River, Yankee Fork, and Panther Creek drainages.

Migratory Birds
Potential short-term and long-term impacts to migratory birds and their habitat should be specifically addressed in the EIS. The Service recommends construction be timed to avoid nesting and breeding season for migratory birds to the extent practicable. Projects from early spring through late summer (April-August) would have the highest potential for deleterious effects to migratory birds. During this time, construction could result in the destruction of active nests and young birds which breed in the area. Such destruction may result in unintentional take under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. §703-712). The MBTA prohibits the take of migratory birds, their parts, nests, eggs, and nestlings. Executive Order 13186, issued on January 11, 2001, affirmed the responsibilities of Federal agencies to comply with the MBTA. The MBTA also requires the development of a strategy for the Service to work with Federal agencies to conserve priority species by avoiding and minimizing unintentional take and taking actions to benefit these same species to the extent practicable.

Bald and Golden Eagles
The Service recommends use of the *National Bald Eagle Management Guidelines* (USFWS, 2007) and the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (USFWS, 2002), which were developed in part to provide consistent application of raptor protection measures and provide full compliance with environmental laws regarding raptor protection. Raptor surveys and mitigation measures are provided in the Guidelines as recommendations to ensure proposed projects will avoid adverse impacts to raptors. Locations of existing raptor nests should be identified prior to initiation of construction. Direct loss of nesting sites or territories should be avoided. Appropriate spatial buffer zones of inactivity should be established during crucial breeding and nesting periods relative to raptor nest sites or territories.

Invasive Species
The Service recommends an inventory of invasive species become part of all action alternatives. Detailed inventory and mapping of invasive species in and near any construction areas could identify potential problems. Each alternative should be evaluated with regard to the potential for new vectors and increased spread of invasive species. Alternatives should describe measures which would be taken to avoid and/or control invasive species. Size and timing of vegetation treatments influence the impacts of these projects on wildlife and their habitats. The EIS should discuss impacts from the introduction of invasive species, accounting for insects, terrestrial and aquatic wildlife, parasite and disease transference, and sensitive wildlife areas with consideration taken for the size and timing of the project. The Service recommends the EIS discuss anticipated vegetative communities in affected areas and the impacts resulting from changes in the extent, distribution, and composition to native vegetative communities.

Wetlands/riparian Areas
Wetland and riparian areas are sensitive habitats which are relatively scarce and highly valuable to many species of insects, amphibians, reptiles, fish, birds and mammals. Impacts to these areas should be avoided to the greatest extent possible. Protocols should be developed to monitor changes to ambient decibel levels, vibrations, air quality, water quality, water flow, sedimentation, water temperature, nutrient levels, contaminants in water and air, erosion, and hydrology. Monitoring should be conducted to determine the degree of impact during construction and operation, as well as for any unforeseen impacts.

We greatly appreciate the opportunity to provide comments. If you need further assistance, please contact Evan Ohr (Evan_Ohr@fws.gov) of this office at (208) 237-6975 ext.115.

Sincerely,

David Kampwerth
Field Supervisor

cc: Treichel, OEPC
Nash, BCPA (ERT)

Literature Cited

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to Manage Sage Grouse Populations and their Habitats. Wildlife Society Bulletin, 28:967-985.

U.S. Fish and Wildlife Service (USFWS). 2002. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances. U.S. Fish and Wildlife Service, Utah Fish and Wildlife Office, Salt Lake City, Utah

U.S. Fish and Wildlife Service (USFWS). 2007. National Bald Eagle Management Guidelines, United States Fish and Wildlife Service, Washington D.C.

CSHP14 0008 – Blair/Idaho State Senator

See attached document for comment.

BONNEVILLE POWER ADMINISTRATION

CRYSTAL SPRINGS HATCHERY PROGRAM

"I'd like to tell you..."

Please have your studies look at:

I need more information about:

I have these other comments:

Please forge ahead. Brigham County looks forward to development of this hatchery.

Name/Address: [illegible]

You ma[illegible]

Please mention "*Crystal Springs Hatchery Program*" in your correspondence.

The comment period ends **July 7, 2014.**

CSHP14 0009 – Carter

See attached document for comment.

BONNEVILLE POWER ADMINISTRATION

CRYSTAL SPRINGS HATCHERY PROGRAM

"I'd like to tell you..."

Please have your studies look at:

The impact on water table

I need more information about:

How many CFS will be required when both Crystal Springs & Legacy Spring Hatcheys are in full Production?

I have these other comments:

There are many wells in the area for both domestic use and Irrigation, that are 30' or less my Concern is that with that much water being Pumped out of the aquatice, it may Impact local wells.

Name/Address:

You

Please mention *Crystal Springs Hatchery Program* in your correspondence.

The comment period ends **July 7, 2014.**

CSHP14 0010 – Comments received at public meetings

Attached: Collective comments received from public meetings.

Crystal Springs Hatchery Program EIS
Public Scoping Meeting Comments
Fort Hall, Idaho
June 10, 2014

1) Has the contamination and chemical been removed from the Yankee Fork?
2) Salmon Fishing has been very important to my family. My father used to fish here and in the ocean, I would fish where he showed me.
3) Once a few fish come back then leave them alone so they can reproduce. Don't take them all to the hatchery.
4) This project is important to our family (Gibson District of Fort Hall). We would like to see this project funded and go forward.
    - Enhance the river system (ecosystem)
    - Economic benefits – Direct: jobs Indirect: supporting services and industries for all communities affected by the project
    - Brings families together through fishing
    - Promotes a healthy lifestyle
    - Brings new traditions for some families and keeps existing traditions intact for other families
    - Fishing in these watersheds is an annual family tradition
    - Allows tribal members and non-tribal members to meeting and interact to develop healthy relationships
    - Young people will see this and be able to carry this project on and possibly add to it
    - Healthy activities like this are good for our youth.
    - My husband taught my son to fish and now my son runs the fisheries program
5) Hope to see more Salmon
6) Will the fish be wild?
7) Yellow billed Cuckoo
8) Yellowstone cutthroat Trout in bottom is ambitious
9) What kind of field studies?
10) Natural or hatchery fish?
11) Taxes on hatchery site?
12) Water rights on property ~ 21.6 cfs
13) Cost? Will it raise electric rates?
14) Will this be a job creator?
15) Funds for personnel to operate hatchery & satellite facilities
16) What is the survival rate expected to be?
17) Are hatchery and natural fish nutritionally equivalent?
18) Project lifespan?
19) Current or future mining above weirs? How will this affect program
20) Studies on effects of mining impacts on fish
21) What are the obstacles to program?
22) What can citizens do to help process?
23) Seismic activity in area?
24) How is the water quality at the hatchery site? Water temp x2
25) How will global climate change affect fish/hatchery
26) Make sure fish are available equally.
27) Fish coming upriver; they can sense or smell if water is bad. They won't go up Panther Creek if there are still chemicals (copper, etc.) in the water. They will smell it at the mouth of the creek at Salmon River.

28) Lots of fish in Yankee Fork and Panther Creek historically. You could walk on them.
29) Big fish used to come upriver in August/September. 50" fish.
30) Fish taste better if you catch them downriver. They are worn out by the time they arrive at Fort Hall area.
31) What is the cost difference between temporary weirs and permanent weirs?
32) Will it be completely a Tribal operation (collection, eggs, rearing, release)?
33) What does No Action mean?
34) How much does it cost to build hatchery?
35) Where does money come from?
36) Am I paying for it?
37) Will it raise my rates?
38) I hope you address my comments, other agencies don't do so well.
39) What field studies will be done?
40) Will the Tribes conduct the studies or will they be outsourced?
41) The fish that the Tribes will be harvesting will be hatchery fish, correct?
42) Who owns hatchery site land?
43) Will taxes be paid?
44) Will there be work for Tribal members?
45) What is the survival rate? 0.3%?
46) What is life cycle?
47) How long will the project last? (duration)

Crystal Springs Hatchery Program EIS
Public Scoping Meeting Comments
Salmon, Idaho
June 11, 2014

1) Cobalt – danger of fire in this area.
2) Different level of maintenance on temporary vs permanent weir.
3) 25 year life span on weir. Should weir become non-functional it would be taken out?
4) Will hatchery fish be adipose fin-clipped?
5) Wild and scenic boundary in Panther Creek?

Crystal Springs Hatchery Program EIS
Public Scoping Meeting Comments
Challis, Idaho
June 12, 2014

1) What is max production of Crystal Springs?
2) Met w/commissioners about reroute of road through Yankee Fork.
3) Custer County is an important contact.
4) IDFG biologist at Sawtooth Hatchery did not hear about meeting.
5) Katie Wood did not hear about meeting until 2 weeks ago.
6) Does steelhead play any role in this proposal? Permanent weir would allow collection of steelhead for IDFG.
7) Would electricity be provided at Yankee Fork? If so, would it be quieter than current generator?

8) What size of bull trout are out there? They have had 29" bull trout at Yankee Fork. Predominantly bull trout. Panther Creek has a lot of brook trout.

Crystal Springs Hatchery Program EIS
Additional Public Scoping Meeting Comments

1) The hatchery should be managed for more than just a larger salmon harvest; it should also be managed for salmon conservation.
2) How many fish will be raised in the hatchery?
3) Who will pay for the hatchery project?
4) How will the hatchery fish get from the hatchery to the streams in the north?
5) Who will haul the fish from the hatchery to the streams in the north?
6) What is the source of water for the hatchery?
7) Who holds the water rights for the hatchery water source?
8) How many staff will be employed for the hatchery and the in-stream facilities?
9) Will the staff positions be year-round?
10) Does the project cost include salaries for employees?
11) What is the expected survival rate of hatchery fish released to Panther Creek and the Yankee Fork?
12) What is the nutritional content of hatchery-raised fish?
13) What is the life cycle for the new hatchery facility? How long will it be in use?
14) How long will it be before the hatchery is operational?
15) What could potentially delay the construction and operation of the hatchery?
16) Would the fish collection facilities be operational 24 hours a day?
17) What time of year would the fish be collected from the streams?
18) Who would remove the stream-related facilities at the end of the program?
19) What would the water source be for acclimation facilities at Panther Creek?
20) Will all released fish be fin-clipped?
21) Will any water losses related to stream diversions be counted against USFS' water allotments?
22) Will water taken from Panther Creek go under the road?
23) How close will the new facilities at Panther Creek be to the existing barn?
24) What is the timing of placing fish in the holding ponds at Panther Creek?
25) Are the pit tag array and screw trap proposals near Clear Creek separate from the Panther Creek part of the Crystal Springs Hatchery Project?
26) Will harvested fish be placed back in the stream for a nutrient source? The USFS would like 1,000 carcasses returned to Panther Creek.
27) Will live escapes be allowed upstream of the fish weir in Panther Creek?
28) Would all of the Dummy Creek flows be needed to support the Panther Creek fish facilities?
29) Would the project construction activities at Panther Creek modify the fences that currently exist around the pasture area at that location?
30) What are the goals for release of juveniles to Panther Creek and the Yankee Fork?
31) What is the hatchery capacity for smolts?
32) Is there a steelhead element to this program?
33) Will the Pole Flat Campground be modified by the facilities at the Yankee Fork?
34) Does the project include trapping of bull trout?

35) The hatchery should be constructed to allow for raising of 10,000 Yellowstone cutthroat trout rather than just 5,000 trout.
36) Is there a preferred alternative?
37) Does the temporary in-stream facility alternative include temporary out-of-stream holding facilities?
38) What would require more maintenance, temporary or permanent in-stream and out-of-stream facilities at Panther Creek and the Yankee Fork?
39) Hatchery fish released to Panther Creek may not return due to the contamination from the Blackbird Mine.
40) The environmental evaluation should address other species, including yellow-billed cuckoo, bull trout, Ute's ladies tresses, migratory birds, bald eagle and golden eagle.
41) What is the time frame for movement of salmon from the hatchery to the streams, out to the ocean and return to the streams?
42) Has mining occurred along Panther Creek and the Yankee Fork in the past? Is it still occurring?
43) BPA should look in the USFS forest management plans for visual resource management requirements.
44) Is Panther Creek eligible for wild and scenic status?
45) There is a concern for cultural resource damage associated with construction at the Yankee Fork.
46) What can citizens do to support the program?
47) There are two separate forest management plans for the Salmon-Challis National Forest; one for the Salmon and one for the Challis.
48) Are other hatcheries proposed in the area, or proposed as part of the same program?
49) Will non-tribal anglers be allowed to harvest salmon in Panther Creek?
50) The cutthroat trout portion of the project would not be part of the NEPA decision for the USFS.
51) The name of the project does not make it clear that there are Panther Creek and Yankee Fork elements of the overall project.
52) Idaho Department of Fish and Game may have redd surveys of Panther Creek.
53) USFS would like the list of all persons/organizations that received the scoping announcement.
54) From the USFS perspective, scoping for NEPA does not end at a specified time; it continues throughout the process.
55) USFS staff receive copper monitoring information for Panther Creek.
56) USFS would like to know what issues are being raised by the public.
57) Have the County Commissioners been asked to be a coordinating agency?

CSHP14 0011 – Ecklesdafer

See attached document for comment.

CRYSTAL SPRINGS HATCHERY PROGRAM

1. I would like you to look at the possibility of locating a hatchery site on the Trail Creek drainage that flows into Panther Creek approximately 7 miles upstream from the Salmon River. This area was considered as a good location for a hatchery by the Indian tribes 10 or so years ago. I have seen Steelhead spawning in the Trail Creek drainage ponds within the past 5 years. The road parallels the creek so that it is just a short walking distance to the area and I would be glad to guide you there. Please call to arrange when we will be available at our place on Panther Creek.

2. Restoring the fishing streams is of great importance to the ecology as well as the economy, especially for Idaho! We have a home located on Panther Creek and would love to see an increase in the fish diversity and population as it must have been many years ago.

CSHP14 0012 – Joyner/U.S. Army Corps of Engineers

See attached document for comment.

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
IDAHO FALLS REGULATORY OFFICE
900 NORTH SKYLINE DRIVE, SUITE A
IDAHO FALLS, IDAHO 83402-1700

REPLY TO ATTENTION OF

3 July 2014

Regulatory Division

SUBJECT: NWW-2014-280, Crystal Springs Hatchery Program

Bonneville Power Administration
Public Affairs – DKC-7
PO Box 14428
Portland, Oregon 97293-4428

To whom it may concern:

This is in response to your 23 May 2014 letter requesting scoping comments on your proposed Crystal Springs Hatchery Program. Thank you for providing the Corps of Engineers (Corps) the opportunity to provide comment. According to information provided, the proposed project would involve the construction of two (2) fish trapping weirs, with one on the Yankee Fork in Custer County, Idaho and one on Panther Creek in Lemhi County, Idaho. The project would also involve development/redevelopment of a fish hatchery at Crystal Springs in Bingham County, Idaho.

The fish hatchery would be located, within Section 25 of Township 4 South, Range 32 East and Section 30, Township 4 South, Range 33 East, near latitude 43.04516º N and longitude -112.65127º W, in Bingham County, Idaho. The Yankee Fork trapping weir would be located, within Section 8 of Township 1 North, Range 15 East, near latitude 44.30204°N and longitude –114.72121°W, in Custer County, Idaho. The Panther Creek trapping weir would be located in Section 18 of Township 20 North, Range 19 East, near latitude 45.06645°N and longitude -114.27145°W, in Lemhi County, Idaho. Your project has been assigned Department of Army (DA) File # NWW-2014-280, which should be referred to in all future correspondence.

AUTHORITY

The DA exerts regulatory jurisdiction over waters of the United States (U.S.), including wetlands, pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344). Section 404 of the Clean Water Act requires a DA permit be obtained prior to discharging dredged or fill material into Waters of the U.S., which includes most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, irrigation and drainage canals and ditches that are tributaries to other waters, and wetlands.

Based on our review of the information you furnished and available to our office, we have preliminarily determined that as currently proposed your project may involve work requiring DA authorization. The project area may impact the Yankee Fork, Panther Creek, and unnamed tributary (Crystal Springs) to the Snake River and adjacent wetlands. Therefore, a DA permit may be required for the discharge of dredged and/or fill material in these waters and wetlands.

We realize that a project at the scoping level is less detailed than a project that is being reviewed for a DA permit. Our scoping comments at this time are limited. As project details are developed and the level of impact to aquatic resources become clearer we may wish to be a cooperator in development of the EIS.

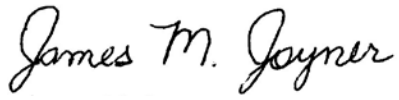
Additionally as part of any DA permit application and review process we would need a wetland delineation of the project area, particularly for the fish hatchery project area. Prior to permitting, the results of the delineation would need to be reviewed and approved by this office.

All Clean Water Act DA authorizations are required to be in accordance with the Environmental Protection Agency's 404 (b)(l) Guidelines. Under the Guidelines, the applicant must show that all appropriate and practicable steps to minimize potential impacts of the discharge on the aquatic ecosystem have been considered, and that the current proposal represents the least environmentally damaging practicable alternative. The applicant must summarize the steps that they have taken to avoid, minimize and/or mitigate the unavoidable impacts of their proposed project. The burden of proof to demonstrate compliance with the Guidelines rests with the applicant. We encourage you to engage with this office well in advance to understand how avoidance, minimization and mitigation sequencing can be incorporated into your proposed project.

At this time, there is not enough information to address the 404(b)(1) guidelines for this particular project. In accordance with Regulatory Guidance Letter (RGL) 92-3, the level of documentation and the detail of analysis required should reflect the significance and complexity of the proposed discharge activity. This will include analysis of secondary and cumulative effects to the aquatic environment from the proposed action. Secondary effects “are caused by the [proposed] action and are later in time or farther removed in distance, but are still reasonably foreseeable” (40 CFR Part 1508 Sec. 8). Cumulative effects are those that result “from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR Part 1508, Sec. 7).

Please contact me by telephone at (208) 522-1676, by mail at the address in the letterhead, or via email at james.m.joyner@usace.army.mil if you have any questions or need additional information.

Sincerely,



James M. Joyner
Sr. Project Manager, Regulatory Division

CSHP14 0013 – Somers/U.S. Environmental Protection Agency

See attached document for comment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ECOSYSTEMS, TRIBAL AND
PUBLIC AFFAIRS

July 7, 2014

Mr. Joe DeHerrera, Project Manager
Bonneville Power Administration
Public Affairs Office -- DKE-7
P.O. Box 14428
Portland, Oregon 97292-4428

Re: Crystal Springs Hatchery Program – Notice of Intent to prepare an Environmental Impact Statement and notice of floodplain and wetlands assessment EPA Region 10 Project Number 14-0025-BPA

Dear Mr. DeHerrera:

The U.S. Environmental Protection Agency has reviewed the Crystal Springs Hatchery Program Federal Register Notice of Intent to prepare an Environmental Impact Statement and notice of floodplain and wetlands assessment. We are submitting scoping comments in accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act. We appreciate this opportunity to engage in the proposed project.

The Crystal Springs Hatchery Program was recommended to BPA by the Northwest Power and Conservation Council Fish and Wildlife Program. Pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980, the purpose is to support efforts to protect, mitigate, and enhance fish and wildlife affected by the development and operation of the Federal Columbia River Power System in the mainstem Columbia River and its tributaries. BPA's EIS will analyze the potential effects of funding the Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho proposal to construct and operate a hatchery for spring/summer Chinook salmon in the Salmon River subbasin and Yellowstone cutthroat trout in the Upper Snake River subbasin on Fort Hall Reservation.

The proposed project would involve construction of a hatchery, two fish trapping facilities (weirs), and relocation of a section of Yankee Fork Road and RV pads. The hatchery would be located on Crystal Springs in Bingham County, Idaho; the weirs would be located on U.S. Forest Service land in the Yankee Fork of the Salmon River at the Pole Flat Campground in Custer County, and at Panther Creek in Lemhi County, Idaho. A USFS Special Use Permit would be required to construct and operate the weirs and associated facilities. The EIS will also include a floodplain and wetlands assessment as required by the Department of Energy, geared to avoid or minimize potential harm to any affected floodplains and wetlands.

We support BPA efforts to mitigate impacts to fish and wildlife affected by the Columbia River system dams. The NOI states that proposed project operations would include collection of adult spring/summer Chinook for broodstock from the Sawtooth and Pahsimeroi hatcheries located in Custer and Lemhi Counties, Idaho. When possible, we are in favor of using wild fish native to the target watersheds to establish hatchery broodstock. However, we understand (J. DeHerrara, phone conversation) that wild fish are extirpated from Panther Creek, and that Yankee Fork has been supplemented in the past few

years and, therefore, no wild run exists there. The NEPA document should address this issue in relation to each of the focus areas and information needs listed below. To inform decision making regarding the proposed Crystal Springs Hatchery Program, we recommend that BPA provide the following information in the EIS:

- A brief summary of the historical salmonid populations, impacts, current conditions, and recovery plans.
- The basis for the recommendation that this proposed hatchery program is needed for the mitigation and recovery of the target salmon stocks and how it would relate to efforts being taken to mitigate and recover Snake River spring/summer chinook through habitat restoration, harvest limitations, and hydroelectric power operations.
- A clear statement of goals and objectives for the proposed project, including but not limited to program designation as conservation or harvest, and whether hatchery operations are intended to be temporary or permanent.
- The co-managers objectives and how they relate to the overall strategy to promote viable salmonid populations (VSPs).
- Discussion of the linkage between Clean Water Act and Endangered Species Act to support self-sustaining wild populations of Salmon River spring/summer Chinook and Upper Snake River Yellowstone cutthroat trout.
- An explanation of how the proposed project would support the recovery of ESA-listed fish and fish species at risk/in decline -- both those targeted for artificial population enhancement (spring/summer Chinook, Yellowstone cutthroat trout) and non-target species that may be affected by the proposed action (such as, bull trout).
- A discussion of effects from hatcheries, including genetic (diversity, domestication, inbreeding depression), ecological (predation, competition, disease), and facility (water quality, fish passage, intake screening).
- Discussion of how hatchery reforms, per the principles, standards and recommendations of the Hatchery Scientific Review Group (HSRG), are integrated into the proposed project, including but not necessarily limited to: hatchery-related fish passage barriers, hatchery intakes, broodstock management, water quality, and watershed-specific plans to implement hatchery reform.
- Criteria that would be used to evaluate the effectiveness of the proposed hatchery program.
- A description of the hatchery management and monitoring program.

Detailed comments pertaining and in addition to those offered above are enclosed for your use in preparing the EIS. If you need more information or would like to discuss these comments, please feel free to contact me at (206) 553-2966 or via electronic mail at somers.elaine@epa.gov. Thank you for the opportunity to participate in the scoping phase of this project.

Sincerely,

Elaine L. Somers
Environmental Review and Sediment Management Unit

Enclosure

U.S. Environmental Protection Agency
Detailed Scoping Comments for the
Crystal Springs Hatchery Program

Purpose and Need
The NEPA document should include a clear and concise statement of the underlying purpose and need for the proposed project, consistent with NEPA implementing regulations at 40 CFR 1502.13. The purpose and need should reflect not only BPA's purpose but also the broader public interest and need. A concise statement is important to set up the analysis of alternatives, which could range from too tightly focused to too broad, depending on how the statement is written.

Artificial Production
Hatcheries can be a useful part of a comprehensive, integrated approach to restoring sustainable runs of salmonids, but should not be the only solution to restoring salmonid populations. Artificial production should be conducted in a scientifically sound manner and considered in the context of the entire watershed. We acknowledge the unique role hatcheries play in mitigating harvest of diminishing wild populations. However, hatcheries should be operated in a manner that recognizes that they exist within an ecosystem and with a goal to promote healthy habitat that supports wild salmon productivity. Hatchery operations should be coordinated with watershed, subbasin, basin and regional scale efforts to improve habitat characteristics and natural production where possible. Naturally selected populations should provide the model for artificially reared populations. Artificial production should strive to minimize adverse effects on biological diversity and to the extent possible, help reverse declines in biological diversity. Artificial production should include an adaptive management design that evaluates the benefits and adverse effects throughout the ecosystem and over the entire life of the species being propagated.

At present, hatcheries serve an important role in meeting commercial, tribal and public harvest obligations. The goal of hatcheries should be to assist recovery and provide opportunities for naturally spawning populations, not to maximize catch in the near term. While production for harvest is a legitimate hatchery objective, adverse impacts on natural populations associated with harvest management of artificially produced populations should be minimized. The NEPA document should explain how this would be accomplished.

The NEPA document should be clear on whether the artificial production program is intended for augmentation, mitigation, restoration, preservation, or research purposes. Periodic reviews of the program and its purpose should be performed to ensure that the program's purpose is being met and a determination made about whether the program should continue. Preferably, hatchery production should be temporary to recover wild stocks, a strategy that has the additional advantage of promoting habitat and water quality that wild salmon require to successfully reproduce. We realize that the extent and nature of habitat loss may often render permanent hatcheries necessary to mitigate or replace lost wild production but where this may be the case, clear justification should be provided.

Hatchery production has potentially negative impacts, such as, confounding wild stock production through mixed stock harvests (overharvesting smaller wild stocks while targeting harvest on larger hatchery stocks) and other potential genetic and biologic complications such as reduction of brood stock biodiversity or hatchery fish outcompeting wild fish for rearing or food. The challenge of hatchery

production is to avoid compromising the goals of self-sustaining production and genetically (or locally) adapted populations, both of which may potentially be negated by the confounding factors. We recommend that the NEPA document discuss the duration of the hatchery program and include the adaptive management plan for changing circumstances in fish production, the need to promote wild stocks, and how the effects of climate change would be factored into the proposed program.

Water Resources

The NEPA document should indicate whether water bodies listed on the Clean Water Act Section 303(d) list of impaired water bodies occur in the project area and, if so, list the parameters of concern and any applicable TMDLs. Disclose which water bodies may be affected by the project, the nature of the potential impacts and the specific pollutants likely to affect those waters. In particular, the NEPA document should discuss how the proposed Crystal Springs Hatchery Program would be designed, built, and operated to comply with its NPDES permit wasteload allocations for total phosphorous and suspended sediment. Where affected water bodies are not 303(d) listed, the NEPA analysis should demonstrate that the proposed program would comply with anti-degradation provisions of the Clean Water Act.

Source waters. Watersheds affected by proposed projects may also function as public drinking water supplies and/or their source areas. Source water is water from streams, rivers, lakes, springs or aquifers used as a supply of drinking water. Source water areas are delineated and mapped by the state for each federally regulated public water system. The 1996 amendments to the Safe Drinking Water Act require federal agencies to protect sources of drinking water for communities. The NEPA document should identify:

- Source water protection areas within the project area;
- Activities that could potentially affect source water areas;
- Potential contaminants that may result from the proposed project; and
- Measures that would be taken to protect the source water protection areas.

Cumulative and Indirect Effects

Impacts from hatcheries may have cumulative effects on affected ecosystems. The NEPA document must assess impacts over the entire area of impact and consider the effects of other past, present and future projects in the area together with the proposed action, including those by entities other than BPA. EPA has issued guidance on how we are to provide comments on the assessment of cumulative effects, *Consideration of Cumulative Impacts in EPA Review of NEPA Documents,* which can be found on EPA's Office of Federal Activities home page at: http://www.epa.gov/compliance/resources/nepa.html.

The cumulative effects analysis should:

- Identify resources that would be cumulatively affected;
- Determine the appropriate geographic (within natural ecological boundaries) area and the time period over which the effects have occurred and would occur;
- Examine all past, present, and reasonably foreseeable future actions that have affected, are affecting, or would affect resources of concern;
- Describe a benchmark or baseline;
- Include scientifically defensible threshold levels.

Climate Change
Effects of climate change may include changes in hydrology, sea level, weather patterns, precipitation, and chemical reaction rates, among others. Cumulative effects analysis in the NEPA document should include changes to resources that can reasonably be anticipated due to climate change that may have bearing on aspects of the project (e.g., changes in hydrology that may increase sediment). The NEPA analysis should consider how fishery resources affected by climate change could potentially influence the proposed program.

Monitoring
Monitoring should evaluate the effectiveness of individual hatchery programs in meeting their intended purpose (augmentation, mitigation, restoration, preservation, or research) as well as the overall program in maximizing natural spawning populations throughout the region. The NEPA document should identify clear monitoring goals and objectives, such as:

- Questions to be answered;
- Parameters to be monitored;
- Where and when monitoring would take place;
- Who would be responsible;
- Information that would be evaluated and reported;
- Actions (contingencies, adaptive management, corrections to future actions) that would be taken based on the monitoring information;
- How the public could obtain information on mitigation effectiveness and monitoring results.

Consultation with Native American Tribes
The Notice of Intent states that the Crystal Springs Hatchery Program is a Shoshone-Bannock Tribes proposal. Nevertheless, the NEPA document should explain how the proposed project could affect historical or traditional cultural places and treaty rights. Identify historic resources and how treaty rights and privileges are appropriately addressed. The proposed program would affect the Tribes' fishing rights, therefore the NEPA process should be conducted in consultation with all affected tribal governments, consistent with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments.* EO 13175 states that the U.S. government will continue "to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, trust resources, and Indian tribal treaty and other rights." Documentation of these consultations should be included in the NEPA document. Consistent with the July 28, 1999 memorandum from the Council on Environmental Quality to Heads of Federal Agencies, we urge BPA to consider inviting affected Tribal governments to participate in the NEPA process as cooperating agencies. This would establish a means to address intergovernmental issues throughout the NEPA process.

CSHP14 0014 – Colter

See attached document for comment.

Date 6/30/14

BPA Public Affairs DKE7

P.O. Box 14428

Portland, OR 97293-4428

Dear Mr. Rose,

I would like to make some comments on the Crystal Springs Hatchery Program

I attended the Public scoping meeting June 10, 2014 at the Shoshone Bannock Hotel and Event Center at Fort Hall.

I believe that the Shoshone Bannock Tribal Fisheries Department did an excellent job at looking at all the aspects of the environmental studies for this project. Dan Stone's presentation was very clear as to the goals and objectives of this "save the fish for the future generations" project.

My husband and I took our children fishing and enjoyed the wilderness 2 to 3 times a month during the summers when our children were growing up. We participated in Salmon fishing on the Salmon River from Decker Flats to the Yankee Fork. We fished for trout and many other species in many areas of Idaho.

This project could save the fish for future generations of all peoples.

Thank You

Ms. Belma Colter

Ms. Belma Colter

Appendix B
Shoshone-Bannock Tribes
Tribal Resource Management Plan

TRIBAL RESOURCE MANAGEMENT PLAN

For Shoshone-Bannock Tribes' Snake River Spring/Summer Chinook Salmon Fisheries within the Salmon River Sub-Basin

Prepared for:

National Marines Fisheries Service-National Oceanic and Atmospheric Administration
Pacific Northwest Region
Portland, Oregon

December 28, 2010

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CONTACT INFORMATION

Title

Tribal Resource Management Plan for the Shoshone-Bannock Tribes Snake River Spring/Summer Chinook Salmon Fisheries within the Salmon River Sub-Basin

Responsible Management Agency

Agency:	Shoshone-Bannock Tribes
Name of Primary Contact:	Lytle Denny, Anadromous Fish Biologist
Address:	P.O. Box 306, Bldg. 95, 3rd & B Street
City, State, Zip Code:	Fort Hall, Idaho, 83203
Telephone Number:	208/239-4560 or 208/239-4551
Fax Number:	208/478-3986
Email Address:	ldenny@shoshonebannocktribes.com

Date Completed
First draft submitted January 11, 2006
Second draft submitted April 17, 2007
Third draft submitted December 5, 2008
Final copy submitted December 28, 2010

EXECUTIVE SUMMARY

The Shoshone-Bannock Tribes (Tribes) exercise their right to hunt for Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha*) under inherent rights and the Fort Bridger Treaty of July 3, 1868 (15 Stat 673). Section 4(d) Rule (50 CFR 223) allows a tribal government to submit a Tribal Resource Management Plan (TRMP) with the intent of exempting the tribes' harvest of protected species from the Endangered Species Act (ESA). The purpose and scope of this TRMP is to provide the Tribes an exemption under the ESA to harvest listed Chinook salmon in the Salmon River sub-basin, while the species is listed as threatened.

Populations of Chinook salmon decreased substantially coincident with the construction of hydroelectric dams on the lower Snake and Columbia rivers (Raymond 1988; Williams 1989). Water diversions, mining, logging, livestock grazing, agriculture, municipalities, sedimentation, and commercial fisheries all played a significant role in further reducing anadromous fish populations to the point where Chinook salmon were listed under the ESA as threatened on April 22, 1992 (57 FR 14653).

Prior to 1992, the Tribes implemented Chinook salmon fisheries throughout the Salmon River, but in 1992 the dynamics of these fisheries were drastically altered. Tribal Chinook salmon fishing up until 1976 was governed by the Fort Hall Business Council (FHBC), Tribal fisherman harvested only what was necessary for sustenance. In 1975, the FHBC acting as the Fish and Game Commission (Commission) adopted the 1975 Tribal Game Code, as amended (Shoshone-Bannock Tribes 1975). The 1975 Game Code, as amended contained the Chinook salmon fishing regulations and guidelines up until 1992. The annual harvest guidelines change on a yearly basis and are dependent upon escapement forecasts. Since the ESA protections were established, the Tribes were left to adapt their fishing practices to hatchery influenced areas, which resulted in a diminishment of fishing practices in traditional fishing areas.

The TRMP was developed to manage Tribal Chinook salmon harvest in the Salmon River on natural and hatchery-origin Snake River spring/summer Chinook salmon. The Tribes utilized the ICTRT (2007) population designations with some minor modifications to develop fishery management areas (FMA) for twenty-two populations. The Tribes developed three abundance-based sliding-scale harvest management frameworks, forecast methodology, protocol for developing annual harvest guidelines, and a detailed monitoring and evaluation plan.

There are three stocks of Snake River spring/summer Chinook salmon in the Salmon River, known as major population groups (MPG) (Waples 1995); South Fork, Middle Fork, and Upper Salmon River. The South Fork Salmon River includes the mainstem South Fork, Secesh River, East Fork South Fork Salmon River, and the Little Salmon River. The Middle Fork Salmon River includes Big Creek, Bear Valley Creek, Middle Fork Upper Main, Chamberlain Creek, Camas Creek, Loon Creek, Marsh Creek, Middle Fork Lower

Main, and Sulphur Creek. Finally, the Upper Salmon River includes Lemhi River, Salmon River Lower Main, Pahsimeroi River, East Fork Salmon River, Salmon River Upper Main, Panther Creek, Valley Creek, Yankee Fork Salmon River, and North Fork Salmon River.

The Tribes will harvest Chinook salmon in accordance with three proposed abundance-based sliding-scale harvest management frameworks for natural-origin populations, supplemented natural-origin populations, and hatchery mitigation stocks. The harvest framework for natural and supplemented populations incorporate the viable population thresholds (VPT) defined by the ICTRT (2007) for basic, intermediate, large and very large populations. The harvest management frameworks for supplemented populations is essentially the same framework for natural-origin populations with adjusted harvest rates. The harvest management framework for hatchery mitigation stocks uses the same methodology and break-points as natural-origin populations, but used broodstock management goals as viability.

Pre-season adult abundance estimates will be developed annually for each of the 22 populations and hatchery programs. This will be accomplished using the *United States vs. Oregon* Technical Advisory Committee (TAC) forecasts for upriver spring Chinook, Lower Granite Dam, and Salmon River. The Salmon River forecast will include the number of hatchery and natural-origin adult Chinook salmon, of which will be further defined by FMA.

Once abundance estimates are developed for each FMA, we will apply this information to the harvest management frameworks and develop harvest guidelines. Overall, when abundance is high, harvest is moderate, when abundance is moderate, harvest is low, and when abundance is low, the Tribes and NOAA-Fisheries will determine appropriate actions, which may include a minimal fishery and/or implementation of habitat or hatchery actions. In areas where interception harvest persists, biologists will proportion harvest accordingly.

Our direct take harvest guidelines in the Salmon River sub-basin are considered all inclusive. The Tribes will coordinate their fishery intentions with the relevant co-managers and NOAA-Fisheries, with special emphasis and discussion on areas where multiple agencies elect to open fisheries. Through coordination between the Tribes and co-managers we will work towards accomplishing equitable harvest allocation.

In-season abundance estimates will be updated as necessary and harvest rates modified to adaptively manage harvest as more information becomes available. Fishery monitors and enforcement personnel will initiate a harvest monitoring program using creel surveys to estimate total Tribal harvest for each FMA. The Tribes will curtail a fishery when the harvest objectives are achieved or spawning commences in a broad range of FMAs defined as greater than 25% of the populations.

The Tribes will implement additional monitoring and evaluation not only to ascertain harvest, but to determine overall impacts to the populations and adaptively manage Chinook salmon. Monitoring and evaluation will focus on two primary performance indicators: adult and juvenile abundance. Methods used to estimate adult abundance includes using dam counts, fish traps, sonar, spawning ground surveys, and harvest. Rotary screw traps will be used to estimate juvenile abundance and productivity.

All of the above information will be reported in the Chinook Salmon Harvest Management Program annual report submitted to NOAA-Fisheries and relevant co-managers.

GLOSSARY

Abundance – quantity, number; relative degree of plentifulness.

Conservation Necessity Principles – conservation standards that must all be met in order for the federal government to impose incidental take restrictions under the ESA on tribal treaty rights.

Critical Level – This plan uses 30% of the Viable Population Threshold as an interim definition – level at which a population can no longer naturally sustain itself.

Consultation – the Tribes believe there are at least two levels of consultation: one is under the ESA; and a broader consultation requirement also exists under the Secretarial Order.

Direct Take – either, if the intent is to take listed fish then the take is direct; or, if the population being fished on is comprised mostly of listed fish, the take is direct.

DNA - (deoxyribonucleic acid) nucleic acids that are the molecular basis for heredity.

Endangered Species – An animal or plant species in danger of extinction throughout all or a significant portion of its range.

ESA – Endangered Species Act of 1973 (16 U.S.C. Section 1531, as amended) is federal legislation that is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend, and provide programs for the conservation of those species, thus preventing extinction of plants and animals.

ESU – Evoluti onarily Significant Unit - the Distinct Population Segment (DPS) of salmon that are listed under the ESA. A pacific salmonid stock that is substantially reproductively isolated from other stocks of the same species and which represents an important part of the evolutionary legacy of the species.

Extirpated – A species that no longer survives in regions that were once part of its range, but that still exists elsewhere in the wild or in captivity. A few individuals still exist but are far below a viable population threshold.

Fishery (Fisheries) – the occupation, industry or season of taking fish (harvest).

FMA - Fishery Management Area, 22 specific geographic areas for each Salmon River population.

Genetic – the biochemical basis of heredity consisting of DNA and RNA that determine the specific amino acid sequence in proteins and appear to be uniform for all known forms of life.

HCSA – Hells Canyon Settlement Agreement – artificial production agreement to mitigate for losses due to the Hells Canyon Complex. Funds the Pahsimeroi and Rapid River hatcheries.

Hatchery-origin – salmon that were born and raised in a hatchery, then released to migrate to the ocean and return as an adult fish.

Incidental Take – Take that results from, but is not the purpose of, carrying out an otherwise legal activity.

IPC – Idaho Power Company – responsible for two hatcheries (Rapid River and Pahsimeroi) in the Salmon River due to the HCSA.

ICTRT – Interior Columbia Basin Technical Recovery Team. Developed recommendations for salmon and steelhead population delineations, viable population thresholds, ESA recovery gaps, and ESA recovery scenarios for listed salmon species.

LSRCP Lower Snake River Compensation Program – U.S. Fish and Wildlife Service branch that administers funding of mitigation hatcheries in Idaho, Oregon, and Washington to mitigate for losses from the four lower Snake River dams.

NOAA Fisheries- National Oceanic and Atmospheric Administration-National Marines Fisheries Service.

Natural-origin - Salmon that were born and raised in the natural environment regardless of parent origin.

Performance Indicator – the actual item being measured in order to determine if the biological objective is being achieved (e.g., dam counts, rack counts, redd counts, harvest counts, effort counts).

Population – (1a) a body of individuals having a quality or characteristic in common; (1b) the organism inhabiting a particular locality; (2) a group of interbreeding organisms that represents the level of organization at which speciation begins.

Productivity – the rate or trend of abundance over time.

Section 4(d) Rule – A regulation (50 CFR 223, July 10, 2000) developed by NOAA-Fisheries establishing prohibitions that apply for a threatened species. Any prohibitions adopted must be those necessary and advisable to provide for the conservation of the species.

Spatial structure – the rate or trend of abundance over space (geographic area).

Subsistence (see Sustenance).

Supplementation – a management strategy that uses artificial propagation for the purpose of attempting to rebuild depressed natural populations of salmon and steelhead.

Surplus – defined by NOAA-Fisheries for purposes of this document as those adipose fin-clipped hatchery-origin fish that are in excess of recovery needs – the Tribes do not believe there are surplus salmon at this time.

Sustenance – means of support, maintenance, or subsistence of life.

Take – To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in any such conduct; may include significant habitat modification or degradation if it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

Threatened Species – An animal or plant species likely to become endangered within the foreseeable future through all or a significant portion of its range.

TRMP – Tribal Resource Management Plan

U.S. v Oregon – Civil No. 68-513 KI. Ratifies the role of the district court judge to intervene as a "perpetual fishmaster" of the Columbia River fisheries to prevent denial of Indian rights.

Viable Population Threshold – population level at which the population will sustain itself.

INTRODUCTION AND PURPOSE

During the past century, human activity resulted in a continued decline of the once robust runs of salmon and steelhead found within the Salmon River sub-basin. Nearly 95% of the total reduction in estimated abundance occurred prior to the mid-1900s. Over the last 30-40 years, the remaining population has been further reduced to about 0.5% of the estimated historical abundance.

Historically, the Shoshone and Bannock peoples harvested anadromous and resident fish throughout the Columbia River Basin (CRB) for subsistence. The annual anadromous fish runs, in what is now presently Oregon, Washington, Idaho, and Nevada provided harvest opportunities in almost every season and every watershed of the CRB. The Tribes continue to harvest andromous fish under rights reserved by the Fort Bridger Treaty of 1868.

50 CFR 223 allows a tribal government to submit a TRMP with the intent of exempting the tribal harvest of protected species from the ESA. Under the guidance of the Snake River Policy and as directed by the Tribes' Fish and Game Commission, the Fish and Wildlife Department developed this TRMP to implement ESA exempt fisheries on Snake River spring/summer Chinook salmon in the Salmon River.

The TRMP will improve upon our long history of conservative harvest management by incorporating population delineations and VPT (ICTRT 2007). The status of the populations and broodstock management goals were already incorporated into the abundance-based sliding-scale harvest management frameworks.

The TRMP establishes three "8%" harvest management framework templates for basic, intermediate, and large natural-origin populations. Each 8% harvest management framework template identifies five breakpoints. Depending upon the annual forecast; 1) the population forecast is ≤ 30% of VPT, the Tribes will meet to determine an applicable level of harvest with an initial proposal of three fish; 2) population forecast is 30.1% - 50% of VPT, then the harvest rate is 3%; 3) population forecast is 50.1% - 75% of VPT, then the harvest rate is 5%; 4) population forecast is 75.1% - 108% of VPT, then the harvest rate is 8%; and, 5) population forecast is ≥ 108.1%, then the harvest rate is 8% of 108.1% of VPT plus 35% on the remaining margin.

There are five active or planned supplementation programs in the Salmon River. The Tribes will adjust the natural-origin harvest management framework templates for basic, intermediate, and large populations from 8% to 12%, if 2-ocean and/or 3-ocean supplementation adults are expected to return from the program. The Tribes and co-managers will develop an annual forecast for the population consisting of both natural-origin and supplementation adults.

Four hatchery mitigation programs operate in the Salmon River (Rapid River Fish Hatchery, McCall Fish Hatchery, Pahsimeroi Fish Hatchery, and Sawtooth Fish Hatchery) that provide state and tribal fishery benefits. The Tribes will work with the relevant co-managers to develop hatchery forecasts, broodstock management goals, and harvest allocation on an annual basis. The Tribes will implement an 8% harvest management framework when the hatchery return is less than ≤ 139.9% of the broodstock goal. If the hatchery return is more than 140% of the broodstock goal, the Tribes will harvest 50% of the remaining adults above the broodstock goals.

Natural-origin, supplementation, and hatchery Chinook salmon forecasts will be made annually and adjusted as appropriate in-season. Tribal fishery regulations and guidelines will be adopted and inter-agency coordination meetings will address co-management harvest concerns. The Tribes will monitor and evaluate the Chinook salmon fisheries to determine overall catch and impacts to the natural populations.

Goal

The goal of the TRMP is to provide population specific harvest management of Chinook salmon in a manner that promotes recovery of the listed species while protecting, preserving, and enhancing rights reserved under the Fort Bridger Treaty and any inherent rights.

Objectives and Tasks

Objective 1a. Develop an abundance-based sliding-scale harvest management framework using an 8% table for natural-origin populations categorized as basic, intermediate, and large.

Objective 1b. Develop an abundance-based sliding-scale harvest management framework using a 12% table for supplemented natural-origin populations, categorized as basic, intermediate, and large.

Objective 1c. Develop an abundance-based sliding-scale harvest management framework for hatchery mitigation programs.

Objective 2. Develop a method to estimate adult escapement for natural-origin, supplementation, and hatchery adult Chinook salmon returning to 22 FMAs.

Objective 3. Develop adult Chinook salmon escapement estimates for 22 FMAs with.

Task 3.1. Develop Columbia River mouth upriver spring Chinook salmon forecast (January).

Activity 3.1.1. Assist TAC with development of Columbia River mouth natural and hatchery Snake River spring/summer Chinook salmon forecast (January).

Activity 3.1.2. Assist TAC with development of Columbia River mouth natural and hatchery Upper Columbia spring Chinook salmon forecast for (January).

Activity 3.1.3. Utilize Zones 1-5 harvest estimates and Bonneville Dam counts to validate Columbia River mouth forecast; update forecast as necessary.

Task 3.2. Utilize Columbia River mouth upriver spring Chinook salmon forecast to develop forecast for Lower Granite Dam (February).

Activity 3.2.1. Utilize Lower Granite Dam count to validate forecast; update forecast as necessary.

Task 3.3. Utilize Lower Granite Dam Chinook salmon forecast to develop forecast for 22 FMAs (March-April).

Task 3.4. Utilize PIT data collected at Bonneville and Lower Granite dams to refine forecasts for Snake River spring/summer Chinook salmon.

Objective 4. Apply adult forecast to the abundance-based sliding-scale harvest management frameworks and develop population specific harvest guidelines.

Task 4.1. Apply natural-origin adult Chinook salmon forecast to the natural-origin harvest management framework and set population specific fishery targets (May).

Task 4.2. Apply supplementation adult Chinook salmon forecast to the supplementation harvest management framework and set population specific fishery harvest targets (May).

Task 4.3. Apply hatchery adult Chinook salmon forecasts to the hatchery harvest management framework and set population specific fishery harvest targets (May).

Task 4.4. Determine harvest levels when run sizes for any given population fall below 30% VPT, through government to government consultation with NOAA-Fisheries (May).

Task 4.5. Communicate the Tribes fisheries intentions with the relevant co-managers and incorporate harvest allocations, if agreeable to Commission (May).

Task 4.6. Provide opportunity for Tribal member public comment on proposed fishery guidelines (May).

Task 4.7. Provide draft Chinook salmon fishing guidelines to Commission for approval (May).

Task 4.8. Submit annual harvest guidelines to NOAA-Fisheries (May).

Task 4.9. Notify co-managers, NOAA-Fisheries, and Tribal fishermen of any modifications to the Chinook salmon regulations and guidelines.

Objective 5. Implement harvest monitoring program to provide accurate and precise estimates of harvest.

Task 5.1. Develop a protocol for monitoring and evaluation Chinook salmon fisheries.

Task 5.2. Schedule annual meeting with fishery monitors and enforcement to discuss data collection, analysis, and reporting requirements.

Task 5.3. Collect efforts, hours per effort, fish caught per effort, fish released per effort, indirect mortality, gear used, area, and time (seasonal).

Task 5.4. Partition harvest accordingly in FMAs where multiple populations can be intercepted.

Task 5.5. Estimate total Tribal harvest for each population with statistical valid estimates (May-August).

Task 5.6. Obtain population specific harvest estimates from other treaty and non-treaty fisheries and determine whether equitable harvest was achieved.

Objective 6. Determine total adult abundance for each population.

Task 6.1. Use picket weirs in Yankee Fork, Panther Creek and Lemhi River and sonar in Big, Loon, Marsh, Bear Valley, Valley Creek to obtain adult escapement estimate; request adult data from existing program collected in Little Salmon, Secesh, East Fork South Fork, South Fork, Pahsimeroi, East Fork, and Salmon River Upper Main.

Task 6.2. Complete spawning ground surveys as necessary to obtain escapement estimates; this will include a detailed summary of existing programs, areas covered, and data limitations.

Objective 7. Monitor and evaluate juvenile abundance and productivity.

Task 7.1. Install and o perate rotary screw traps in Camas, Loon, Bear Valley, North Fork, and Yankee Fork.

Activity 7.1.1. Estimate emigrating Chinook salmon fry, parr, pre-smolt and smolt.

Activity 7.1.2. Use mark-recapture method to determine trap efficiency as conditions change.

Activity 7.1.3. Utilize PIT tags to determine population survival to Lower Granite Dam using SURPH model.

Objective 8. Increase non-monetary social benefits.

Task 8.1. Measure Tribal member participation in fishermen's meetings.

Task 8.2. Measure Tribal member Chinook salmon fishing efforts.

Objective 9. Communicate findings to NOAA-Fisheries.

Task 9.1. Complete annual report and provide to NOAA-Fisheries and relevant co-managers.

Authorities

The ESA (16 USC 1531-1543) establishes the basic authority for the protection of listed species of plants and animals. Section 4(d) prohibits take without ESA authorization and requires NOAA-Fisheries to issue regulations deemed necessary and advisable to provide for the conservation of the species. If tribal, private, local, state, or federal programs do not interfere with the long-term survival and recovery of a species, they can be authorized under Section 4(d) of the ESA. Section 4(d) is available only for threatened species.

The Tribes reserved the right to hunt anadromous and resident fish under the Fort Bridger Treaty of July 3, 1868. Article IV reserved the right to hunt on the unoccupied land of the United States and was construed to include the right to fish (*State v Tinno,* 94 Idaho 759, Supreme Court of Idaho, June 8, 1972).

The Indians herein named agree ... they shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts. (Article IV).

The 1975 Tribal Game Code provides jurisdiction over Tribal members hunting, fishing, trapping, and gathering resources on and/or off the Fort Hall Indian Reservation under the Fort Bridger Treaty of 1868. Tribal management guidance is provided by annual regulations carried out by the directives of the 1975 Game Code.

Policy Statement

The Tribes developed a policy statement to provide for management guidance of Snake River sub-basin resources in 1994 (Shoshone-Bannock Tribes 1994).

The Tribes will pursue, promote, and where necessary, initiate efforts to restore the Snake River system and affected unoccupied lands to a natural condition. This includes the restoration of component resources to conditions that most closely represent the ecological features associated with a natural riverine ecosystem. In addition, the Tribes will work to ensure the protection, preservation, and where appropriate the enhancement of rights reserved by the Tribes under the Fort Bridger Treaty of 1868 and any inherent aboriginal rights.

Treaty Trust Obligations

The Department of Commerce has a trust obligation to carry out their statutory mission in a manner that harmonizes tribal sovereignty and treaty rights so as to minimize the potential for conflict and ensure tribes do not bear a disproportionate burden for the conservation of listed species. The federal government has a trust responsibility to protect the Tribes right to harvest and/or gather natural resources and protect endangered species. Section 4(d) rule improves Tribal management of natural resources.

Principle 3(c) of the Secretarial Order #3206, "American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act," provides the following Conservation Necessity Principles required by any federal restriction on treaty harvest.

i) The restriction is reasonable and necessary for the conservation of the species at issue;
ii) The conservation purpose of the restriction cannot be achieved by reasonable regulation of non-Indian activities;
iii) The measure is the least restrictive alternative available to achieve the required conservation purpose;

iv) The restriction does not discriminate against Indian activities, either as stated or applied; and,

v) Voluntary tribal measures are not adequate to achieve the necessary conservation purpose.

This TRMP will balance statutory conservation requirements with tribal rights and the federal trust responsibility as directed by Section 4(d). The Tribes are confident the Secretary of Commerce will determine implementation of this TRMP will not appreciably reduce the likelihood of survival and recovery of the listed species; and therefore, exempt the Tribes direct take or harvest from the prohibition of take under the ESA.

HISTORICAL BACKGROUND

The Rivers and Fisheries of the Shoshone-Bannock Peoples – taken from Albers et al. 1998.

In historic times, the Shoshone and Bannock speaking peoples lived at the headwaters of four major river systems in the western United States. They intensively utilized and traveled the rivers and tributaries of the Salmon and Snake, which in turn feed the CRB, but they also spent time on watercourses leading to the Great Basin as well as the Missouri and Colorado Rivers. Many descendents now live on or near the Fort Hall Indian Reservation in southeast Idaho.

The Shoshone and Bannock peoples maintained lifestyles which were closely and continuously adapted to the pulse of the riverine environments where they lived and traveled; clearly indicating that the Shoshone and Bannock peoples were fishers who relied, in one degree or another, on the anadromous fish species of the CRB.

The importance of fishing to the historic Shoshone and Bannock peoples is also corroborated in archeological sources (Holmer 1986, Plew 1983, Swanson et al. 1970), but it was not until 1805 that the first European-American observations of Shoshone and Bannock fisheries and fishing practices appeared in the historic record. From this date until 1879, there is a continuous record of eyewitness accounts which describe the prominence of fishing in Shoshone and Bannock subsistence (Figure 1).

Historic and ethnographic sources reveal that the most intense fishing took place from April to September, when salmon and other anadromous species ascended the Salmon River to its headwaters and the Snake River to Shoshone Falls. On the Lemhi River, where the conditions for fishing were especially favorable, "salmon," according to Sven Liljeblad (1957), were "their principal source of Livelihood." Salmon were taken during the spring, summer, and fall runs on the Lemhi River, and one variety was also caught on the Salmon River in winter and on its tributary streams where they spawned in March (Steward 1970, Thwaites 1959). In addition, the *Newe* of the Salmon River region were

reported to procure at least nine other species of fish including lamprey, suckers, and trout.

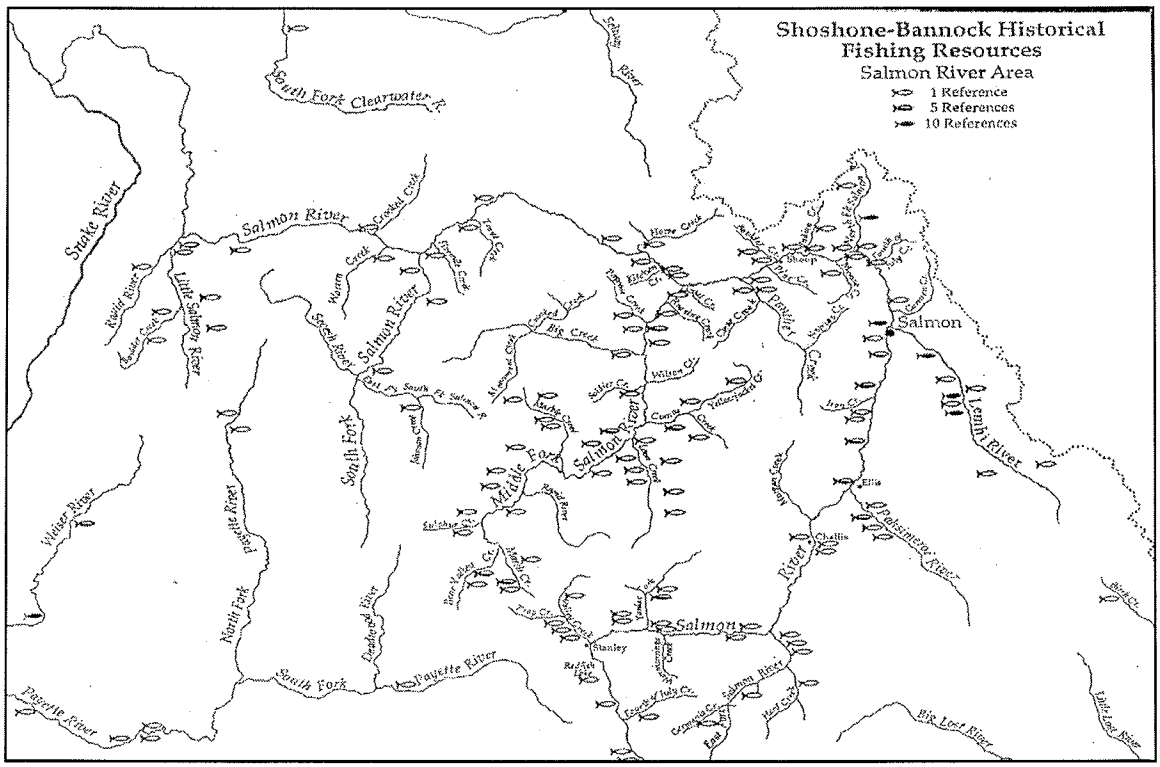

Figure 1. Shoshone-Bannock fishing locations documented by historical references in central-Idaho (Albers et al. 1998).

One of their major winter camping grounds was located at *Pa:dai,* and it consisted of a series of sites at the confluence of the Lemhi and Salmon Rivers (modern Salmon, Idaho). In 1805, Shoshone and Bannock encampments and fishing sites were also reported along the Lemhi, and they were regularly noted in the vicinity of the present day town of Tendoy in the 1850s. The journals of the Lewis and Clark Expedition also noted several settlements and fishing locations on tributaries of the main Salmon as far as the North Fork. Another popular area for fishing and occupation was situated along the lower reaches of the Pahsimeroi in an area also called *Pasimadi* (Mink 1997).

The centrality of anadromous fishing to the Shoshone and Bannock subsistence economy persisted much longer on the Salmon and its tributaries than anywhere else in Idaho (Liljeblad 1957 & 1959). This was due, in part, to the presence of a reservation in the Lemhi-Salmon area until 1907, but it was also a consequence of the many Shoshone and Bannock who stayed in this region to work as farm hands on local ranches and to perform various kinds of wage-work in local towns and mines.

In later years, as the upstream return of salmon was obstructed on the Snake River and its tributaries above Hells Canyon, more and more Shoshone and Bannock from Fort Hall

turned to the Salmon River drainage as a location to fish. Popular fishing areas noted in oral histories include, among many others, the Salmon River near Ellis, the Lemhi, Yankee Fork, East Fork, Middle Fork, Pahsimeroi, Redfish Lake, and Bear Valley Creek (Cawson 1950). Also, the continuing importance of the Salmon River fisheries to modern day Shoshone-Bannock is clearly evident in the testimony of tribal members who appeared in the trial of the *State of Idaho v. Gerald Tinno.*

Shoshone-Bannock Reliance on Anadromous Fish Resources – taken from Walker 1992.

Several methods have been employed by scholars and scientists to estimate both the amount of fish traditionally available and the amounts traditionally harvested by the tribes of Idaho including the Shoshone-Bannock Tribes. It has been estimated by Rostlund, Hewes and Walker, the Shoshone and Bannock people's average annual fish harvest for the Salmon River region was 233,555 fish (range 36,500-604,166). This is based on several methods of estimating historical catch information and assumes 15 pounds per fish.

One of the earliest and most enduring studies of fish populations and harvests in Native North America was completed by Erhard Rostlund in 1952 and published as "Freshwater Fish and Fishing in Native North America." Assuming Rostlund's method is correct, the home territory of the Tribes which includes 10 million square acres or about 15,625 square miles, the Tribal catch derived by Rostland would be 9,062,500 pounds. At an average weight of 15 pounds per fish, this equates to 604,166 total fish.

A different method was used by Hewes in his 1947 "Aboriginal Use of Fishery Resources in Northwestern North America." By this method, a tribal population of 1,000 would consume 1,000 pounds per day or 365,000 pounds per year. The Shoshone and Bannock population of southern and central Idaho probably exceeded 5,000 which would produce an average annual catch of 1,825,000 pounds. By apportioning 1,500 of this 5,000 total Shoshone and Bannock peoples to central-Idaho (Salmon River region), the Hewes method would yield an average annual catch of 547,500 pounds, a figure close to the estimate made by Walker. At an average weight of 15 pounds per fish, this equates to 36,500 total fish.

Another method used for estimating Shoshone and Bannock subsistence harvest, typical of central Idaho during the mid-19th century is the direct comparison of harvest of fish and game in Alaska. The Alaskan research indicates that contemporary hunting and gathering ranged as high as 1,498 pounds of fish and game per person per year with an estimated annual average throughout Alaska of 250 pounds (dressed weight). About 65% of the harvest was found to be fish with such species at salmon, halibut, herring, whitefish, cod, and artic char. Also resembling the Columbia system during the latter nineteenth century, ninety-five percent of the total fish harvest in Alaska is now taken by the commercial harvest.

Although we cannot compare specific Alaska communities with the Shoshone-Bannock, we can use the Alaskan survey data to help validate ranges of historic Shoshone-Bannock fish consumption. For example, 65% of the Alaskan high estimate is 973.7 pounds of fish per person per year, a figure within the range of estimates for tribal groups of the Columbia River system.

Walker (1993) further improved fish consumption estimates for the Shoshone-Bannock. Walker used more empirical methods as a first step in estimating Shoshone-Bannock reliance on fish resources in the Salmon River country. Walker (1993) grouped the Shoshone-Bannock fishing sites into three broad types: fishing sites at natural falls, cascades, or rapids; those constructed as weirs, traps, and fish walls, and the simple fishing site commonly utilized without any such distinguishing features. The first two types are by far the most productive sites and are capable of daily harvests in the hundreds and even thousands of fish during certain peak days of the fish runs. Walker (1993) located about 50 such sites. The third type is not usually employed during peak days of the anadromous fish runs and is used in an opportunistic manner for both anadromous and resident species. Walker estimates Shoshone-Bannock harvest in the Lemhi/Salmon River region to be 200 fish per day, per weir, averaging 15 pounds each. This yields a potential average annual harvest of 900,000 pounds, or about 60,000 fish.

SUB-BASIN LOCATION – taken from Salmon Subbasin Assessment (NPPC 2004)

General Description

The Salmon River sub-basin is unique in the CRB as it supports a diverse group of some of the region's more important wild, indigenous salmonid populations. Many of these populations reside in habitat strongholds within the sub-basin's large areas of designated wilderness and roadless areas. These vast protected wilderness areas are a unique feature of the sub-basin. For example, public lands account for over 91% of the land area of the sub-basin, and The Frank Church - River of No Return Wilderness Area, one of the five within the sub-basin, is the largest wilderness area in the contiguous United States. These large protected areas provide refuge not only for wild salmonids, but also serve as habitat strongholds for wildlife, some of which are imperiled or absent across much of their historic range.

Historically, the Salmon River sub-basin provided more spawning area than any other sub-basin in the CRB, producing 39% of the spring Chinook and 45% of the summer Chinook and 25% of the summer steelhead returning to the mouth of the Columbia River (Mallet 1974). A recent broad-scale assessment of the entire CRB ecosystem (ICBEMP 1997) found that the Salmon sub-basin provides a core of remaining connected habitat for five species of salmonids: bull trout, westslope cutthroat trout, redband trout (sympatric with steelhead), stream-type Chinook salmon, and summer steelhead (Thurow et al. 2000). The sub-basin contains critical habitat for Snake River spring/summer Chinook Salmon, Snake River sockeye salmon, Snake River steelhead,

and bull trout listed under the ESA and large connected habitats for Pacific lamprey, white sturgeon, and a variety of other native nongame fishes.

Geographic Area

The Salmon River sub-basin lies within the northern Rocky Mountains of central-Idaho and encompasses 22 major tributaries (Figure 2). The Salmon River flows 410 miles north and west through central-Idaho to join the Snake River in lower Hells Canyon. The sub-basin is one of the largest in the CRB and encompasses some of its most pristine terrestrial and aquatic temperate montane ecosystems.

The sub-basin is characterized by an intricate mosaic of moderate to high elevation mountain ranges combined with deeply cut valleys of the Salmon River Mountains. The western portion of the sub-basin encompasses the northern Seven Devils Mountains and the southern fringe of the Palouse Prairie region. The southeastern portion of the sub-basin is punctuated by the high alpine ridges of the Lost River and Lemhi ranges, parallel block fault ranges characteristic of basin-and-range terrain of the Great Basin. Elevation within the sub-basin ranges from 12, 662 feet on the summit of Mount Borah down to 900 feet at the mouth of the Salmon.

Physical Description

Drainage Area

The sub-basin covers approximately 14,000 square miles, 16.7 percent of the land area of Idaho, and six percent of the land area of the CRB. The sub-basin has nearly 1,700 named streams with a combined length of nearly 17,000 stream miles. These streams flow from headwaters in the Sawtooth, Lost River, Lemhi, Beaverhead, and Salmon River mountain ranges to the mouth of the Salmon River at its confluence with the Snake River in lower Hells Canyon.

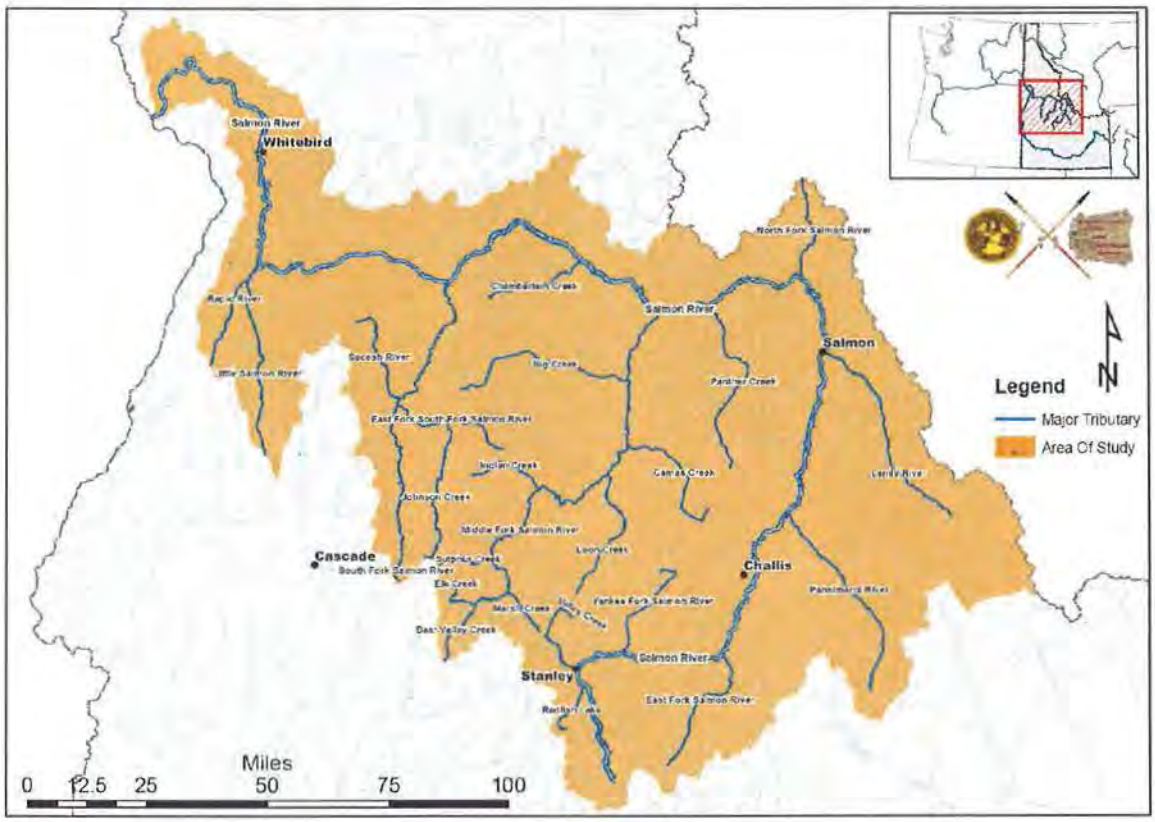

Figure 2. Major tributaries within the Salmon River basin, Idaho.

Geomorphology

The sub-basin lies within the Northern Rocky Mountain and Columbia Intermontane geomorphic provinces. Key geologic features within the sub-basin are the Idaho Batholith, Challis Volcanics, and the Quaternary alluvial deposits of the Pahsimeroi and Lemhi valleys. Soils derived from these parent materials are typically highly erodible. The combination of these soils, steep topography, and climatic stresses give rise to significant base surface erosion, slumping, and debris avalanche hazards (Megahan 1975).

Quaternary glaciation occurred primarily on isolated high elevation peaks. Major alpine glacier systems formed in the Sawtooth Range, White Cloud Peaks, and Boulder Mountains, and to a lesser extent, the Lost River and Lemhi ranges. Large scale glacially derived physiographic features (e.g., broad U-shaped valleys) are prominent in the upstream portions of the Upper Middle Fork, Upper Salmon, and Lemhi watersheds. Localized evidence of alpine glaciation (e.g., pothole lake systems and glacial cirques) is common and dispersed throughout the sub-basin on upper slope and ridge top positions of higher elevation ridge systems. Stream erosion, however, has played the predominant role in shaping the physiography of the sub-basin. Stream erosion since the Middle Tertiary has given rise to a topography characterized by relatively narrow, V-

shaped valleys, steep valley side slopes, and relatively narrow ridge systems. The geomorphology of the eastern Upper Salmon, Pahsimeroi, and Lemhi watersheds is a dramatic exception to the proceeding discussion. The sub-parallel block fault ridges of the Lost River and Lemhi ranges represent the northernmost extent of Basin and Range terrain (so predominant to the south in the Great Basin). In this portion of the sub-basin, high mountain peaks rise rapidly from broad, gentle valleys.

Climate

The sub-basin has a broad climatic gradient, from the prevalence of a Pacific maritime regime in the west to a continental regime in the east. The Pacific maritime-influenced climate of the western portion of the sub-basin is primarily affected by the seasonal movement of two opposing weather systems. From the late fall to early spring months, the climate is influenced by cool and moist Pacific maritime air. Periodically, this westerly flow of air is interrupted by outbreaks of cold, dry, continental air from Canada normally blocked by mountain ranges to the east. During the summer months, the westerly winds weaken, and a Pacific high pressure system becomes dominant, resulting in decreased precipitation, and more continental climatic conditions. The region is generally characterized by warm summers and mild or cool winters. Across much of the sub-basin, most precipitation occurs as snow during winter and summers are comparatively dry.

The eastern-most portion of the sub-basin is characterized by warm summers and cold winters. Mean annual precipitation is typically one-half the amount received in the west. The Salmon River Mountains and Sawtooth Range create a rain-shadow effect, allowing only an occasional influx of moisture laden winter air from the Pacific. Precipitation patterns in the rain-shadow, which predominate in the Pahsimeroi and Lemhi watersheds, differ from those found across the rest of the sub-basin. In these areas, precipitation frequently occurs in the early summer when convective showers are common; winters are relatively dry.

Geographic differences in the seasonal distribution of precipitation influence the characteristics of terrestrial and aquatic habitats. When snowpack is low, anadromous fish in irrigated portions of the sub-basin are affected by stream dewatering and elevated summer temperatures. Occasionally, lengthy frontal rain storms can produce as much as 10 inches of precipitation. These events are a critical factor in flooding and landslides during winter and spring (Platts 1974). Some areas are snow covered for more than eight months of the year while other areas receive only minor amounts. Above 4,000 feet, most of the annual precipitation occurs as snow with maximum accumulation occurring by about the first week in April.

Hydrology

The mean annual flow of the Salmon River at White Bird, the US Geological Survey gauging station closest to the mouth, is 11,300 cubic feet per second (cfs). The drainage

area of the sub-basin upstream from this station is 13,550 mi^2, or 97% of the entire area of the sub-basin. This equates to a mean annual discharge from the sub-basin of approximately 0.83 cfs/mi^2.

In general, stream flows peak in spring and recede to considerably lower levels in summer, fall, and winter (Figure 3). High flows are strongly dependent on snowmelt in most areas, and peaks are generally reached earliest in lower elevation catchments. Spring-time flows in the lower river reaches of the Lemhi and Pahsimeroi Rivers are different than those found in the other major tributaries, and reflect a high rate of water diversion for irrigation purposes as well as differences in geology and levels of precipitation at the eastern edge of the sub-basin. Flows in the lower Lemhi River reach particularly low levels in the summer and fall.

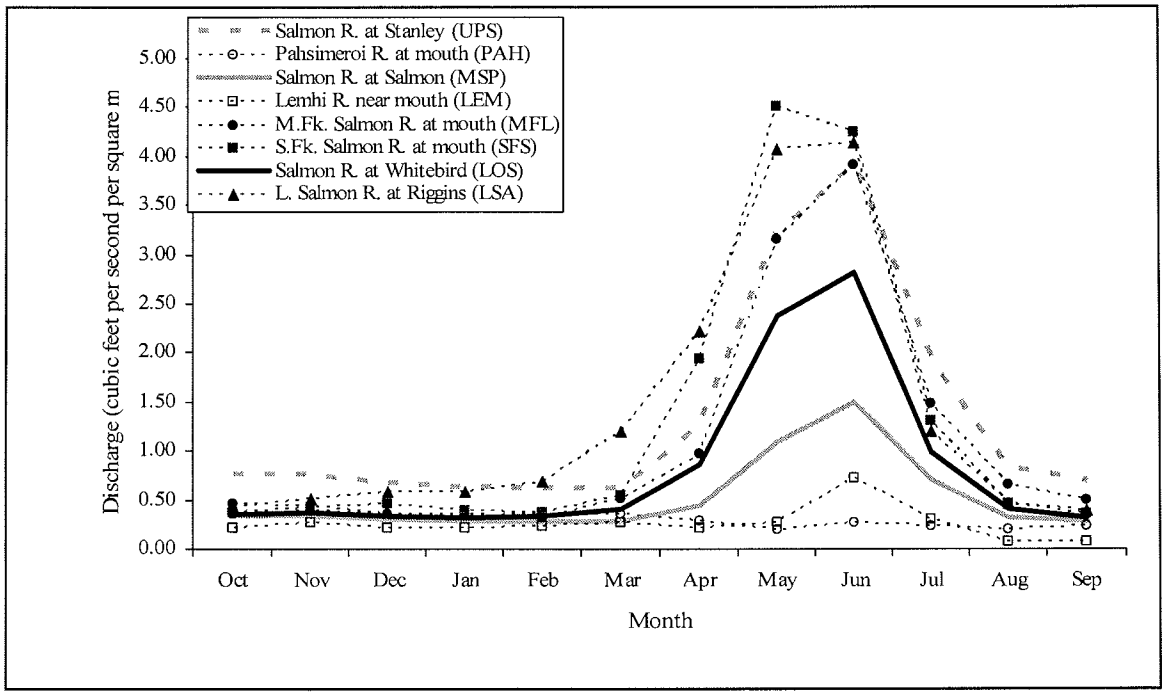

Figure 3. Seasonal patterns in streamflows for the periods of record at eight gauging stations on rivers within the Salmon River basin, Idaho (data source: USGS). Flows at gauge sites have been normalized to drainage area for comparative purposes.

Ownership and Land Use Patterns

Public lands account for approximately 91% of the sub-basin, with most of this being in federal ownership and managed by seven National Forests and Bureau of Land Management (Figure 4). Public lands within the sub-basin are managed to produce wood products, forage for domestic livestock, and mineral commodities, and to provide recreation, wilderness, and terrestrial and aquatic habitats. Approximately nine percent of the sub-basin land area is privately owned.

Land management practices within the sub-basin vary among landowners. The greatest proportion of National Forest lands are federally designated Wilderness Areas or are areas with low resource commodity suitability. One third of the National Forest lands in the sub-basin are managed intensively for forest, mineral, or range resource commodity production. Bureau of Land Management lands in the sub-basin are managed to provide domestic livestock rangeland and habitats for native species. State of Idaho endowment lands within the sub-basin are managed for forest, mineral, or range resource commodity production.

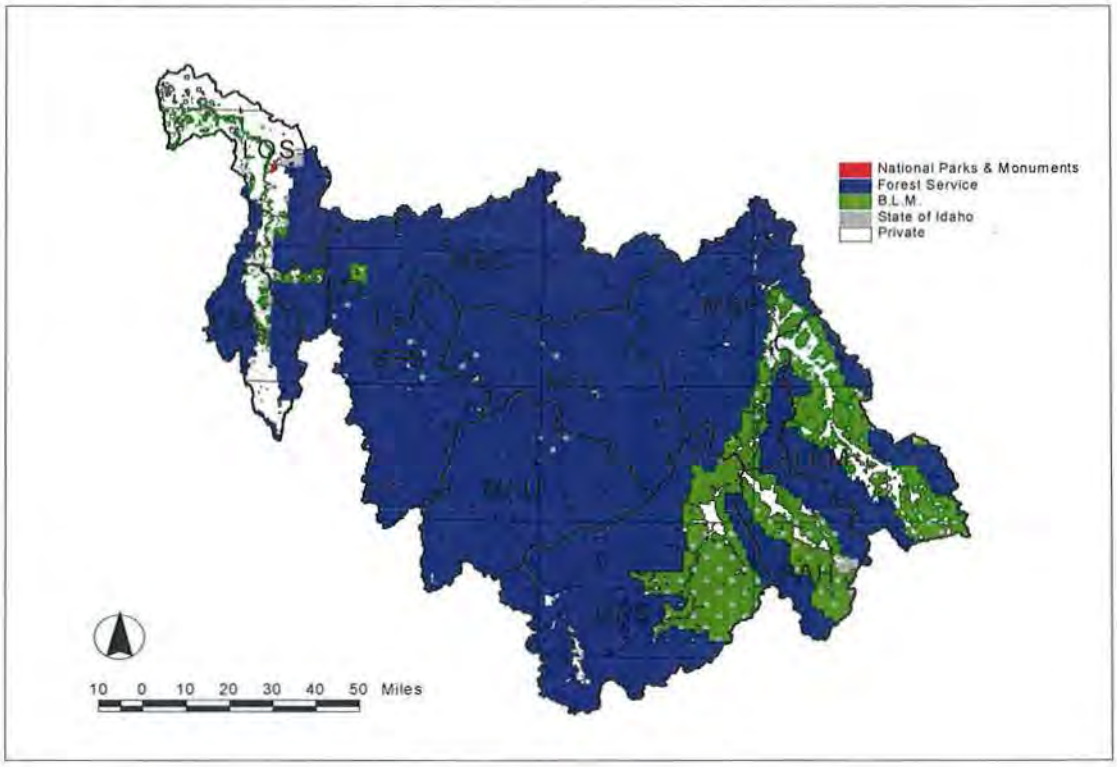

Figure 4. Land ownership patterns within the Salmon River basin, Idaho.

ENDANGERED SPECIES ACT

Under this TRMP, the Tribes will harvest natural-origin Snake River spring/summer Chinook Salmon within the Salmon River sub-basin. Implementation of this TRMP will not likely jeopardize other listed species including Snake River steelhead, Snake River Sockeye salmon, and Bull Trout, but will likely result in incidental impacts. Snake River fall Chinook will not be impacted by this TRMP and warrant no further discussion.

Snake River Spring/Summer Chinook Salmon

Chinook salmon were listed under the ESA as threatened on April 22, 1992 (57 FR 14653) and this order was corrected June 3, 1992 (57 FR 68543). An emergency reclassification was published on August 18, 1994, (59 FR 42529) and expired twelve

months later. In 2005, the status of Snake River spring/summer Chinook salmon was reaffirmed as threatened (50 CFR 223 & 224).

Prior to these rulings, hatchery produced fish were not provided ESA protections. NOAA-Fisheries clarified that hatchery stocks are included in an Evolutionarily Significant Unit (ESU) if it is determined that they are not reproductively isolated from populations in the ESU, and they are representative of the evolutionary legacy of the ESU (70 FR 37160). Hatchery stocks are considered representative of the evolutionary legacy of an ESU, and hence included in the ESU, if it is determined that they are genetically no more than moderately divergent from the natural population. If a hatchery stock is more divergent from the local natural population, this indicates that the hatchery stock is reproductively isolated from the ESU.

For threatened salmon and *O. mykiss* ESUs, Section 4(d) protections are applied to natural and hatchery fish with an intact adipose fin, but not to listed hatchery fish that have had their adipose fin removed prior to release into the wild. Many hatcheries produce fish that are not part of a listed ESU, while others produce fish that are part of a listed ESU but are surplus to conservation and recovery needs, for the purpose of contributing to sustainable fisheries. With their adipose fin removed, non-listed and surplus listed hatchery fish can be visually distinguished from listed fish requiring protection for conservation and/or recovery purposes. Exempted from take prohibitions, adipose-fin-clipped hatchery fish can be harvested in fisheries, including but not limited to mark selective fisheries that have appropriate ESA authorization. In addition to adipose-fin-clipped hatchery fish, other listed hatchery fish (with intact adipose fins) that are surplus to the recovery needs of an ESU and that are otherwise distinguishable from naturally spawned fish in the ESU (*e.g.*, by run timing, location, or other marking methods) may be exempted from the section 4(d) protections under the available limits (70 FR 37160) (Table 1).

Table 1. List of all active Salmon River basin artificial propagation programs and whether they are included in Evolutionary Significant Units (ESUs) of West Coast Salmon.

ESU and Artificial Propagation Program	Included	Location (Idaho)
Snake River Sockeye salmon ESU		
Redfish Lake Captive Propagation Program	*Yes*	*Stanley Basin Lakes*
Snake River Spring/summer Chinook Salmon ESU		
McCall Fish Hatchery	*Yes*	*South Fork Salmon River*
Johnson Creek Artificial Propagation Enhancement	*Yes*	*East Fork South Fork Salmon River*
Pahsimeroi Fish Hatchery	*Yes*	*Pahsimeroi River*
Yankee Fork Chinook Salmon Supplementation Program	*Undetermined*	*Yankee Fork Salmon River*
East Fork Captive Rearing Experiment	*Yes*	*East Fork Salmon River*
West Fork Yankee Fork Captive Rearing Experiment	*Yes*	*Yankee Fork Salmon River*
Sawtooth Fish Hatchery	*Yes*	*Upper Salmon River*
Rapid River Fish Hatchery	*No*	*Little Salmon River*

Snake River Steelhead

Snake River steelhead adults are generally not present in the Salmon River during the Tribes' Chinook salmon fisheries. Snake River steelhead were listed on October 17, 1997 (50 CRF 222 and 227). No legal distinctions were made between A-run and B-run summer steelhead. Resident rainbow trout are not protected under this rule. Tribal biologists estimate that steelhead by-catch is less than 10 adults per year and occurs in Yankee Fork, East Fork and Salmon River Upper Main FMAs. However, we will initiate a creel census and reporting system to estimate incidental impacts to steelhead. Incidental impacts to steelhead will be included in our annual report to the NOAA-Fisheries.

Snake River sockeye salmon

In November 1991, Snake River sockeye salmon were listed as endangered under the ESA (56 FR 58619). The listing was in response to the Shoshone-Bannock Tribes' petition submitted to NMFS in March of 1990. This petition was seen as the last chance to stimulate a positive change to the otherwise doomed population of the sockeye salmon.

The Tribes harvest monitors have not recorded any sockeye salmon harvest by tribal members since initiation of monitoring in 1979. Sockeye salmon are not a target species of the Tribes' TRMP. The Tribes will manage Chinook salmon harvest to minimize incidental impacts to sockeye salmon to the greatest extent possible.

Mainstem Columbia River tribal fisheries impact Snake River sockeye salmon. The Tribes recognize the unique situation of Snake River sockeye salmon and will ensure proper monitoring and evaluation, information and education occurs whenever the potential for incidental take exists. The Tribes will estimate the number of returning adult sockeye salmon and determine an incidental impact rate limit of 1% of the expected return.

Snake River sockeye salmon typically cross Lower Granite Dam from as early as June 22 through August 27 (Figure 5). Sockeye salmon are destined for the Sawtooth Valley Lakes in central Idaho in early August and migrate through nine Chinook salmon FMAs. The run-timing of sockeye salmon will overlap with late-time returning adult spring/summer Chinook salmon. Tribal harvest of Chinook salmon may not be curtailed while Snake River sockeye are returning and we expect the only area where sockeye salmon may be incidentally taken may occur in the Salmon River Upper Main FMA.

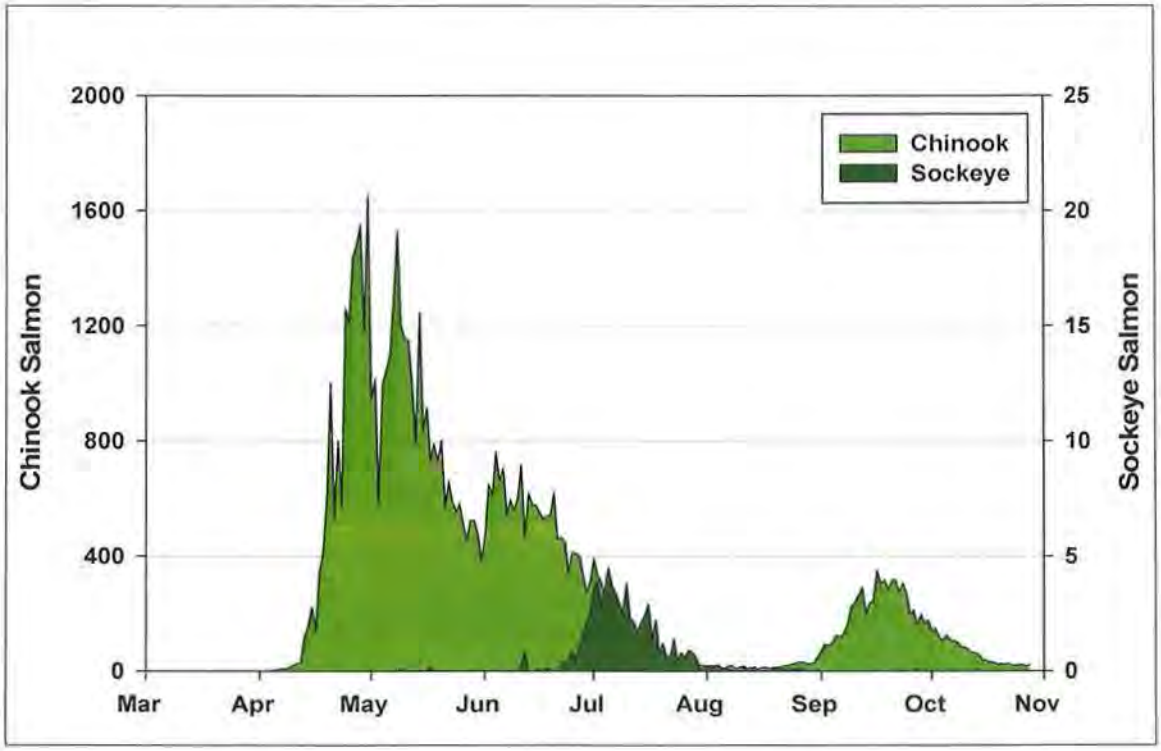

Figure 5. Run timing from 1998-2008 for Chinook and sockeye salmon crossing Lower Granite Dam (data provided by Fish Passage Center).

Critical Habitat

Critical habitat was designated on December 28, 1993 for Snake River spring/summer and fall Chinook and Snake River sockeye salmon (58 FR 68543). Critical habitat for Snake River spring/summer Chinook salmon was revised on October 25, 1999 (64 FR 57399). Critical habitat was designated on February 16, 2000 for the Snake River Steelhead ESU (65 FR 7764). Bull trout critical habitat was designated on June 10, 1998 (63 FR 31647).

The activities considered in this consultation (i.e. fishing, camping, monitoring and evaluation) will not result in the destruction or adverse modification of any of the essential features of the critical habitat designations listed above. Tribal management of the fisheries is intended to protect, preserve and enhance natural resources.

Bull Trout

Columbia River bull trout were federally listed as a threatened species on June 10, 1998 (63 FR 31647). Bull Trout are not a target species of the TRMP. Tribal fishermen may incidentally harvest adult bull trout in the Salmon River, while fishing for Chinook salmon. Tribal biologists estimate that bull trout catch is less than 20 adults per year. We will initiate a creel census and reporting system to estimate incidental impacts to Bull Trout.

Incidental take of bull trout by SBT fishermen will require consultation with the USFWS. Because bull trout are not a target species during the Chinook salmon fishery, SBT will seek exception to prohibition of take under a different process with the USFWS (Section 6 Agreement). The bull trout consultation will have to be coordinated with NOAA Fisheries review of the TRMP, and the result of consultation will be included as a component of the annual Fishery Implementation Plan (FIP). Incidental impacts to Bull Trout will be included in our annual report and submitted to the USFWS and NOAA-Fisheries.

HATCHERY PROGRAMS

The fisheries proposed under this TRMP include hatchery stocks located in the Salmon River sub-basin. The mitigation hatcheries include the Rapid River Fish Hatchery, McCall Fish Hatchery/South Fork Salmon River satellite facility, Pahsimeroi Fish Hatchery, and Sawtooth Fish Hatchery. The supplementation programs include Johnson Creek Artificial Propagation Enhancement (JCAPE), Yankee Fork Chinook Salmon Supplementation (YFCSS) Program, and Salmon River Captive Rearing Initiative. Hatchery-origin Chinook salmon produced by the Rapid River Fish Hatchery are not listed and warrant no ESA protections. All other hatchery-origin fish are listed, but surplus to recovery.

The Tribes plan to address hatchery reform, sub-basin plans, salmon and steelhead recovery plans, and the Columbia Basin Fish Accords in this TRMP and will consult with NOAA-Fisheries and the co-managers to address any modifications to artificial propagation in the Salmon River basin.

Lower Snake River Compensation Plan

The Lower Snake River Compensation Plan (LSRCP) program was authorized by the Water Resources Development Act of 1976 and 1986 to mitigate for losses to fish and wildlife caused by construction and operation of the four Lower Snake River dams; Ice Harbor, Lower Monumental, Little Goose and Lower Granite Dam (LWG). The LSRCP programs expected basin wide fishery benefits for spring/summer Chinook salmon in areas below and above LWG. The commercial harvest expectation is 176,000 spring/summer Chinook, with a project area goal of 58,700 adults over Lower Granite Dam.

McCall Fish Hatchery/South Fork Salmon River Satellite Facility

The McCall Fish Hatchery (McCall) is located in McCall, Idaho near the North Fork Payette River which collects, holds, and spawns adult Chinook salmon at a satellite facility located 66 miles up the South Fork Salmon River. McCall was the first LSRCP facility constructed in 1979 with an adult return goal of 8,000 summer Chinook over LWG. The production target for McCall is 1 million smolts released at Knox Bridge on

the South Fork Salmon River and 300,000 eggs released in Dollar Creek (IDFG et. al. 2008). This requires the collection of 1,360 adult Chinook salmon for broodstock. Adult returns are variable and are highly dependent upon migration conditions and ocean productivity.

Sawtooth Fish Hatchery

Sawtooth Fish Hatchery (SFH) is located 2 miles upstream of Redfish Lake Creek near the town of Stanley, Idaho. SFH was constructed in 1985 to contribute approximately 19,445 adult spring Chinook salmon to the LSRCP goal. The SFH adult return goal is based on a return of 11,310 Chinook salmon to the SFH, 6,090 to the East Fork Salmon River, and 2,045 to Valley Creek (all based on a smolt-to-adult return rate (SAR) of 0.87%). The Valley Creek component of the program was never implemented and the East Fork component was terminated in 1998. The current smolt production objective for SFH is 1.5 million smolts (IDFG et .al. 2008), which takes 350 males and 350 females for broodstock. Adult returns are variable and are highly dependent upon migration conditions and ocean productivity.

Idaho Power Company

The Hells Canyon Settlement Agreement (HCSA) provided offsite mitigation for lost fisheries from the construction and operation of the Hells Canyon Complex. Rapid River and Pahsimeroi Fish Hatcheries were developed under the HCSA and funded by Idaho Power Company.

Pahsimeroi Fish Hatchery

The mitigation goal for Pahsimeroi Fish Hatchery is to release 1 million summer Chinook salmon smolts annually into the Pahsimeroi River. Approximately 300 pair of adult summer Chinook are required to meet this mitigation when considering pre-spawning mortality and culling of disease positive adults (IDFG et .al. 2008).

Rapid River Fish Hatchery

Approximately, 2,500 spring Chinook salmon are needed annually for broodstock for the Rapid River Fish Hatchery spring Chinook salmon program. This number includes jacks and accounts for pre-spawning mortality at the 20-year average as well as average female culling required by disease management constraints and average fecundity. This brood level will provide 3.4 million green eggs and 3.0 million smolts at an average of 88% eye egg-to-smolt survival to meet the smolt release goal. Release sites and numbers will vary between the Little Salmon and Snake River, with the majority of production being released in Rapid River (IDFG et .al. 2008).

Bonneville Power Administration

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 authroized Montana, Idaho, Oregon, and Washington to create the Northwest Power and Conservation Council, which created the Fish and Wildlife Program to protect, mitigate, and enhance fish and wildlife impacted by the construction of the Federal Columbia River Power System. Several supplementation programs are currently funded through the Council's Fish and Wildlife Program to increase natural production in the Salmon River sub-basin.

Johnson Creek Artificial Propagation Enhancement

The JCAPE program is operated on Johnson Creek, a tributary to the East Fork South Fork Salmon River in conjunction with McCall. The primary objective of the program is to supplement adult returns in Johnson Creek by collecting and propagating adults through a traditional hatchery smolt program. A maximum of 40 natural-origin adults will be collected at the Johnson Creek weir to provide broodstock for up to 100,000 smolts, annually (IDFG et .al. 2008). The progeny are reared at McCall and released as 1+ yearling smolts in Johnson Creek during April.

Salmon River Chinook Captive Rearing Program

IDFG and NOAA-Fisheries operate an adult Chinook salmon captive rearing supplementation program in the West Fork Yankee Fork and East Fork Salmon River. The goal of this program is to release approximately 20 pairs of adult Chinook salmon for natural spawning in each tributary.

Yankee Fork Chinook Salmon Supplementation (YFCSS) Program

The Tribes are developing a supplementation program in the Yankee Fork Salmon River. Adults will be collected at a weir in Yankee Fork and their progeny will be reared to smolt and released into Yankee Fork. The goal of the YFCSS program is yet to be defined, but will emphasize releasing adults and smolts to develop a locally adapted broodstock. The YFCSS will provide natural production benefits and additional harvest opportunities for Tribal members within Yankee Fork Salmon River.

Idaho Supplementation Studies (ISS)

The Pahsimeroi, Sawtooth, and McCall hatchery programs are scheduled to initiate supplementation starting in 2009 to increase natural production. Supplementation will provide natural production benefits and additional harvest opportunities. The *US v. Oregon* parties commit to planning in 2008 in order to implement supplementation in 2009.

CHINOOK SALMON HARVEST MANAGEMENT

The Tribes will manage all Chinook salmon fisheries to achieve escapement or broodstock goals as the first priority using the harvest management framework discussed below. We defined 22 FMAs under this TRMP, recognizing that each population is unique and must be managed separately. The Tribes use the Lower Granite Dam prediction and counts to estimate abundance to each of the natural-origin FMAs. The harvest management frameworks are established for three groups of returning adults; natural-origin, supplementation, or hatchery-origin. If fish abundance is below 30% of VPT, NOAA-Fisheries will engage the Tribes in formal government to government consultation, consistent with all executive orders regarding consultation. The Tribes will cooperate with NOAA-Fisheries to determine resource management strategies and implement recovery plans.

The Tribes' harvest guidelines are considered maximum harvest for the Salmon River sub-basin. The Tribes will coordinate their fishery intentions with the relevant co-managers and NOAA-Fisheries, with special emphasis and discussion on areas where multiple agencies elect to open fisheries. Coordination between the Tribes, co-managers, and NOAA-Fisheries will occur throughout the fishery.

Fishery Management Areas

According to the ICTRT (2007), there are three major population groups (MPG) of Chinook salmon within the Salmon River; South Fork Salmon River, Middle Fork Salmon River, and Upper Salmon River (Figure 6). The South Fork Salmon River contains four extant populations, the Middle Fork Salmon River contains nine extant populations, and the Upper Salmon River contains nine populations, of which eight are extant and one is extirpated (Panther Creek). The Tribes adopted twenty-two well defined harvest locations within the Salmon River sub-basin, specifically for Chinook salmon harvest management. We define the geographic area for each FMA as the area described by the ICTRT (2007) or as modified by the Tribes.

Little Salmon River (SRLSR). This area includes the Little Salmon River and Rapid River and their tributaries as well as the main Salmon River and tributaries (including Whitebird and Slate creeks) downstream of the Little Salmon River to the confluence with the Snake River (Figure 7). The ICTRT population designation does not include the main Salmon River downstream from Whitebird Creek, but the Tribes include the lower main Salmon River as part of this FMA. This spring run population is classified as intermediate with a VPT of 750 adult spawners. The spawning areas include the mainstem Little Salmon River, Slate and Yellowbird creeks.

South Fork Salmon River (SFMAI). This area includes the South Fork Salmon River mainstem and tributaries (except the Secesh and East Fork South Fork) extending the

full length of the South Fork. The area also includes the mainstem Salmon River and tributaries between the South Fork and the Little Salmon River (Figure 7). This summer run population is classified as large with a VPT of 1,000 adult spawners. The spawning area includes the mainstem South Fork Salmon River Poverty Flats and Stolle Meadows, Warren and Crooked creeks.

Secesh River (SFSEC). This area includes the entire Secesh River and its tributaries, including Lake and Lick creeks (Figure 7). This summer run population is classified as intermediate with a VPT of 750 adult spawners. The spawning areas include the mainstem Secesh River above Chinook Campground and Lake Creek.

East Fork South Fork Salmon River (SFEFS). This area includes the entire East Fork South Fork Salmon River sub-basin (Figure 7). This summer run population is classified as large with a VPT of 1,000 adult spawners. The primary spawning area is located in Johnson Creek.

Chamberlain Creek (SRCHA). This area includes Chamberlain Creek and its tributaries and the mainstem Salmon River and its tributaries (including Bargamin Creek) from Chamberlain Creek downstream to the South Fork Salmon River (Figure 8). This spring run population is classified as intermediate with a VPT of 750 adult spawners. The spawning areas included mainstem Chamberlain, Bargamin, McCalla, and Sabe creeks.

Middle Fork Lower Main (MFLMA). This area includes the mainstem Middle Fork Salmon River and its minor tributaries from the mouth of Indian Creek to the confluence with the main Salmon River and continuing downstream to include the Salmon River and its tributaries to the confluence with Chamberlain Creek (does not include major tributaries Big, Marble, Indian, Loon, and Camas creeks which are included in separate FMAs) (Figure 8). This spring/summer run population is classified as basic with a VPT of 500 adult spawners. There are no major spawning areas identified in this FMA, but most of the documented spawning occurs in Horse Creek.

Big Creek (MFBIG). This area includes the entire Big Creek Sub-basin. (Figure 8). This spring/summer run population is classified as large with a VPT of 1,000 adult spawners. There are three major spawning areas located in upper and lower Big Creek as well as Monumental Creek.

Camas Creek (MFCAM). This area includes the entire Camas Creek Sub-basin (Figure 8). This spring/summer run population is classified as basic with a VPT of 500 adult spawners. The spawning areas include Camas and Yellowjacket creeks.

Loon Creek (MFLOO). This area includes the entire Loon Creek Sub-basin (Figure 8). This spring/summer run population is classified as basic with a VPT of 500 adult spawners. The spawning areas are located in Loon Creek near Falconberry Meadows and Tincup campground and additional spawning occurs in East Fork Mayfield Creek.

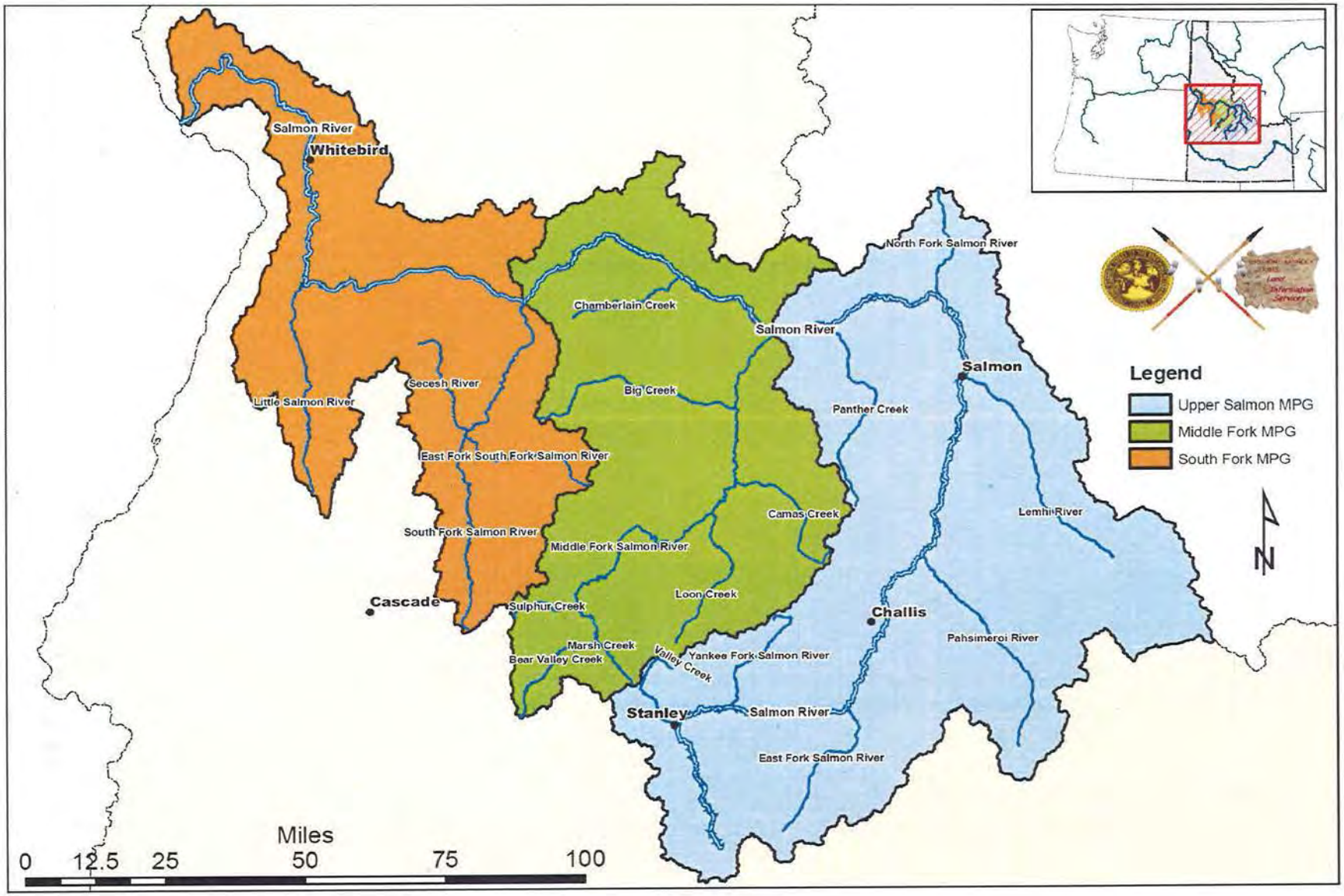

Figure 6. Snake River spring/summer Chinook salmon Major Populations Groups.

Middle Fork Upper Main (MFUMA). This area includes the mainstem Middle Fork Salmon River from Indian Creek upstream to the confluence of Bear Valley and Marsh creeks, including tributaries except Sulphur Creek (does include major tributaries Marble, Indian, Pistol creeks and Rapid River and minor tributaries Soldier, Elkhorn and Dagger creeks) (Figure 8). This spring/summer run population is classified as intermediate with a VPT of 750 adult spawners. The spawning areas are scattered across the large tributaries listed above. Some spawning does occur in the mainstem Middle Fork Salmon River.

Sulphur Creek (MFSUL). This area includes the entire Sulphur Creek Sub-basin (Figure 8). This spring run population is classified as basic with a VPT of 500 adult spawners. The spawning area is located in Sulphur Creek meadows located one mile above the confluence with the Middle Fork Salmon River.

Bear Valley Creek (MFBEA). This area includes the entire Bear Valley Creek Sub-basin including Elk and Bear creeks, from the headwaters to the confluence with Marsh Creek (Figure 8). This spring run population is classified as intermediate with a VPT of 750 adult spawners. The spawning area includes the entire watershed from Fir Creek to the headwaters in Elk and Bear creeks.

Marsh Creek (MFMAR). This area includes the entire Marsh Creek drainage, including Knapp, Beaver, Capehorn creeks, from the headwaters to the confluence with Bear Valley Creek (Figure 8). This spring run population is classified as basic with a VPT of 500 adult spawners. Spawning occurs in Marsh Creek from Capehorn Creek upstream to Knapp Creek and lower reaches of Beaver and Capehorn creeks.

North Fork Salmon River (SRNFS). This area includes the entire North Fork Salmon River system, the mainstem Salmon River and its tributaries from the North Fork downstream to the confluence with Panther Creek (Figure 9). This spring/summer run population is classified as basic with a VPT of 500 adult spawners. The majority of spawning in the North Fork Salmon River occurs in the mainstem.

Lemhi River (SRLEM). This area includes the entire Lemhi River drainage and the mainstem Salmon River from the Lemhi River downstream to the confluence with the North Fork Salmon River (Figure 9). This spring run population is classified by the Tribes as large with a VPT of 1000 adult spawners. The spawning areas include the main Lemhi River near Hayden Creek and in Eightmile, Texas, and Carmen creeks.

Salmon River Lower Mainstem (SRLMA). The area as defined by the Tribes includes the mainstem Salmon River and its tributaries from Valley Creek downstream to the Lemhi River (expect for the Pahsimeroi, East Fork, and Yankee Fork Salmon Rivers) (Figure 9). The Tribes classify this spring/summer run population as large with a VPT of 2000 adult spawners. The spawning areas include the mainstem Salmon River with tributary spawning.

Pahsimeroi River (SRPAH). This area includes the entire Pahsimeroi River sub-basin (Figure 9). This summer run population is classified as large with a VPT of 500 adult spawners. The spawning areas include the mainstem Pahsimeroi River, Patterson, and Goldberg creeks.

East Fork Salmon River (SREFS). This area includes the entire East Fork Salmon RiversSub-basin (Figure 9). This spring/summer run population is classified as large with a VPT of 1000 adult spawners. The spawning areas occur in the mainstem East Fork from Big Boulder Creek to the headwaters and in tributaries Herd, Germania, and East Pass creeks.

Yankee Fork Salmon River (SRYFS). This area includes the entire Yankee Fork Salmon River sub-basin (Figure 9). The spring/summer run population is classified as basic with a VPT of 500 adult spawners. The spawning areas are distributed broadly throughout the mainstem of Yankee Fork with tributary spawning in West Fork, Eightmile and Jordan creeks.

Valley Creek (SRVAL). This area includes the entire Valley Creek sub-basin (Figure 9). This spring/summer run population is classified as basic with a VPT of 500 adult spawners. The spawning areas are distributed broadly throughout Valley Creek with tributary spawning in Elk Creek.

Salmon River Upper Mainstem (SRUMA). The area as defined by the Tribes includes the mainstem Salmon River and its tributaries from Valley Creek upstream to the headwaters (Figure 9). This spring/summer run population is classified as large with a VPT of 1000 adult spawners. The spawning areas include the main Salmon River above Valley Creek to the headwaters, Alturas Lake, Pole, Beaver and Frenchman creeks.

Panther Creek (SRPAN). This area includes the entire Panther Creek sub-basin and the mainstem Salmon River and tributaries from Panther Creek downstream to the Middle Fork Salmon River (including Colson and Owl creeks) (Figure 9). The Tribes classify this population as a spring/summer run and basic with a VPT of 500 adult spawners. The major spawning areas include Panther Creek pstream of Deep Creek and tributary spawning in Woodtick, Musgrove, Porphyry and Moyer creeks.

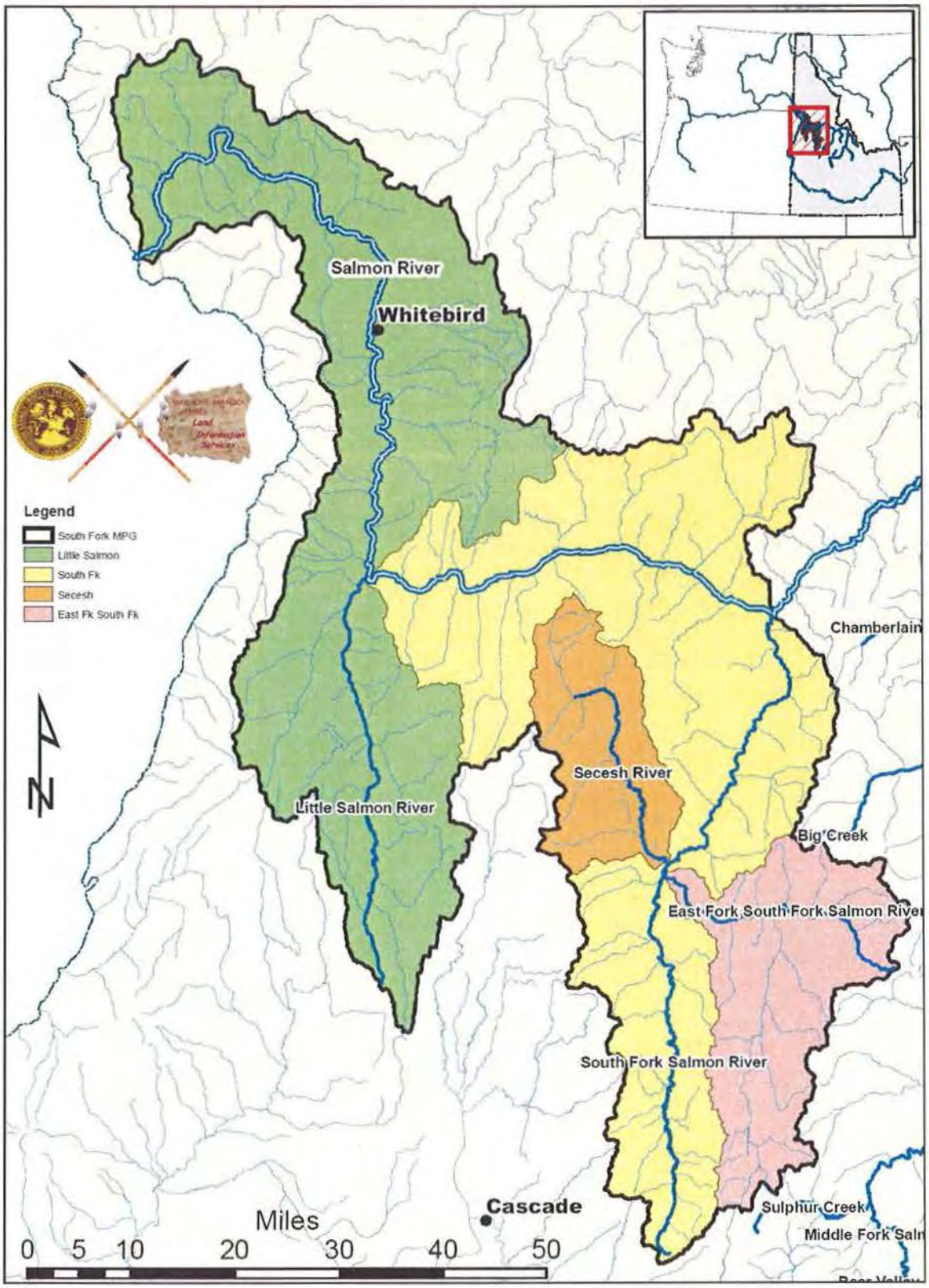

Figure 7. South Fork Salmon River MPG and four respective Chinook salmon populations; Little Salmon, South Fork, Secesh, and East Fork South Fork.

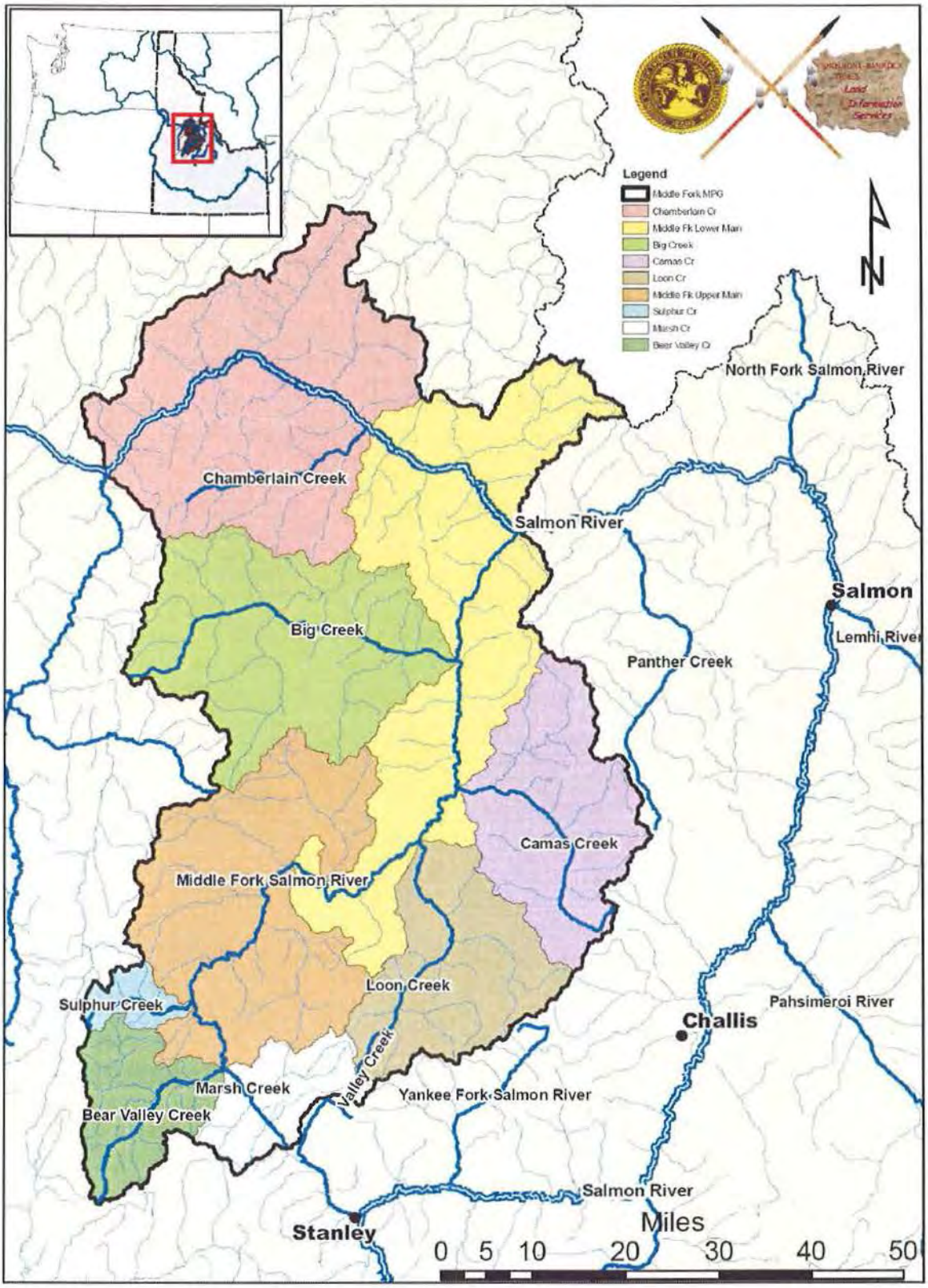

Figure 8. **Middle Fork Salmon River MPG and nine respective Chinook salmon populations; Chamberlain, Middle Fork Lower Main, Big, Camas, Loon, Middle Fork Upper Main, Sulphur, Marsh, and Bear Valley.**

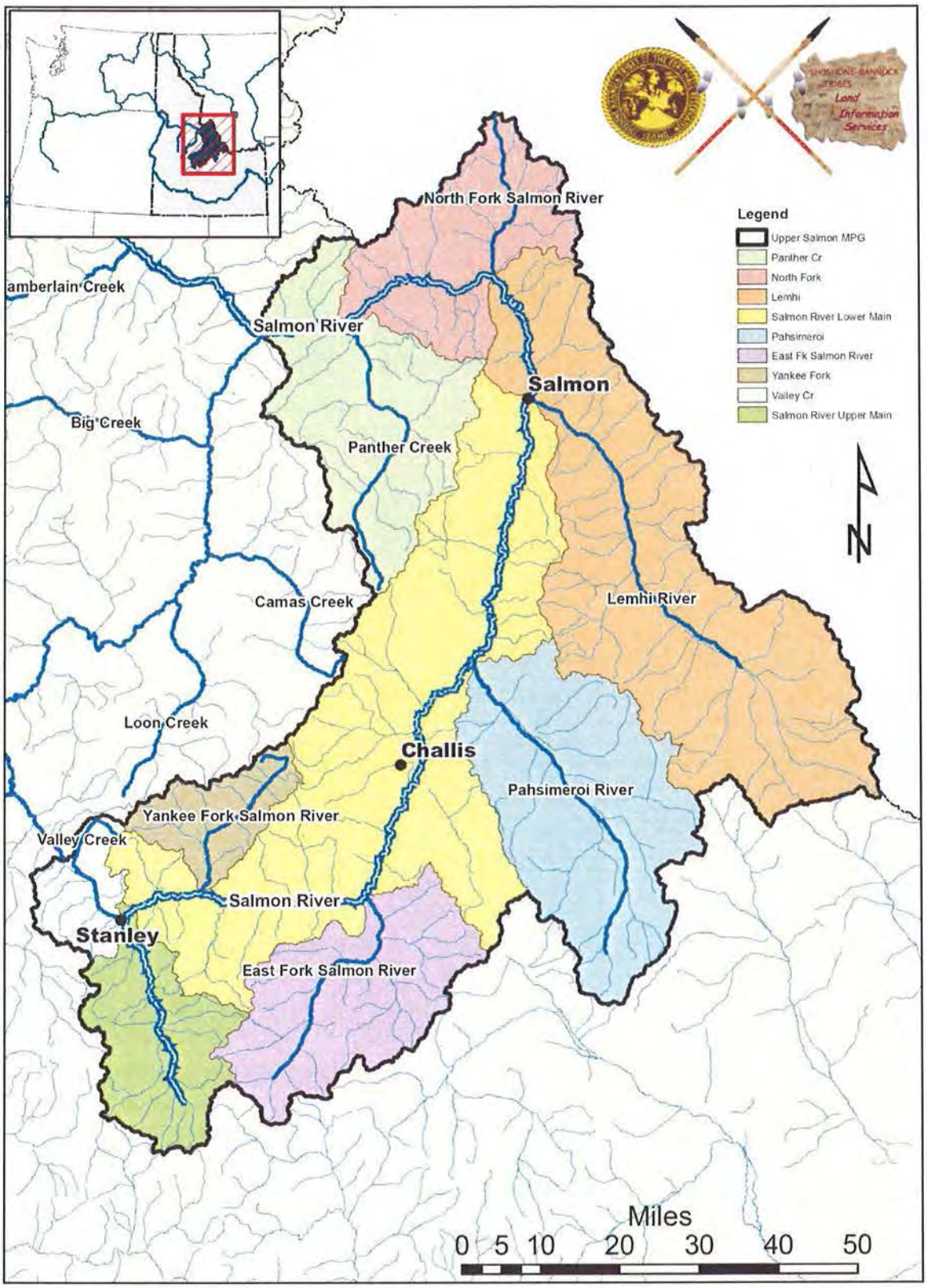

Figure 9. **Upper Salmon River MPG and nine respective Chinook salmon populations; Panther, North Fork, Salmon River Lower Main, Lemhi, East Fork, Yankee Fork, Valley, and Salmon River Upper Main.**

Escapement Goals

The Tribes utilized the VPT identified by the ICTRT as escapement goals for twenty-two natural-origin Chinook salmon populations (Table 3). We further used the VPT to develop abundance-based sliding-scale harvest management frameworks for basic, intermediate, and large populations. The Tribes adopted a critical level at 30% of VPT recognizing the extreme risks associated with extinction. The Lemhi population is classified by the ICTRT as a very large population; similarly the ICTRT classifies Panther Creek as an Intermediate population. The Tribes reclassified these populations because they do not function at a level relative to their ICTRT recommendation. If supporting information becomes available that demonstrates these populations are behaving according to ICTRT recommendations (if habitat/carrying capacity can sustain abundance, productivity, spatial distribution, and genetic diversity), the Tribes will reconsider switching to using the TRT threshold in consultation with NOAA-Fisheries.

Table 2. List of the FMAs, name, critical level, viable population thresholds, and associated hatchery stocks included in this TRMP.

FMA code	Name	Critical Level	Viable Population Threshold	Associated hatchery stock(s)
SRLSR	Little Salmon River	225	750	Rapid River Fish Hatchery
SFMAI	South Fork Salmon River	300	1,000	McCall Fish Hatchery
SFSEC	Secesh River	225	750	
SFEFS	East Fork South Fork Salmon River	300	1,000	JCAPE
SRCHA	Chamberlain Creek	225	750	
MFLMA	Middle Fork Lower Main	150	500	
MFBIG	Big Creek	300	1,000	
MFCAM	Camas Creek	150	500	
MFLOO	Loon Creek	150	500	
MFUMA	Middle Fork Upper Main	225	750	
MFSUL	Sulphur Creek	150	500	
MFBEA	Bear Valley Creek	225	750	
MFMAR	Marsh Creek	150	500	
SRPAN	Panther Creek [1]	150	500	
SRNFS	North Fork Salmon River	150	500	
SRLEM	Lemhi River [2]	300	1,000	
SRLMA	Salmon River Lower Main	300	2,000	
SRPAH	Pahsimeroi River[1]	300	500	Pahsimeroi Fish Hatchery
SREFS	East Fork Salmon River	300	1,000	Captive Rearing
SRYFS	Yankee Fork Salmon River	150	500	Captive Rearing, YFCSS
SRVAL	Valley Creek	150	500	
SRUMA	Salmon River Upper Main	300	1,000	Sawtooth Fish Hatchery

1/ The Tribes define this FMA as basic populations.
2/ The Tribes define these FMAs as large populations.

The Tribes summarized the population assessments developed by the ICTRT (2007) to describe the current status of each population (Table 4). Low escapement estimates

result in all of the populations being classified at high risk for both abundance and productivity. Thirty-two percent of the populations are at low risk for spatial structure and genetic diversity, 36% at moderate risk, and 32% at high risk.

Table 3. List of fishery management areas and associated VSP risk levels from the ICTRT (2007).

FMA	Name	Abundance/ Productivity Risk				Spatial Structure/ Diversity Risk			
		Very Low	*Low*	*Mod*	*High*	*Very Low*	*Low*	*Mod*	*High*
SRLSR	Little Salmon River[1]				X				X
SFMAI	South Fork Salmon River				X			X	
SFSEC	Secesh River				X		X		
SFEFS	East Fork South Fork				X		X		
SRCHA	Chamberlain Creek				X		X		
MFLMA	Middle Fork lower main				X			X	
MFBIG	Big Creek				X			X	
MFCAM	Camas Creek				X			X	
MFLOO	Loon Creek				X			X	
MFUMA	Middle Fork upper main[1]				X				X
MFSUL	Sulphur Creek				X			X	
MFBEA	Bear Valley Creek				X		X		
MFMAR	Marsh Creek				X		X		
SRPAN	Panther Creek[1]				X				X
SRNFS	North Fork Salmon River				X		X		
SRLEM	Lemhi River				X				X
SRLMA	Salmon River lower main				X		X		
SRPAH	Pahsimeroi River				X				X
SREFS	East Fork Salmon River				X				X
SRYFS	Yankee Fork Salmon River				X				X
SRVAL	Valley Creek				X			X	
SRUMA	Salmon River upper main				X			X	

[1] Risk levels classified by Shoshone-Bannock Tribes.

Forecasting

TAC will develop pre-season upriver spring Chinook forecasts for the Columbia River mouth. This forecast will be used by the *US v. Oregon* parties to develop harvest guidelines for Snake and Upper Columbia River Chinook salmon. The Columbia River forecast is validated with Bonneville Dam counts and harvest estimates in Zones 1-5. If the forecast is not correct after 50% of the run has passed Bonneville Dam, (usually if harvest and/or dam counts are low) TAC will review the current data and update the forecast.

Once the upriver spring Chinook forecast is developed, TAC will forecast escapement to Lower Granite Dam. Zone 6 harvest rates are determined by the upriver spring Chinook salmon forecast. The Lower Granite Dam forecast assumes harvest will occur in the Zone 6 fishery and inter-dam mortality is representative of historical estimates.

The Lower Granite Dam forecast is then used to forecast escapement into the Snake River Basin as defined by five major rivers; Salmon, Clearwater, Grande Ronde, Imnaha, and Snake rivers. This forecast consists of the escapement estimate for hatchery and natural-origin adult Chinook salmon. The natural-origin escapement estimate is derived by dividing the percent of production from each river. The percent of production is determined by the sum of the total redds recorded above Lower Granite Dam divided by the number of redds located in each system from the two adult brood years (2-3 ocean adults). Once escapement estimates are developed for each major river, we can further refine the forecast for each population using the same methodology.

The Tribes long-term goal is to develop accurate and precise methods to estimate escapement and will research other methods to forecast escapement at the population level. The use of long-term data series of redds counts can be regressed against Lower Granite Dam counts of unclipped Chinook salmon. Forecasts of hatchery fish will be accomplished primarily through use of PIT tags. Groups of up to 50,000 hatchery smolts are released at Rapid River, Sawtooth, Pahsimeroi, and South Fork, which will allow managers the ability to predict escapement and run-timing.

Annual Implementation of the Fisheries

The Tribes will use standard methodology agreed upon by the co-managers to develop population-specific pre-season forecasts. The methodology to develop pre-season forecasts can be modified at any time in a coordinated fashion, provided that all parties use the same methodology from that point forward. The Tribes will use the population-specific preseason forecast and either the natural-origin harvest rate schedule (Table 5), the supplemented population harvest rate schedule (Table 7), or the hatchery-origin harvest rate schedule (Table 8) - as appropriate - to determine the year-specific allowable ESA take limit by population. The Tribes will develop and share with co-managers and NOAA Fisheries a yearly FIP prior to promulgation of yearly fishery regulations.

The Tribes will work in-season with other co-managers to update pre-season forecast as needed and will use the same updated inseason updates as other co-managers and will adjust the FIP accordingly. The Tribes will report weekly harvest impacts by population to co-managers and NOAA-Fisheries.

Fisheries' curtailment procedures have been established by the Tribes' Fish and Wildlife Department and Fort Hall Business Council and will be described in the FIP and fisheries regulations. Fisheries curtailment will be triggered when the total population-specific ESA limit is reached on any given year or by any other provision described in the FIP. The Fish and Wildlife Department will post curtailments at the tributaries, mailed letters to fisherman, and through weekly Tribal fishing updates as needed. The Tribes will use the Snake Basin Harvest Forum, along with co-managers to share harvest information, take of ESA-listed fish information, adult trapping information, spawning ground survey data

and to develop post-season escapement estimates. The post-season escapement estimates and information about the take of ESA-listed fish will be used by the Tribes, along with other co-managers, to determine post-season total ESA impacts by population and reported in the Chinook Salmon Harvest Management Program annual report submitted to NOAA-Fisheries and other co-managers.

Natural-origin Framework

The Tribes will manage all Chinook salmon fisheries to achieve escapement objectives. As the number of predicted adults increase towards the VPT, the number of fish escaping to the spawning grounds will also increase. The overall percent of the total run escaping will be lower in high escapement years, with the actual escapement value being higher. This will allow harvest opportunities to increase accordingly. The natural-origin management framework is used to determine the total allowable harvest for any given population or hatchery program. If other co-managers propose fisheries above and beyond our harvest rates, we will coordinate our best effort to negotiate equitable harvest allocation.

Harvest will be no lower than 1% and no higher than 35% in any given year. As population abundance increases to 30.1 – 50% of the VPT, the Tribes escapement objective is 97% and the harvest rate is 3%. As population abundance increase to 50.1 – 75% of the VPT, the Tribes escapement objective is 95% and the harvest rate is 5%. As populations increase to 75.1 – 108% of the VPT, the Tribes escapement objective is 92% and the harvest rate is 8%. When abundance exceeds 108.1% of the VPT, the Tribes escapement objective will range from 65% – 92% and the harvest rate will range from 8% – 35% (Table 5).

The Tribes will utilize the harvest management frameworks located below to develop annual harvest guidelines. We developed harvest management frameworks for basic, intermediate, large and very large Chinook salmon populations (Table 6). Basic populations include the Middle Fork Lower Main, Camas, Loon, Marsh, Sulphur, Panther, North Fork, Pahsimeroi, Yankee Fork, and Valley Creek. Intermediate populations include the Little Salmon, Secesh, Chamberlain, Middle Fork Upper Main, and Bear Valley. Large populations include South Fork, East Fork South Fork, Big, Lemhi, East Fork, and Salmon River Upper Main. The only very large population is Salmon River Lower Main.

Table 4. **Percent escapement objective and harvest rate for natural-origin populations of Snake River spring/summer Chinook salmon.**

Percent of Viable Population Threshold	Percent Escapement Objective	Harvest Rate
0 – 30%	99%	3 fish
30.1 – 50%	97%	3%
50.1 – 75%	95%	5%
75.1 – 108%	92%	8%
> 108.1%	65 – 92%	35% of the margin

Table 5. **Abundance-based sliding-scale harvest management framework for natural-origin populations of Snake River spring/summer Chinook salmon.**

Population Category	Viable Population Threshold	Percent of VPT	Forecast	Harvest Rate	Harvest
Basic [1]	500	0 - 30%	<150		3
		30.1% - 50%	151 - 250	3%	5 - 8
		50.1% - 75%	251 - 375	5%	13 - 19
		75.1% -108%	376 - 540	8%	30 - 43
		≥ 108.1%	≥ 541	35% [5]	≥ 44
Intermediate [2]	750	0 - 30%	<225		3
		30.1% - 50%	226 - 375	3%	7 - 11
		50.1% - 75%	376 - 563	5%	19 - 28
		75.1% -108%	564 - 810	8%	45 - 65
		≥ 108.1%	≥ 811	35% [5]	≥ 66
Large [3]	1000	0 - 30%	< 300		3
		30.1% - 50%	301 - 500	3%	9 - 15
		50.1% - 75%	501 - 750	5%	25 - 38
		75.1% -108%	751 - 1080	8%	60 - 86
		≥ 108.1%	≥ 1081	35% [5]	≥ 87
Very Large [4]	2000	0 – 30%	< 600		3
		30.1% - 50%	601 - 1000	3%	18 - 30
		50.1% - 75%	1001 - 1500	5%	50 - 75
		75.1% - 108%	1501 - 2160	8%	120 - 173
		≥ 108.1%	≥ 2161	35% [5]	≥ 174

1/	Basic areas include Middle Fork Lower Main, Camas, Loon, Marsh, Sulphur, Panther, North Fork, Pahsimeroi, Yankee Fork, Valley
2/	Intermediate areas include Little Salmon, Secesh, Chamberlain, Middle Fork Upper Main, Bear Valley
3/	Large areas include South Fork, East Fork South Fork, Big, Lemhi, East Fork, Salmon River Upper Main
4/	Very Large areas include Salmon River Lower Main
5/	The 35% harvest rate applies only to portion of return greater than 108% of viability abundance objective. If R = return and E = viability population threshold, then catch = 0.08(1.08 E) + (0.35(R-1.08 E)).

Supplementation Framework

The Tribes will adjust the natural-origin harvest framework in FMAs that contain natural-origin adults and an active supplementation program (Table 7). The supplemented population framework will be used under the following circumstances: (1) there has been a juvenile or adult release program designed to supplement natural production; (2) returns from the supplementation program include 4 and 5 year-old fish; and (3) co-managers have the ability to forecast the returning number of fish from the supplementation program. The supplementation management framework is used to determine the total allowable harvest for any given population or hatchery program. If other co-managers propose fisheries above and beyond our harvest rates, we will coordinate our best effort to negotiate equitable harvest allocation.

Table 6. Modified abundance-based sliding-scale harvest management framework for supplemented populations of Snake River spring/summer Chinook salmon.

Percent of Viable Population Threshold	Percent Escapement Objective	Harvest Rate
0 – 30%	99%	1%
30.1 – 50%	96%	4%
50.1 – 75%	91%	9%
75.1 – 108%	88%	12%
> 108.1%	65 – 92%	42% of the margin

Hatchery-origin Framework

The majority of the Tribes' harvest is anticipated to come from hatchery-origin stocks, as these populations are generally in higher abundance than natural-origin populations. The Tribes' harvest management framework is designed to achieve hatchery broodstock goals and uses an 8% table with modifications. The harvest management framework is used to determine the total allowable harvest for any given population or hatchery program. If other co-managers propose fisheries above and beyond our harvest rates, we will coordinate our best effort to negotiate equitable harvest allocation.

The Tribes recognize hatchery broodstock goals are necessary to keep programs operating. We will continue to utilize the existing harvest management framework consistent with current management strategies. Harvest will be no lower than 1% and no higher than 50% in any given year. If forecasts are less than 29.9% of the broodstock goal, the Tribes will implement a fishery for 3 fish. As hatchery returns increase to 30 – 49.9% of the broodstock goal, the Tribes harvest rate is 3%. As hatchery returns increase to 50 – 74.9% of the broodstock goal, the Tribes harvest rate is 5%. As hatchery returns increase to 75 – 107.9% of the broodstock goal, the Tribes harvest rate is 8%. When abundance exceeds 108% of the broodstock goal, the Tribes will harvest 8% of the run of to 108% of the broodstock goal and an additional 35% of the run above

108% - 139.9% of the broodstock goal. When hatchery returns are above 140% of the broodstock goal, the Tribes will harvest 50% of the available surplus (Table 8).

Hatchery-origin adult Chinook salmon can be intercepted in natural-origin FMAs located downstream from hatchery facilities. Understanding that hatchery fish will migrate through multiple FMAs, the Tribes will partition harvest accordingly, depending upon location of take. Additional details on proportioning harvest are discussed under harvest monitoring.

Table 7. Harvest management framework for hatchery programs in Salmon River basin.

Hatchery Program	Broodstock Goal [1]	% of Goal	Forecast	Harvest Rate	Harvest
Rapid River	2500	0 - 29.9%	< 748		3
		30% - 49.9%	749 - 1248	3%	22 - 37
		50% - 74.9%	1249 - 1873	5%	62 - 94
		75% -107.9%	1874 - 2698	8%	150 - 216
		108% - 139.9%	2699 - 3498	35% [2]	217 - 496
		≥ 140%	≥ 3499	50% [3]	≥ 497
South Fork/ McCall	1360	0 - 29.9%	< 407		3
		30% - 49.9%	408 - 679	3%	12 - 20
		50% - 74.9%	680 - 1019	5%	34 - 51
		75% -107.9%	1020 - 1467	8%	82 - 117
		108% - 139.9%	1468 - 1903	35% [2]	118 - 270
		≥ 140%	≥ 1904	50% [3]	≥ 271
Pahsimeroi	600	0 - 29.9%	< 179		3
		30% - 49.9%	180 - 299	3%	5 - 9
		50% - 74.9%	300 - 449	5%	15 - 22
		75% -107.9%	450 - 647	8%	36 - 52
		108% - 139.9%	648 - 839	35% [2]	53 - 119
		≥ 140%	≥ 840	50% [3]	≥ 120
Sawtooth	700	0 - 29.9%	< 209		3
		30% - 49.9%	210 - 349	3%	6 - 10
		50% - 74.9%	350 - 524	5%	18 - 26
		75% -107.9%	525 - 755	8%	42 - 60
		108% - 139.9%	756 - 979	35% [2]	61 - 139
		≥ 140%	≥ 980	50% [3]	≥ 140

1/	Broodstock goals were developed by the Salmon River co-managers and incorporated in the 2008 Salmon River Annual Operating Plan.
2/	The 35% harvest rate applies only to portion of return greater than 108% of viability abundance objective. If R = return and E = viability abundance objective, then catch = 0.08(1.08 E) + (0.35(R-1.08 E)).
3/	When abundance reaches ≥ 140% of the broodstock goal, the Tribes elect to harvest 50% of the available surplus. Available surplus is defined by the number of adults not necessary to meet broodstock goals.

Regulations and Guidelines

Once the run predictions are established, the Tribes apply the abundance estimate to the abundance-based sliding-scale harvest management framework. As run updates occur, the Tribes re-apply the updated abundance estimate to the framework and update the corresponding harvest guideline. The Fish and Game Commission establishes annual salmon hunting regulations and harvest guidelines. Harvest regulations and guidelines are set and mailed to Tribal fisherman, NOAA-Fisheries, and co-managers. As dam counts progress and adult abundance predictions are updated, harvest guidelines may be modified and re-distributed.

Tribal fisherman will be allowed to fish for Chinook salmon with a spear, net, hook and line, or other traditional and contemporary methods. Fishing occurs throughout the day and night wherever there is opportunity to harvest fish. The Tribes reserve the opportunity to implement fishing selectively for hatchery-origin fish with the release of natural-origin fish.

Interception harvest will occur on returning adult salmon migrating through mainstem river reaches in the Salmon, South Fork and Middle Fork. In-season harvest of fish in mixed stock FMAs will be proportioned according to the expected escapement in preliminary reports. Our final harvest estimates in mixed stock FMAs will be based on actual escapement, post fishery.

Harvest in each FMA will be curtailed when either the natural-origin or hatchery-origin guideline is reached, or spawning commences in > 25% of the FMAs, whichever comes first. If there are surplus hatchery-origin fish, we will request that they are used for recovery and conservation purposes, or distributed to the Tribes or food banks, appropriately.

Enforcement

Specific enforcement authorities are contained in the Tribes' Constitution and Bylaws; 1975 Game Code; and annual salmon hunting regulations and guidelines enacted by the Tribes' Fish and Game Commission. The Tribes' Fish and Game Department provides enforcement, protection and education of the annual salmon hunting regulations and guidelines. When the Tribes enact the annual salmon hunting regulations and guidelines, a copy is provided to IDFG and NOAA-Fisheries. Tribal enforcement personnel may meet with State and other federal law enforcement officers in order to exchange information and coordinate enforcement activities where multiple agencies are conducting fisheries.

Violations of the 1975 Game Code and annual salmon hunting regulations and guidelines are prosecuted in Tribal Court. Incident reports made by State and Federal enforcement personnel are communicated to the Tribes enforcement personnel for

Tribal investigation. Monitors and enforcement personnel are given the authority and responsibility to conduct creel surveys and curtail fisheries once harvest guidelines are reached or spawning begins.

Public Outreach

Information is sent to Tribal fishermen and Sho-Ban News regarding preliminary assessments of run strength, recent issues, and future meetings. Summaries of "Joint Staff Report Concerning Commercial Seasons for Spring Chinook, Steelhead, Sturgeon, Shad, Smelt, and other Species and Miscellaneous Regulations" are mailed to the Tribal Fishermen prior to the January Columbia River Compact Hearing. Joint State reports pertaining to Columbia River sport fisheries are also provided to the Tribal Fishermen at this time. Tribal fishermen and staff attend the January Columbia River Compact Hearing to provide testimony concerning Columbia River mainstem fisheries and harvest allocation pertaining to Snake River spring/summer Chinook salmon.

Tribal fishermen meetings are held to discuss the forecasts, run-timing, and proposed regulations and guidelines. Tribal concerns are considered in the final salmon hunting regulations and guidelines. Updates are provided to fishermen on run strength, trap counts, flows, harvest, modifications to guidelines, curtailments, and additional information.

MONITORING AND EVALUATION

The Tribes developed two performance indicators used to determine harvest, abundance, productivity, spatial structure, and genetic diversity. The performance indicators are adult and juvenile abundance. Adult abundance will be measured by mainstem harvest, dam counts, Tribal harvest monitoring, fish counting stations and spawning ground surveys. Juvenile abundance will be measured by rotary screw traps and survival will be monitored at Lower Granite Dam.

Adult Abundance

Accurate estimates of escapement are essential for effective management and conservation of salmonids (Busby et al. 1996; McElhany et al. 2000). For this TRMP, we will utilize five performance indicators to estimate Chinook salmon adult abundance; mainstem harvest, dam counts, weir counts, redd counts, and harvest.

Mainstem Harvest

The Tribes will utilize mainstem harvest estimates provided by TAC to determine total abundance of Snake River spring/summer Chinook salmon. Mainstem Columbia River harvest monitoring does not provide accounting of impacts at the population level. Impacts are reported at the ESU level, which is not conducive to effect management and recovery of listed species. The Tribes will continue to advocate for increased monitoring

and evaluation to validate the current assumption that harvest impacts are spread evenly across the Snake River spring/summer Chinook salmon populations.

Genetic Stock Identification (GSI) methods have proven to be effective in determining the proportion of stock origin in several mixed stock fisheries (Shaklee et al. 1999, Beacham et al. 2006). Population genetic methods and statistical assignment models taking advantage of the power of microsatellite techniques which have advanced dramatically in recent years, and estimates of stock composition is now possible using Bayesian or Maximum Likelihood methods (Kalinowski 2003). This methodology could be used to evaluate mainstem fishery impacts at the population level and provide greater accountability.

Dam Counts

The two primary adult Chinook salmon counts used in this TRMP are collected at Bonneville and Lower Granite dams. Bonneville Dam is located 146 miles from the mouth of the Columbia River and Lower Granite Dam, the last of eight dams is located 432 miles from the mouth. The Tribes use dam counts for pre-season, in-season, and post-season fisheries management. This data is important for tracking adult counts throughout the season to determine if forecasts are accurate.

There are three primary runs of Chinook salmon migrating into the Columbia River above Bonneville Dam; they include upriver spring Chinook, summer Chinook, and fall Chinook. Upriver spring Chinook, which includes Snake River spring/summer Chinook and Upper Columbia Spring Chinook are counted from March 15 – May 31. Summer Chinook are counted from June 1 – July 31 and fall Chinook from August 1 – November 15. There are also three runs of Chinook salmon migrating above Lower Granite Dam; they include spring, summer, and fall Chinook. Spring Chinook are counted from March 17 – June 17, summer Chinook are counted from June 18 – August 17, and fall Chinook are counted from August 18 – December 15.

Jack salmon counts are primarily used to forecast four year old salmon returns in the following year. Jack salmon counts are used to determine overall catch composition. Jack salmon do not count towards the harvest guidelines, but will be noted in the overall catch estimate. If Tribal members report harvest and include jack salmon as total catch, the actual harvest estimate will be highly biased, in terms of adult salmon.

All of the Columbia River dams are capable of detecting Passive Integrated Transponder (PIT) tags. PIT tags are typically injected into a proportional amount of migrating salmon and give researchers insight into survival and migration timing. We will utilize PIT tag interrogations at Bonneville and Lower Granite dam to refine our forecasts and develop run-timing (i.e. early, average, or late) predictions. Run-timing information is useful in updating forecasts, which typically occurs when approximately 50% of the run has passed a dam.

At Lower Granite Dam, the data is collected on the composition of clipped (hatchery) and un-clipped (natural) Chinook salmon. This information is available upon request and will be used to validate the Lower Granite Dam forecast, which includes the number of hatchery and natural Chinook salmon.

The U.S. Army Corps of Engineers (USCOE) provides daily and annual estimates for all migrating species that cross their dams. PIT tag data and composition data is also collected and available at the following websites. We will use this information to adaptively manage the Chinook salmon harvest management program.

www.cbr.washington.edu/dart/
www.fpc.org/

Harvest Monitoring

The Fish and Wildlife Department will develop a Harvest Monitoring Program to provide accurate and precise estimates of Chinook salmon harvest in all FMAs open to salmon fishing. Each year, the biologists will develop a harvest monitoring and evaluation plan developed with the best available science, current harvest guidelines, and anticipated funding. This will allow the Department to maximize monitoring effort throughout the Salmon River sub-basin.

The Tribes began harvest monitoring in 1981 and documented the majority of harvest in the following FMAs: South Fork; Salmon River Upper Main; Yankee Fork, Bear Valley Creek; East Fork; and Marsh Creek. Minimal harvest has occurred in Secesh, East Fork South Fork, Big, Camas, Loon, Pahsimeroi, Valley and Lemhi. As we initiate this TRMP, harvest monitoring will be focused in the areas listed above, with development of creel surveys in the Little Salmon River, Chamberlain Creek, Middle Fork Upper Main, Middle Fork Lower Main, Sulphur Creek, Panther Creek, North Fork, and Salmon River Lower Main.

The primary objective of harvest monitoring is to ascertain catch per unit effort (CPUE), with effort recorded as catch/fishermen/day. Harvest monitors and enforcement personnel frequently patrol high effort fishing areas and record date, time, catch, location, name of fisherman, hours fished, species, external and internal marks, length, gender, and other miscellaneous information. This information is used to generate harvest estimate by FMA and reported to NOAA-Fisheries and relevant co-managers. Fishery monitors also collect tissue and scale samples from willing fisherman for population genetics and age structure.

Fishermen are typically concentrated in areas accessible to vehicles with camping in close proximity. We receive few reports of fishermen accessing FMAs via drift boats, rafts, or other water crafts. Creel surveys include an initial count of the total efforts

with key information recorded including vehicles and camp locations. Coordination between monitors and enforcement personnel occurs frequently to share information. Biologists will develop a harvest summary regarding available fish for harvest in each FMA. Biologists will also use CPUE to determine when harvest guidelines will be achieved. This information is shared with fishermen and staff to increase knowledge of fish abundance and implement curtailments. Enforcement personnel will continue to patrol the curtailments as necessary.

To accurately report harvest impacts by population, the Tribes will develop a protocol to proportion harvest accordingly in FMAs where multiple populations are likely to be harvested (Table 9). The populations at the head-end of the MPGs are subjected to interception harvest in fisheries downstream. For example, fish from the Salmon River Upper Main population can be harvested in any of the lower FMAs that contain mainstem river reaches. The Tribes mainstem Salmon River, Middle Fork, and lower South Fork (below the confluence with the East Fork South Fork) harvest is minimal at best, until the river approaches levels conducive to tribal gear and techniques. Mainstem harvest will be proportioned to downstream FMA's based the expected escapement.

Table 8. List of populations intercepted in downstream Salmon River fisheries.

Fishery Management Area	Number of Populations This FMA Intercepts	Number of FMAs this Population is Intercepted In
Little Salmon River	22	0
South Fork Salmon River	21	1
Secesh River	0	2
East Fork South Fork	0	2
Chamberlain Creek	18	2
Middle Fork Lower Main	17	3
Big Creek	0	4
Camas Creek	0	4
Loon Creek	0	4
Middle Fork Upper Main	3	4
Sulphur Creek	0	5
Bear Valley Creek	0	5
Marsh Creek	0	5
Panther Creek	8	4
North Fork Salmon River	7	5
Lemhi River	6	6
Salmon River Lower Main	5	7
Pahsimeroi River	0	8
East Fork Salmon River	0	8
Yankee Fork Salmon River	0	8
Valley Creek	1	8
Salmon River Upper Main	0	9

Fish Counting Stations

Determination of adult spawner abundance is a critical aspect of a viable population management strategy (Foose et al. 1995, Botkin et al. 2000), which is recognized within the scientific community for listed species recovery planning (NMFS 2000, NMFS 2002, McElhaney et al. 2000), and for effective resource management. Several methods of counting adult Chinook salmon are employed in Idaho, they include picket or permanent weirs associated with fish traps, videography or sonar. Picket weirs operated in conjunction with fish traps provide more information about migrating salmon than any other method. All of these methods allow accurate and precise estimation of run-timing and total escapement. The use of adult fish counting stations will validate preseason forecasts by population and allow us to determine harvest impacts with higher resolution.

Fish counting stations should be operated from May – September each year, as conditions allow. Most temporary picket weirs and fish traps are not installed until the hydro-graph recedes past the spring high water event; typically in late June – early July. Permanent weirs and traps are usually installed/operated one week prior to the first anticipated trapping event. All methods usually cease after seven consecutive days of no fish encountered in late August –September.

Multiple agencies operate fish traps, videography, and sonar stations in the South Fork and Upper Salmon River MPGs, with 4/4 and 4/9 FMAs covered, respectively. There are no fish counting stations in the Middle Fork MPG (Figure 10). Data collected at fish counting stations may include date, number of fish trapped, length, gender, age, mark, scale/tissue samples, PIT tags, CWTs, and other external marks. This information is now available to the co-managers at an IDFG website.

We will request fish count data collected by co-managers at existing fish traps, videography, and sonar sites to assess accuracy of forecasts and run-timing predictions while we develop our M & E program. Hatchery and natural-origin adult escapement data is used to assess performance at the population level and provide evaluations on distribution within and between years.

Our long-term goal is to implement adult fish counting stations in several populations located in the Middle Fork and Upper Salmon MPGs to provide necessary data on run-timing and escapement (Figure 10). Our plan includes continuing use of a weir located in Yankee Fork. We also plan to operate adult fish counting stations using sonar in Valley, Big, Loon, Marsh, and Bear Valley creeks and weirs located in the Panther Creek and Lemhi River.

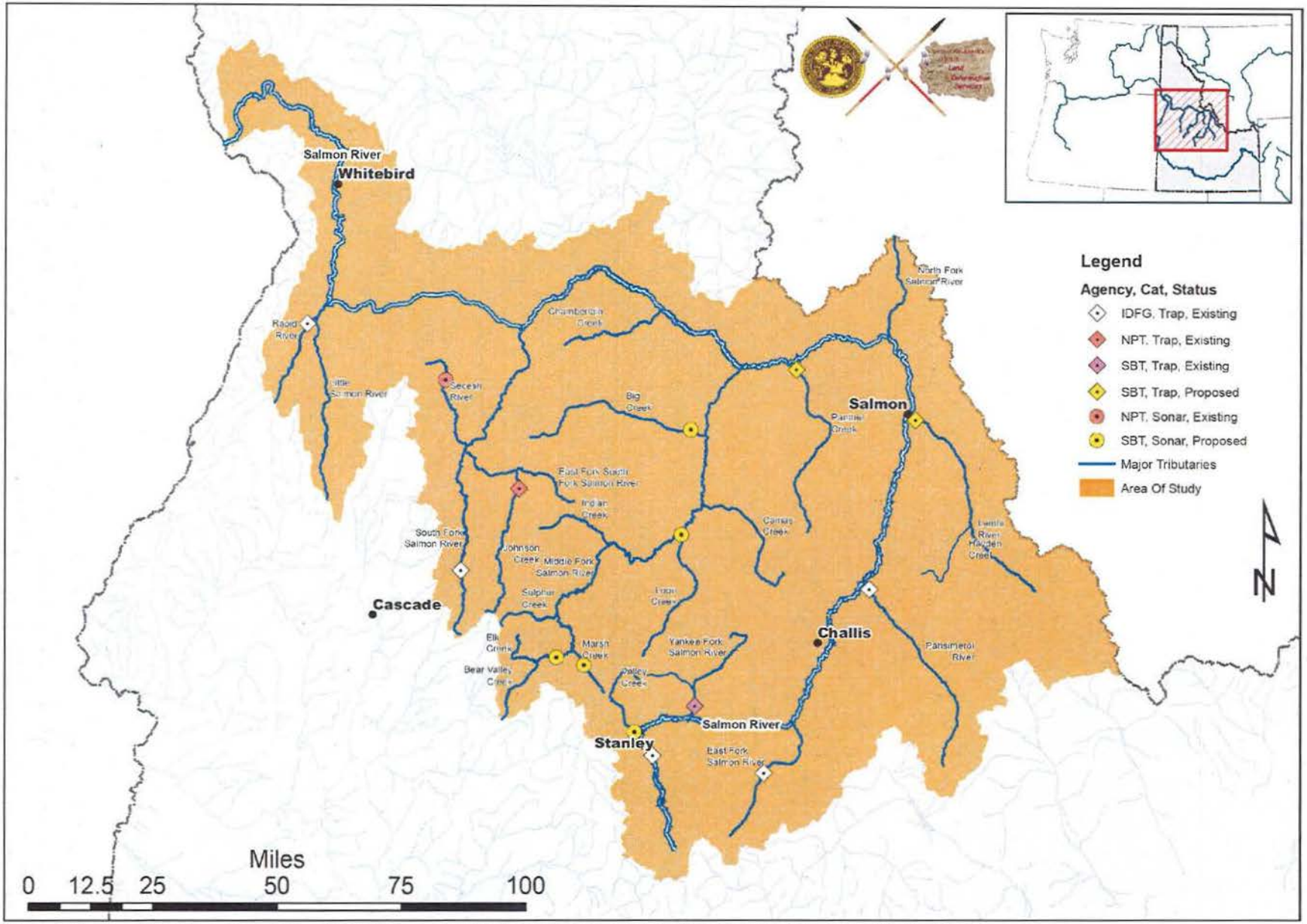

Figure 10. **Existing and proposed spring/summer Chinook salmon adult abundance monitoring sites in Idaho.**

Spawning Ground Surveys

As the product only of reproductive adults, redd counts provide an index of effective population size (Meffe 1986). While redd counts are commonly used to index adult escapement and assess population trends (Beland 1996; Rieman and Myers 1997; Isaak et al. 2003), their accuracy as a measure of abundance has rarely been evaluated (Dunham et al. 2001). Maxwell (1999) suggests that the sources of counting errors involved in redd counts be identified and reduced before they will be useful for long-term monitoring. The Tribes propose to initiate multiple-pass spawning ground surveys for estimating adult escapement and identifying harvest impacts, followed by secondary use for forecasting and assessing productivity.

In Idaho, managers implement three methods of spawning ground surveys; one-pass, multiple-pass, or intensive, conducted either on the ground or by air. Data collected includes the number of redds observed on each date, total number of redds observed over the entire spawning season, location of redds, and carcass information which includes location, gender, otolith, tissue, scale, number of carcasses, length, internal or external mark, and percent spawned.

Timing of spawning ground surveys vary depending upon the method employed. Spawning ground surveys for spring/summer Chinook salmon typically occur from August through late-September, usually with one week variance. One-pass ground and/or aerial surveys are typically completed during the last week of spawning after the majority of redds have been constructed and are still visible. Multiple ground surveys are conducted bi-weekly with one survey conducted during the first, middle, and last weeks of spawning. Intensive ground surveys are conducted on a weekly basis or more. Each method may produce variable results, usually depending upon spawn timing and surveyor experience. Tribal biologist agree that intensive spawning ground surveys provide the most accurate and precise estimate of total escapement, followed by multiple-pass ground, single-pass ground, and aerial surveys; the same is true for information from carcass recoveries.

Multiple agencies implement spawning ground surveys in the Salmon River sub-basin. Single-pass aerial redd counts have been conducted by the IDFG since 1957, following the spatial and temporal design. Since 1992, the ISS project (BPA#1989098) collaborators have conducting multiple-pass spawning ground surveys within transects in the following major tributaries: Slate Creek (tributary near Riggins, Idaho); Secesh River; Johnson Creek; Lake Creek; South Fork Salmon River; Upper Salmon River; Bear Valley Creek; Marsh Creek; Lemhi River; North Fork Salmon River; Pahsimeroi River; Valley Creek; East Fork; Herd Creek; and, West Fork Yankee Fork. The Tribes perform multiple-pass spawning ground surveys in conjunction with ISS in West Fork Yankee Fork, East Fork Salmon River, Valley Creek, and Bear Valley Creek. In addition, the Salmon River Habitat Enhancement Program conducts multiple pass spawning ground surveys in Yankee Fork, Smiley, Slate, Elk (Valley Creek tributary), and Herd creeks.

Single-pass aerial surveys are conducted over 95% of suitable spawning habitat in Idaho. Spawn timing is highly variable between years and this method is not highly rated for estimating abundance within years. The Tribes utilize this data in areas where multiple-pass ground surveys are not feasible.

Multiple-pass spawning ground surveys provide accurate and precise estimates of redds. Our goal is to work with the co-managers to identify, on an annual basis, where multiple-pass spawning ground surveys will be conducted. We will assess whether we will need to supplement these surveys and/or implement new surveys to estimate total redds by FMA. In areas where adult fish counting stations are present we will use the fish count data, with redd count data to develop fish per redd values. This information will be used to assess escapement in areas without fish counting stations using an appropriate fish per redd value.

Juvenile Abundance and Productivity

Abundance will be estimated for juvenile Chinook salmon yearly and will provide information for assessing abundance and productivity. Estimation of Chinook salmon smolt numbers is an important component for managing Chinook salmon fisheries (Newcomb and Coon 2001). It is also important to estimate fish production for all stages of migrants, which in Idaho includes fry, parr, pre-smolt, and smolt. The abundance of the smolting cohort, coupled with expected or observed survival rates, aid in forecasting recruitment and give indices of expected returns for escapement and stock recruitment (Raymond 1988). The number of smolts produced annually may provide a relative index of the overall health of a watershed for coldwater species (Karr 1998).

Smolt survival studies have been a cornerstone of salmonid research in the Snake–Columbia River basin for more than three decades (Bickford and Skalski 2000). PIT tag (passive integrated transponder tag) release–recapture techniques (Skalski et al. 1998) used in the Snake–Columbia River basin are well suited to providing estimates of smolt survival through river reaches and entire hydroprojects (Muir et al. 2001). At some dams, smolts can be collected at turbine intake or juvenile bypass systems and survival can be estimated by SURvival under Proportional Hazards (SURPH) (Lady et al. 2001).

Methods used to sample emigrating smolts vary in their degree of success at accurately estimating numbers of emigrants (Newcomb and Comb 2001). Smolts are difficult to monitor because they migrate at night and during the spring when high flows from spring snowmelt and rain can be problematic for sampling. Methods used to monitor emigration and estimate smolt abundance include trapping with fyke nets, box traps, weirs and counting fences, screw traps, or inclined-screen smolt traps (fixed and floating; Wagner et al. 1963; Lister et al. 1969; Davis et al. 1980; Seelbach et al. 1984; DuBois et al. 1991; Seelbach and Miller 1993; Kennen et al. 1994; Orciari et al. 1994; Thedinga et al. 1994; Whalen et al. 1999); through mark-recapture to test for trapping efficiency (Seelbach 1987; Dempson and Stansbury 1991; Orciari et al. 1994; Whalen et al. 1999) and to estimate total smolt numbers (MacDonald and Smith 1980; Peven and

Hay 1989). Other methods include counting with electronic fish counters or PIT tag readers (Appleby and Tipping 1991; Beckman et al. 1998), hydroacoustics (Moore and Potter 1994; Vehanen et al. 1998), and observing with a camera or other imaging system device (Cousens et al. 1982).

Rotary Screw Traps

In Idaho, fry, parr, pre-smolt, and smolt outmigration data is achieved primarily through rotary screw traps, mark-recapture experiments, and PIT tags. Data is currently available for the South Fork and Upper Salmon River MPGs, with very little representation in the Middle Fork MPG. Multiple agencies collect this information in various tributaries (Figure 11), with 100% representation in the South Fork, 22% in the Middle Fork, and 44% in the Upper Salmon River.

Rotary screw traps provide a comprehensive approach to evaluating juvenile abundance and productivity. To fill data gaps in the Upper Salmon and Middle Fork MPGs, the Tribes propose to install and operate rotary screw traps in Camas Creek, Loon Creek, and Bear Valley Creek for the Middle Fork MPG in addition to Panther Creek, North Fork Salmon River, and Yankee Fork Salmon River within the Upper Salmon MPG (Figure 10).

Spatial Structure and Genetic Diversity

The geographic distribution and frequency of redds can provide an indicator of spatial structure. The dynamics of multiple, potentially interacting local populations, often described as "metapopulations" (Hanksi 1999), has emerged as a key consideration in conservation planning for salmonid fishes. Although understanding metapopulation dynamics in salmonid fishes is limited (Rieman and Dunham 2000), all models of spatially structured populations are characterized by some degree of synchrony, or correlation, among populations (Harrison and Taylor 1996). A low level correlation is often regarded as beneficial because habitat vacated by local extirpations can be recolonized by dispersal from nearby populations that were fluctuating out of phase . Conversely, a high level of correlation among populations can result in simultaneous extirpations when abundances are low and is predicted to decrease the probability of metapopulation persistence (Heino et al. 1997). Many aspects of reserve design and effective conservation thus hinge on understanding the level of synchrony that exist among local populations (e.g., Pickett and Thompson 1978; Moyle and Sato 1991; McElhaney et al. 2000).

The Tribes will work collectively with the relevant co-managers to determine overall spatial structure of redds recorded in annual spawning ground surveys. In addition, DNA will be collected and archived on carcasses recovered in spawning ground surveys, emigrating smolts collected at rotary screw traps, and adults sampled in Tribal harvest.

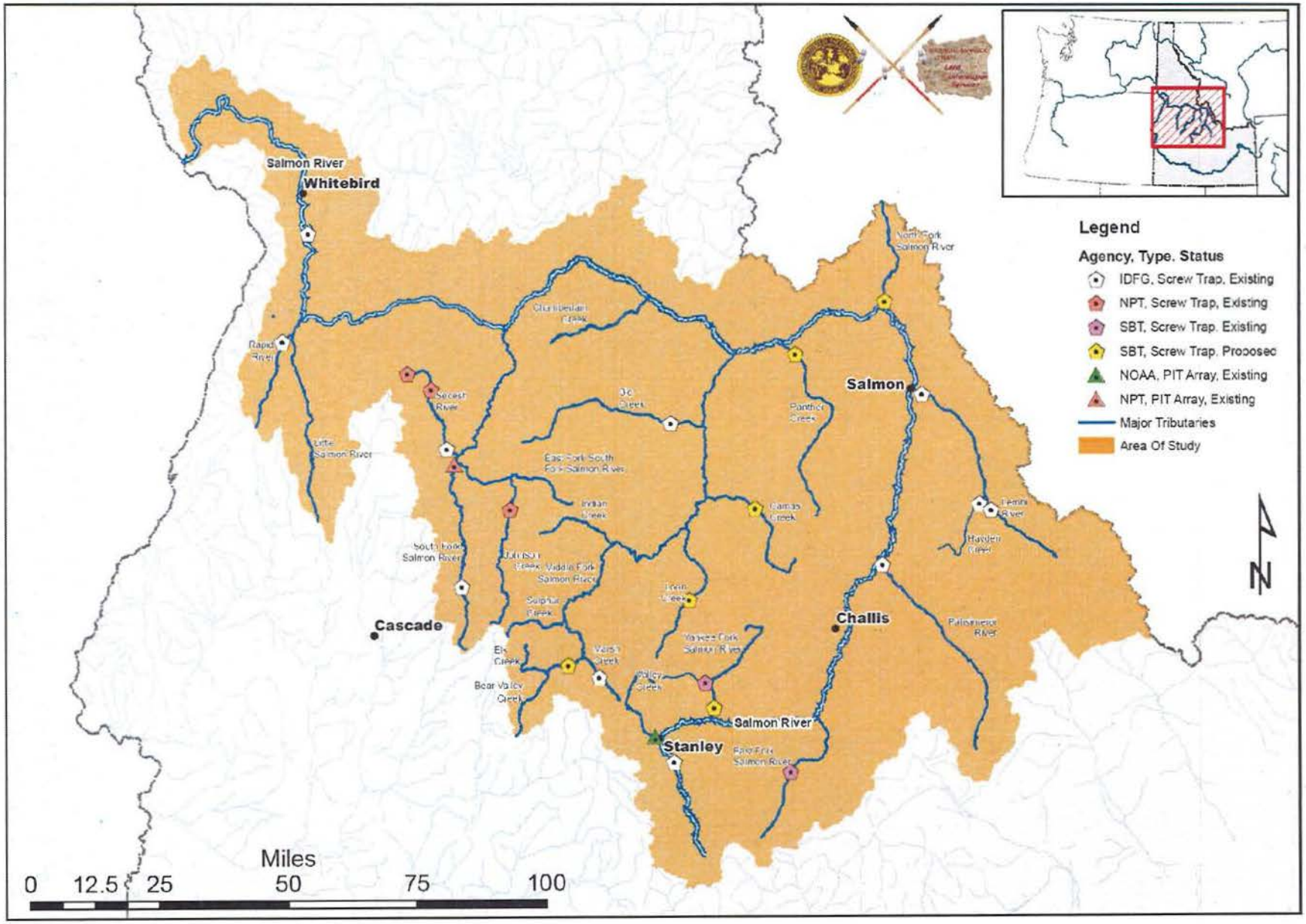

Figure 11. Existing and proposed spring/summer Chinook salmon juvenile abundance monitoring locations in Idaho.

Summary

The M & E component will assess abundance, productivity, spatial structure, and genetic diversity within 22 FMAs. Performance metrics that include mainstem Columbia River harvest, dam counts, and harvest monitoring will be completed for each FMA and allow us to assess harvest monitoring at a minimum level. We will adaptively manage our harvest program and developed a Tier three M & E approach to collect additional data necessary for harvest management, but conditional upon funding. The conditional methods implemented under our M & E plan include fish counting stations, spawning ground surveys, and operation of rotary screw traps.

Tier 1

This category includes data collection from fish counting stations, spawning ground surveys, and rotary screw traps. FMAs included are Little Salmon River, South Fork Salmon River, Secesh River, East Fork South Fork Salmon River, Big Creek, Loon Creek, Bear Valley Creek, Marsh Creek, Panther Creek, Lemhi River, Pahsimeroi River, East Fork Salmon River, Yankee Fork Salmon River, Valley Creek, and Salmon River Upper Main (Table 10).

Tier 2

This category includes data collection from two of the following categories: fish counting stations; spawning ground surveys; and, rotary screw traps. FMAs included are Camas Creek and North Fork Salmon River (Table 10).

Tier 3

This category includes only data collection from spawning ground surveys. FMAs included are Chamberlain Creek, Middle Fork Lower Main, Middle Fork Upper Main, Sulphur Creek, Salmon River Lower Main (Table 10).

Table 9. Evalution of each FMA using the Three-tier management system.

Code	Name	Tier #	Performance Indicators
	South Fork Salmon River		
SRLSR	Little Salmon River	1	1, 2, 3
SFMAI	South Fork Salmon River	1	1, 2, 3
SFSEC	Secesh River	1	1, 2, 3
SFEFS	East Fork South Fork Salmon River	1	1, 2, 3
	Middle Fork Salmon River		
SRCHA	Chamberlain Creek	3	2
MFLMA	Middle Fork Lower Main	3	2
MFBIG	Big Creek	1	1, 2, 3
MFCAM	Camas Creek	2	2, 3
MFLOO	Loon Creek	1	1, 2, 3
MFUMA	Middle Fork Upper Main	3	2
MFSUL	Sulphur Creek	3	2
MFBEA	Bear Valley Creek	1	1, 2, 3
MFMAR	Marsh Creek	1	1, 2, 3
	Upper Salmon River		
SRNFS	North Fork Salmon River	2	2, 3
SRLEM	Lemhi River	1	1, 2, 3
SRLMA	Salmon River Lower Main	3	2
SRPAH	Pahsimeroi River	1	1, 2, 3
SREFS	East Fork Salmon River	1	1, 2, 3
SRYFS	Yankee Fork Salmon River	1	1, 2, 3
SRVAL	Valley Creek	1	1, 2, 3
SRUMA	Salmon River Upper Main	1	1, 2, 3
SRPAN	Panther Creek	1	1, 2, 3

Performance indicators

1. Fish Counting Station
2. Spawning Ground Survey
3. Rotary Screw Trap

EFFECTS ON ESA-LISTED SALMONIDS

Other fisheries exist outside the direct regulatory control of the Shoshone-Bannock Tribes that harvest the same populations of Snake River spring/summer Chinook in this TRMP. The State of Idaho and the Nez Perce Tribe conduct fisheries in the South Fork Salmon River, and the State of Idaho plans to conduct fisheries below Pahsimeroi and Sawtooth. IDFG and the NPT fisheries target hatchery-origin fish, and use catch-and-release methods to limit the harvest of natural-origin fish. Idaho harvests these same populations in interception fisheries that target the unlisted Rapid River hatchery-origin population in the main Salmon River below Riggins, Idaho. The Nez Perce Tribe also harvest on these same populations in the main Salmon River and in the Snake and Columbia rivers.

The states of Oregon and Washington conduct sport fisheries in the main Columbia River from the mouth up to the confluence with the Snake River. The states of Washington and Oregon also conduct commercial fisheries that intercept these populations in Zones 1-5 of the main Columbia River (from the mouth upriver to Bonneville Dam). The Nez Perce, Umatilla, Yakama, and Warm Springs tribes conduct ceremonial, subsistence, and commercial fisheries on these populations in Zone 6 (between Bonneville and McNary dams).

Ocean interception harvest of Snake River Spring/summer Chinook Salmon also occurs in the U.S. and in Canada. The ocean fisheries are both commercial and sport fisheries. Although these impacts have been reduced due to more conservative harvest rates inflicted on the fisheries due to the ESA listings, counter effects of larger and larger hatchery-origin populations, mass marking of hatchery-origin fish, new gear and selective fishing techniques, and decreased enforcement potentially mask some of the savings due to lower harvest rates. Increased monitoring of these interception fisheries is greatly needed in order to ascertain the level of impact these fisheries are actually having on the recovery and survival of the listed Snake River spring/summer Chinook salmon.

The Tribes expect NOAA-Fisheries to ensure harvest impacts in other specified fisheries listed above do not jeopardize the survival and recovery of the listed species, and, therefore, expect increased precision in harvest monitoring efforts to determine impacts.

TRMP Revision Process

The TRMP was developed to adaptively manage harvest of Snake River spring/summer Chinook salmon. The TRMP will be revised or modified accordingly to incorporate recommendations from recovery plans, harvest management plans, hatchery reviews, data reviews, FCRPS Biological Opinion, and amendments to the NPCC Fish and Wildlife Program.

The Tribes expect formal written notification by NOAA-Fisheries of any new technical information related to this TRMP or proposed harvest plans. With any new information, the Tribes and NOAA-Fisheries, in a government to government consultation, will determine whether modifications to this TRMP are necessary. Revisions will be developed and approved by the Fish and Game Commission.

Five-Year Evaluation

A comprehensive assessment of this TRMP will be conducted every five years (starting in 2014) in order to evaluate the efficacy of the plan. Adult and juvenile abundance data will be compiled and used to track population performance over time. The overall assessment will focus on whether the populations are trending to viability. If VPT is not

being achieved then the Tribes plan to continue consultations to achieve sustainable recovery of the spring/summer Chinook salmon, while the Tribes continue to harvest.

The Tribes view the TRMP framework as a conservative harvest. The Tribes expect the federal government to reduce all other sources of mortality in order to ensure VPT is achieved. The Tribes will promote recovery of the species by: 1) initiating nutrient enrichment supplementation; 2) using artificial propagation; 3) restoring Snake River hydrograph to conditions closely representing natural riverine ecosystem; 4) promoting policies which reduce ocean and Columbia River harvest of Snake River spring/summer Chinook salmon.

CONSISTENCY OF TRMP WITH COURT PROCEEDINGS

The Tribes' harvest guidelines are considered maximum harvest for the Salmon River sub-basin. The Tribes will coordinate their fishery intentions with the relevant co-managers and NOAA-Fisheries, with special emphasis and discussion on areas where multiple agencies elect to open fisheries. Coordination between the Tribes, co-managers, and NOAA-Fisheries will occur throughout the fishery.

The Tribes are full parties to the *U.S. v Oregon* (Civil No. 68-513 KI) proceeding and are affected by the long-term management agreement. In FMAs that are jointly shared with other co-managers, the *U.S. v Oregon* dispute resolution process may be used in order to achieve an equitable sharing of harvest allocation.

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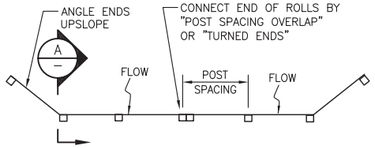
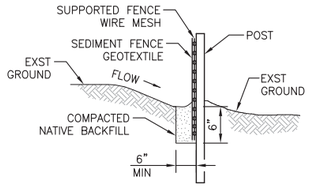
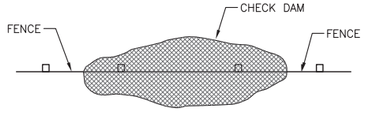


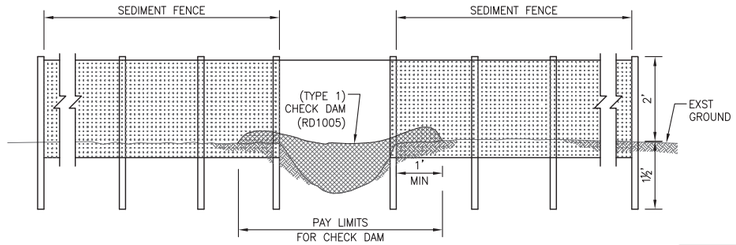
PLAN



SECTION A



PLAN VIEW AT DITCH SECTION



ELEVATION VIEW AT DITCH SECTION OR LOW AREAS

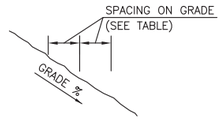
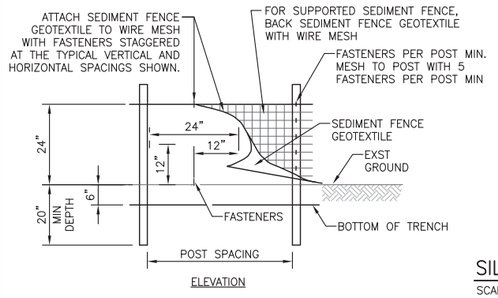


TABLE 1
FENCE SPACING
FOR GENERAL APPLICATION

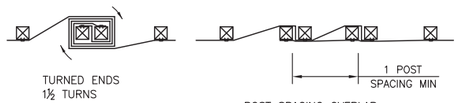
INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
GRADE	MAXIMUM SPACING ON GRADE
GRADE< 10%	300'
10% ≤ GRADE< 15%	150'
15% ≤ GRADE< 20%	100'
20% ≤ GRADE< 30%	50'
30% ≤ GRADE	25'

TABLE 2

POST SPACING	
4'	SUPPORTED SEDIMENT FENCE
6'	UNSUPPORTED SEDIMENT FENCE WITH GEOTEXTILE ELONGATION LESS THAN 50%
4'	UNSUPPORTED SEDIMENT FENCE WITH GEOTEXTILE ELONGATION MORE THAN 50%



ELEVATION

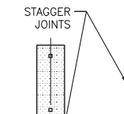


GEOTEXTILE END CONNECTIONS

SILT FENCE DETAIL

SCALE: NTS

EC101



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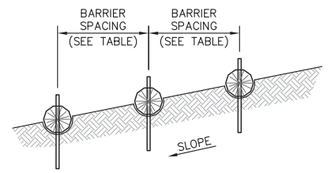
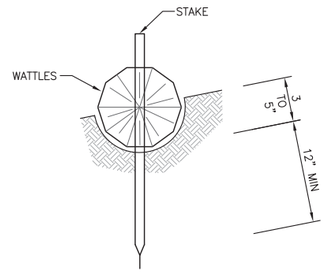


PROFILE

PLACE WATTLES ALONG SLOPE CONTOURS.



SECTION B

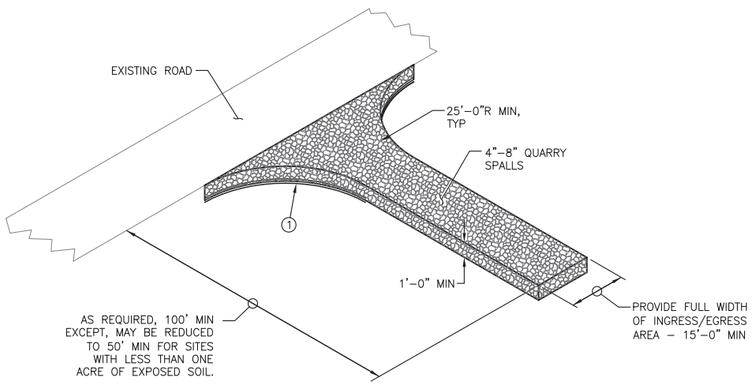
BARRIER SPACING
FOR GENERAL APPLICATION

INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS		
% SLOPE	% SLOPE	MAXIMUM SPACING ON SLOPE
10% FLATTER	1:10 OR FLATTER	300'
10 > % ≥ 15	10 > X ≥ 7.5	150'
15 > % ≥ 20	7.5 > X ≥ 5	100'
20 > % ≥ 30	5 > X ≥ 3	50'
STEEPER THAN 30%	STEEPER THAN 1:3	25'

SEDIMENT BARRIER

SCALE: NTS

EC102

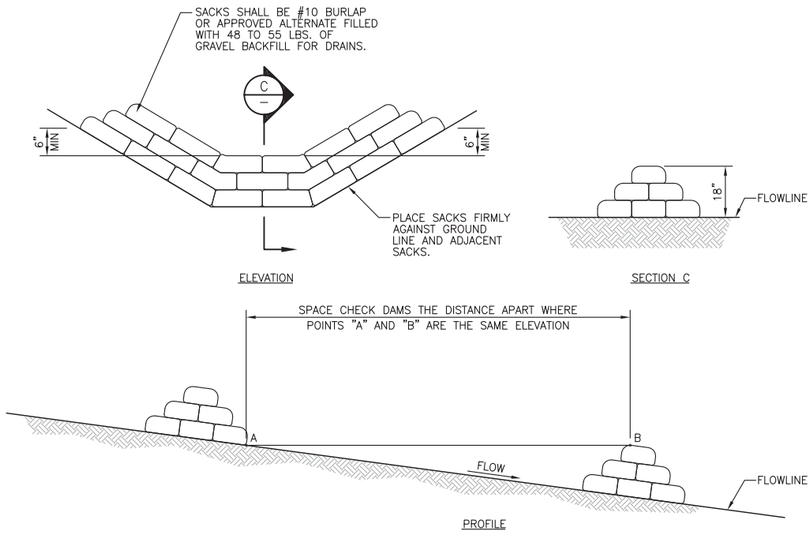


① PLACE CONSTRUCTION GEOTEXTILE FOR SOIL STABILIZATION AND A MINIMUM OF 0.15' CRUSHED ROCK UNDER THE SPALLS, FROM THE EDGE OF THE EXISTING ROADWAY TO THE RADIUS RETURNS, OR AS DIRECTED BY THE ENGINEER.

TEMPORARY ENTRANCE

SCALE: NTS

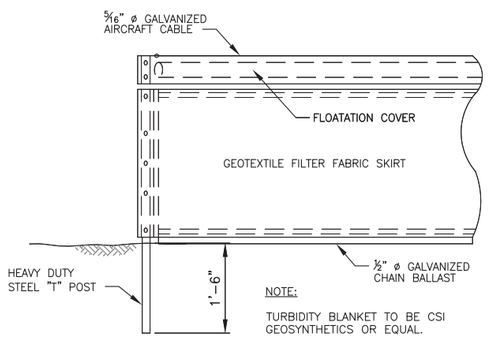
EC103



SANDBAG CHECK DAMS

SCALE: NTS

EC104



TURBIDITY CURTAIN DETAIL

SCALE: NTS

EC105

Source: McMillan LLC 2013.

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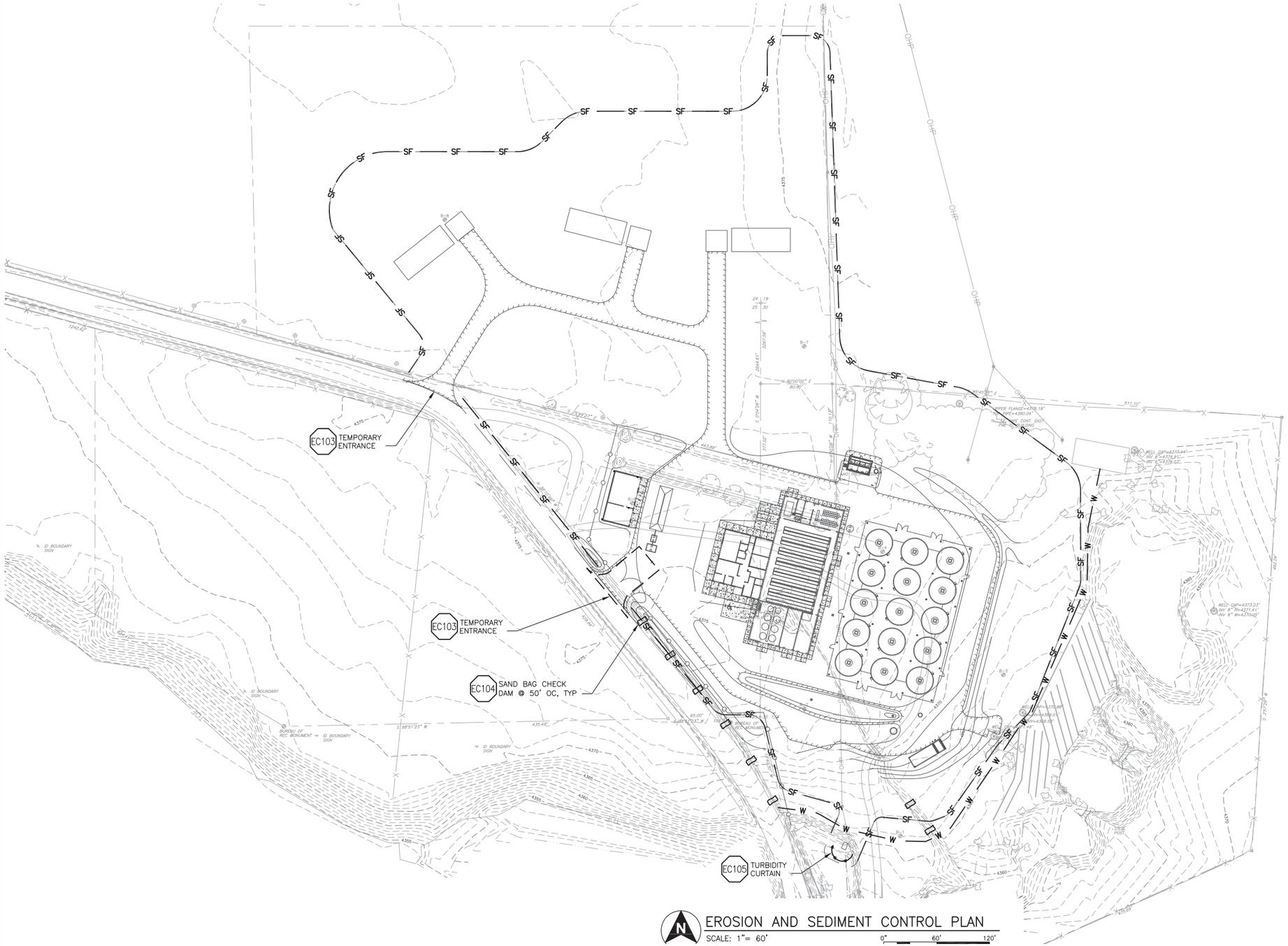
Figure C-1a
Erosion and Sediment Control Plan and Details for the Crystal Springs Hatchery



EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL SUBMIT AN EROSION AND SEDIMENT CONTROL PLAN FOR WORK DURING CONSTRUCTION, SIGNED AND STAMPED BY A REGISTERED CIVIL ENGINEER PRIOR TO THE START OF CONSTRUCTION, THAT MEETS ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
   A. ALL SLOPES SHALL BE PROTECTED FROM EROSION DURING ROUGH GRADING OPERATIONS AND THEREAFTER, UNTIL INSTALLATION OF FINAL GROUNDCOVER.
   B. ALL SLOPE PROTECTION SWALES SHALL BE CONSTRUCTED AT THE SAME TIME AS BANKS ARE GRADED.
   C. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES CONTAINED WITHIN THE CONTRACT SPECIFICATIONS. THE CONTRACTOR SHALL ALSO PROVIDE ANY ADDITIONAL EROSION CONTROL MEASURES (HYDROSEEDING, MULCHING OF STRAW, SAND DIVERSION DITCHES, ETC.) DICTATED BY FIELD CONDITIONS TO PREVENT EROSION OR THE INTRODUCTION OF DIRT, MUD, OR DEBRIS TO EXISTING PUBLIC OR PRIVATE ROADWAY OR ONTO ADJACENT PROPERTIES DURING ANY PHASE OF CONSTRUCTION OPERATIONS. SPECIAL ATTENTION SHALL BE GIVEN TO ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES NOTED ABOVE.
   D. THE GENERAL EROSION AND SEDIMENT CONTROL PLAN ON THIS DRAWING IS PROVIDED TO AID THE CONTRACTOR IN DEVELOPING THE EROSION AND SEDIMENT CONTROL PLAN ACCORDING TO CONTRACTOR SCHEDULE AND PHASING OF THE PROJECT.
2. CONTRACTOR SHALL INSTALL SILT FENCE AS INDICATED AND IN ANY ADDITIONAL LOCATIONS WHERE MATERIAL COULD LEAVE THE CONSTRUCTION SITE, AT CONTRACTORS EXPENSE.
3. THE CONTRACTOR IS RESPONSIBLE FOR INSPECTING AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE DURATION OF THE PROJECT.
4. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL FACILITIES, FENCING, AND STAGING AREA MATERIALS WHEN CONSTRUCTION IS COMPLETE. NO CONSTRUCTION DEBRIS, DEMOLITION MATERIALS, OR EXCESS EQUIPMENT SHALL BE LEFT ON SITE.
5. CONTRACTOR SHALL REGRADE AND VEGETATE DISTURBED SLOPES TO NEAR EXISTING CONDITION AS APPROVED BY THE OWNER'S REPRESENTATIVE. ALL FINISHED CONSTRUCTED SLOPES SHALL HAVE BIO–DEGRADABLE FIBER WATTLES INSTALLED AT THE TOE OF THE FINISHED SLOPE. IDEQ BMP–21.
6. ALL RUNOFF FROM SITE CONSTRUCTION ACTIVITIES AND FROM RAINFALL EVENTS SHALL BE DETAINED ON SITE AND FILTERED PRIOR TO DISCHARGE.
7. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PREVENT:
   A. TRACKING OF MUD AND DIRT ONTO ROADS. ROAD SWEEPING IS REQUIRED IF TRACKING OCCURS.
   B. ACCUMULATION OF CONSTRUCTION WASTE AND LITTER ON SITE.
   C. NO GRADING OR CONSTRUCTION ACTIVITIES SHALL OCCUR OUTSIDE OF THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS FOR THE PROJECT.
9. STOCKPILED EXCAVATION MATERIALS SHALL BE PROTECTED FROM WATER AND WIND EROSION BY COVERING AS APPROPRIATE.
10. THE SILT FENCE AND/OR WATTLES SHALL BE CONSTRUCTED PRIOR TO ANY CONSTRUCTION ACTIVITIES.
11. CONTRACTOR SHALL PROVIDE DUST ABATEMENT OVER ALL DISTURBED AREAS BY WATER SPRAY.
12. MINIMIZE DISTURBANCES TO EXISTING VEGETATION – UTILIZE AS NATURAL BUFFER STRIPS.
13. CONTRACTOR SHALL HAVE ONSITE AT ALL TIMES SPILL PREVENTION AND CONTROL MEASURES AS PER IDEQ BMP–10.

LEGEND:

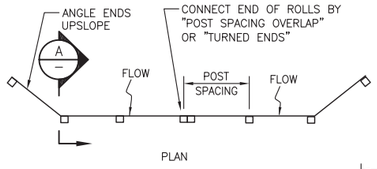
SF — SILT FENCE EC101

W — SEDIMENT BARRIER EC102

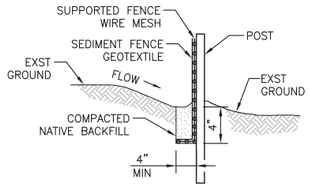
Source: McMillan LLC 2013.

Graphics ... 00269.14 (2/15/16) AB

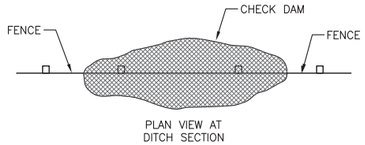
Figure C-1b
Erosion and Sediment Control Plan and Details for the Crystal Springs Hatchery



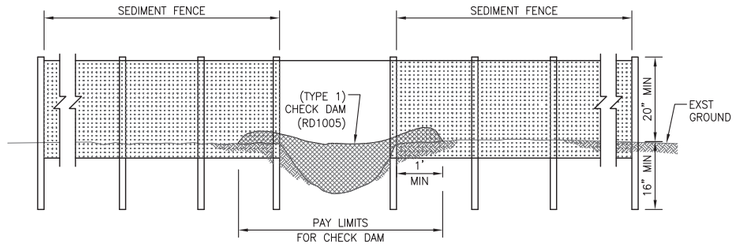
PLAN



SECTION A



PLAN VIEW AT DITCH SECTION



ELEVATION VIEW AT DITCH SECTION OR LOW AREAS

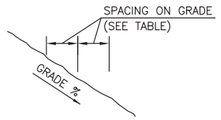
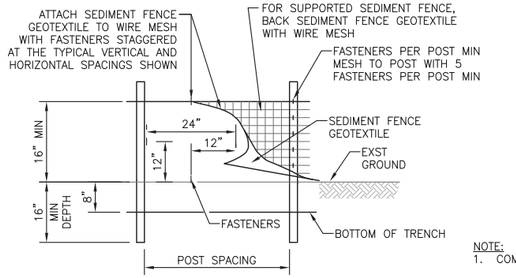


TABLE 1
FENCE SPACING
FOR GENERAL APPLICATION

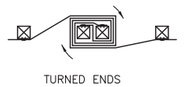
INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
GRADE	MAXIMUM SPACING ON GRADE
GRADE< 10%	300'
10% ≤ GRADE < 15%	150'
15% ≤ GRADE < 20%	100'
20% ≤ GRADE < 30%	50'
30% ≤ GRADE	25'

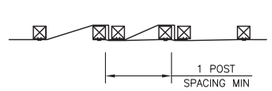
TABLE 2

POST SPACING	
10'	WIRE MESH SUPPORT FENCE
6.5'	EXTRA STRENGTH GEOTEXTILE (WITHOUT WIRE FENCE)



ELEVATION





POST SPACING OVERLAP

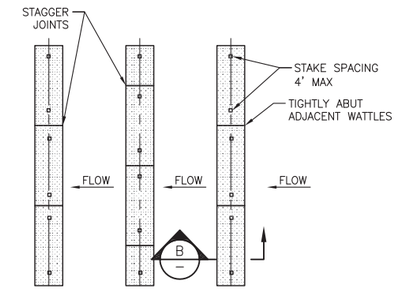
GEOTEXTILE END CONNECTIONS

NOTE:
1. COMPLY WITH IDEQ BMP 36 – SILT FENCE.

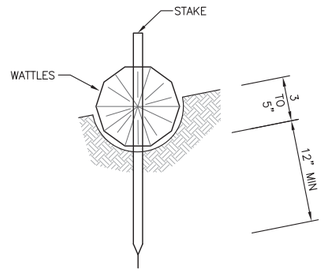
SILT FENCE

SCALE: NTS

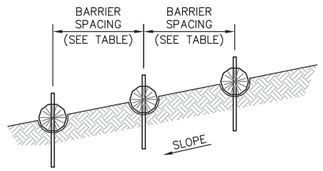
EC101



PLAN



SECTION B



PROFILE

PLACE WATTLES ALONG SLOPE CONTOURS

BARRIER SPACING
FOR GENERAL APPLICATION

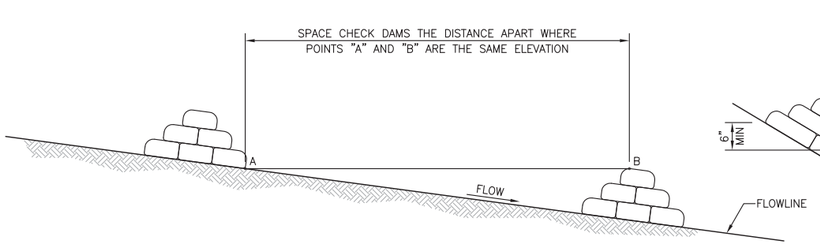
INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
SLOPE	MAXIMUM SPACING ON SLOPE
4:1 OR FLATTER	20'
4:1 TO 2:1	15'
2:1 OR GREATER	10'

NOTE:
1. COMPLY WITH IDEQ BMP 35 – FIBER ROLLS.

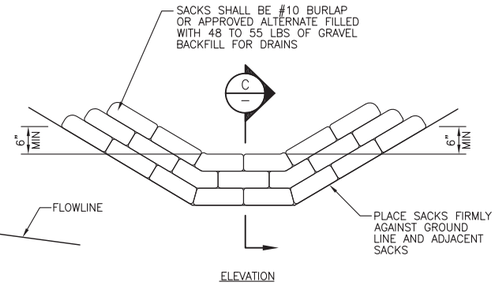
SEDIMENT BARRIER

SCALE: NTS

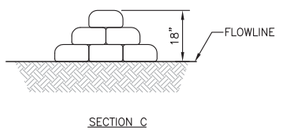
EC102



PROFILE



ELEVATION



SECTION C

NOTE:
1. COMPLY WITH IDEQ BMP 32 – CHECK DAMS.

SANDBAG CHECK DAMS

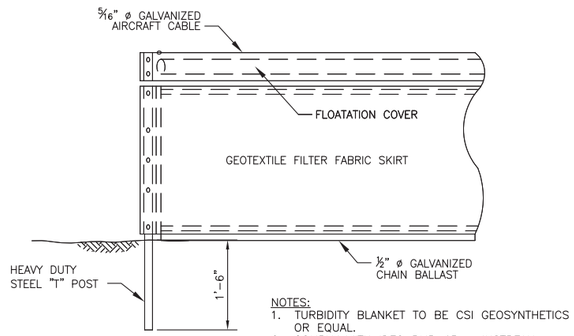
SCALE: NTS

EC104

Graphics ...00269.14 (2/15/16) AB

Source: McMillan LLC 2013.

Figure C-2a
Erosion and Sediment Control Plan and Details for the Yankee Fork Facility



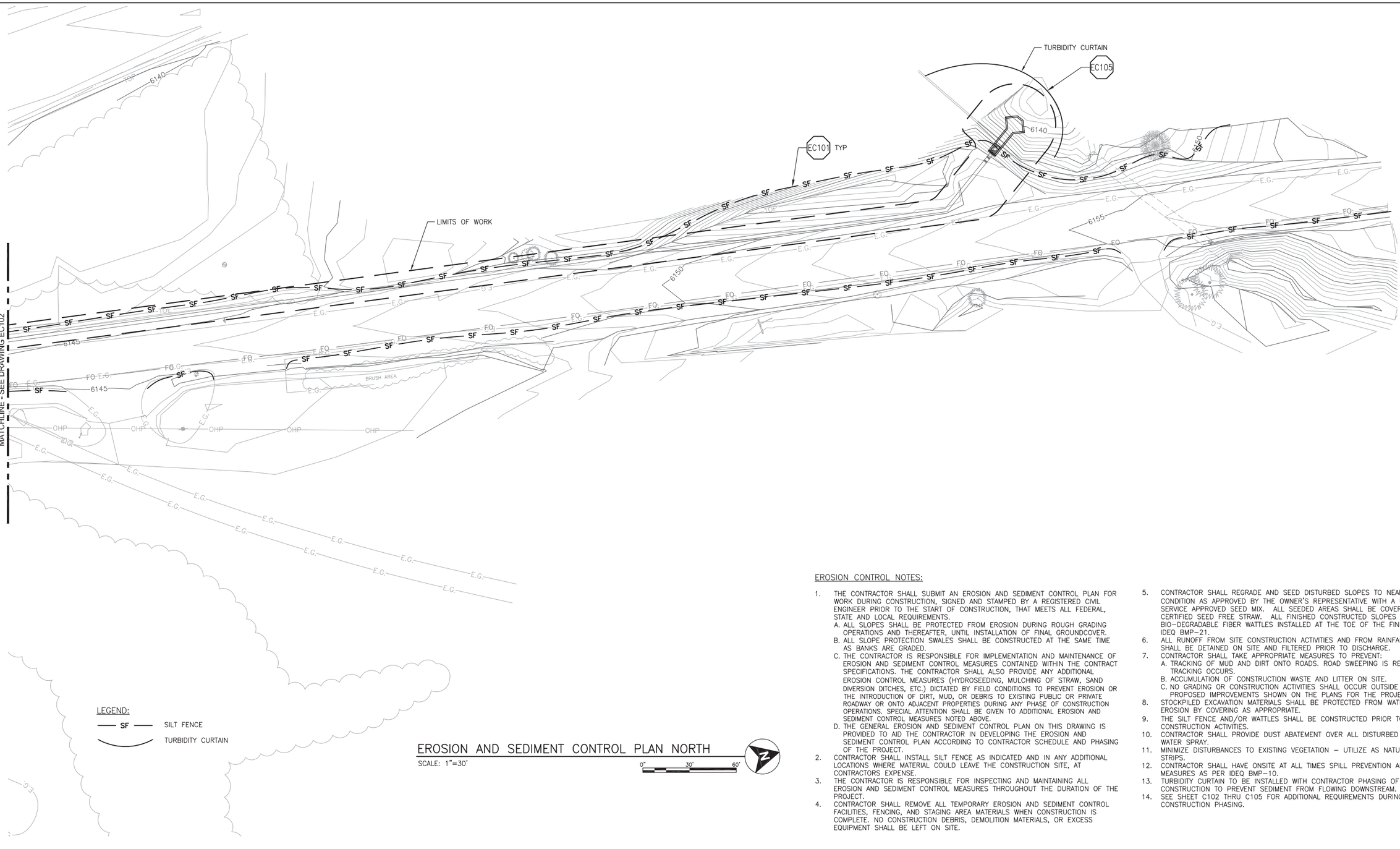
NOTES:
1. TURBIDITY BLANKET TO BE CSI GEOSYNTHETICS OR EQUAL.
2. COMPLY WITH IDEQ BMP 45 – INSTREAM SEDIMENT TRAPPING DEVICES.

TURBIDITY CURTAIN
SCALE: NTS
EC105

Source: McMillan LLC 2013.

Graphics ...00269.14 (2/15/16) AB

Figure C-2b
Erosion and Sediment Control Plan and Details for the Yankee Fork Facility



EROSION AND SEDIMENT CONTROL PLAN NORTH

SCALE: 1"=30'

0' 30' 60'

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL SUBMIT AN EROSION AND SEDIMENT CONTROL PLAN FOR WORK DURING CONSTRUCTION, SIGNED AND STAMPED BY A REGISTERED CIVIL ENGINEER PRIOR TO THE START OF CONSTRUCTION, THAT MEETS ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
   A. ALL SLOPES SHALL BE PROTECTED FROM EROSION DURING ROUGH GRADING OPERATIONS AND THEREAFTER, UNTIL INSTALLATION OF FINAL GROUNDCOVER.
   B. ALL SLOPE PROTECTION SWALES SHALL BE CONSTRUCTED AT THE SAME TIME AS BANKS ARE GRADED.
   C. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES CONTAINED WITHIN THE CONTRACT SPECIFICATIONS. THE CONTRACTOR SHALL ALSO PROVIDE ANY ADDITIONAL EROSION CONTROL MEASURES (HYDROSEEDING, MULCHING OF STRAW, SAND DIVERSION DITCHES, ETC.) DICTATED BY FIELD CONDITIONS TO PREVENT EROSION OR THE INTRODUCTION OF DIRT, MUD, OR DEBRIS TO EXISTING PUBLIC OR PRIVATE ROADWAY OR ONTO ADJACENT PROPERTIES DURING ANY PHASE OF CONSTRUCTION OPERATIONS. SPECIAL ATTENTION SHALL BE GIVEN TO ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES NOTED ABOVE.
   D. THE GENERAL EROSION AND SEDIMENT CONTROL PLAN ON THIS DRAWING IS PROVIDED TO AID THE CONTRACTOR IN DEVELOPING THE EROSION AND SEDIMENT CONTROL PLAN ACCORDING TO CONTRACTOR SCHEDULE AND PHASING OF THE PROJECT.
2. CONTRACTOR SHALL INSTALL SILT FENCE AS INDICATED AND IN ANY ADDITIONAL LOCATIONS WHERE MATERIAL COULD LEAVE THE CONSTRUCTION SITE, AT CONTRACTORS EXPENSE.
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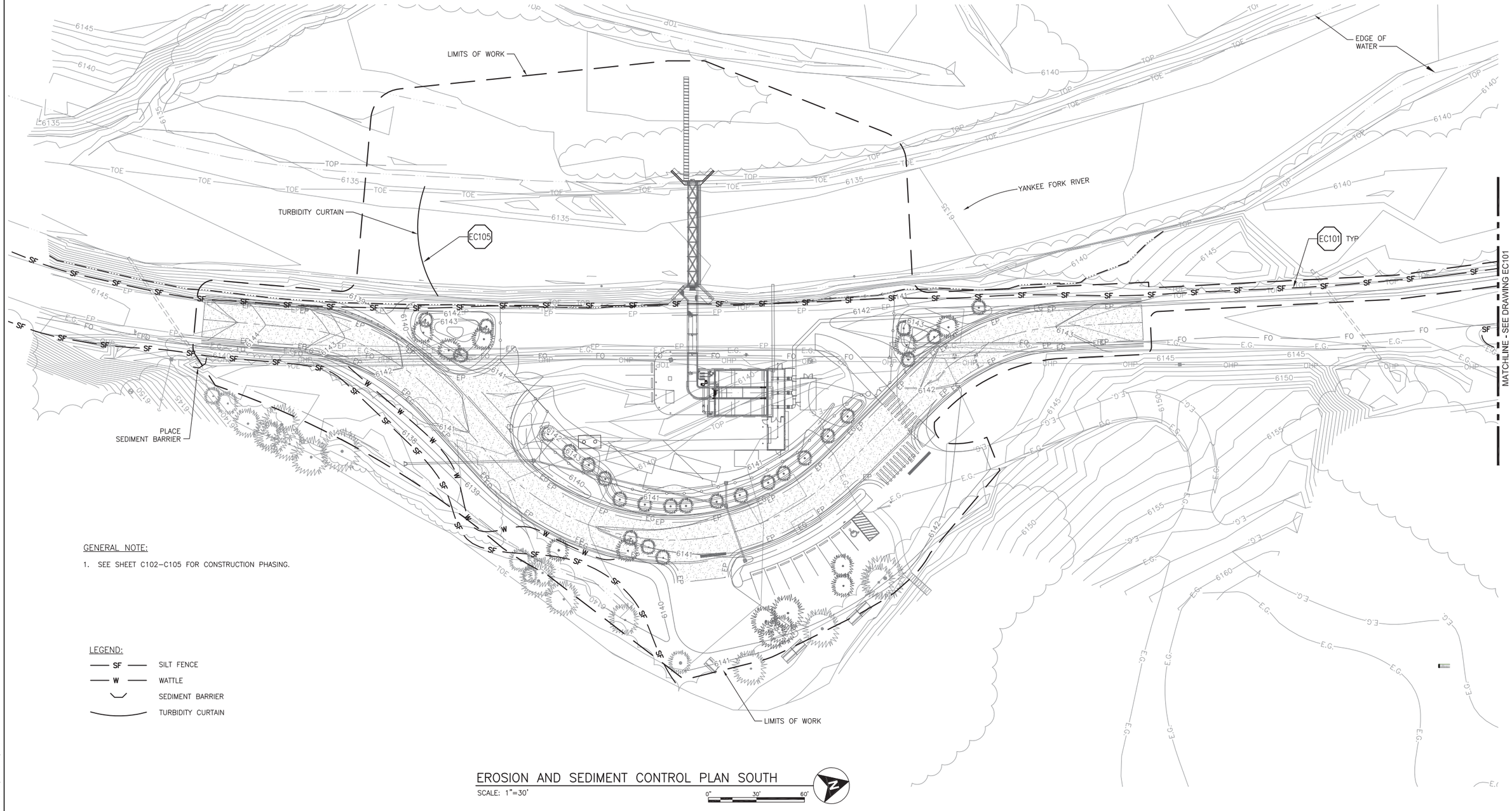
4. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL FACILITIES, FENCING, AND STAGING AREA MATERIALS WHEN CONSTRUCTION IS COMPLETE. NO CONSTRUCTION DEBRIS, DEMOLITION MATERIALS, OR EXCESS EQUIPMENT SHALL BE LEFT ON SITE.
5. CONTRACTOR SHALL REGRADE AND SEED DISTURBED SLOPES TO NEAR EXISTING CONDITION AS APPROVED BY THE OWNER'S REPRESENTATIVE WITH A US FOREST SERVICE APPROVED SEED MIX. ALL SEEDED AREAS SHALL BE COVERED WITH A CERTIFIED SEED FREE STRAW. ALL FINISHED CONSTRUCTED SLOPES SHALL HAVE BIO-DEGRADABLE FIBER WATTLES INSTALLED AT THE TOE OF THE FINISHED SLOPE. IDEQ BMP-21.
6. ALL RUNOFF FROM SITE CONSTRUCTION ACTIVITIES AND FROM RAINFALL EVENTS SHALL BE DETAINED ON SITE AND FILTERED PRIOR TO DISCHARGE.
7. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PREVENT:
   A. TRACKING OF MUD AND DIRT ONTO ROADS. ROAD SWEEPING IS REQUIRED IF TRACKING OCCURS.
   B. ACCUMULATION OF CONSTRUCTION WASTE AND LITTER ON SITE.
   C. NO GRADING OR CONSTRUCTION ACTIVITIES SHALL OCCUR OUTSIDE OF THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS FOR THE PROJECT.
8. STOCKPILED EXCAVATION MATERIALS SHALL BE PROTECTED FROM WATER AND WIND EROSION BY COVERING AS APPROPRIATE.
9. THE SILT FENCE AND/OR WATTLES SHALL BE CONSTRUCTED PRIOR TO ANY CONSTRUCTION ACTIVITIES.
10. CONTRACTOR SHALL PROVIDE DUST ABATEMENT OVER ALL DISTURBED AREAS BY WATER SPRAY.
11. MINIMIZE DISTURBANCES TO EXISTING VEGETATION – UTILIZE AS NATURAL BUFFER STRIPS.
12. CONTRACTOR SHALL HAVE ONSITE AT ALL TIMES SPILL PREVENTION AND CONTROL MEASURES AS PER IDEQ BMP-10.
13. TURBIDITY CURTAIN TO BE INSTALLED WITH CONTRACTOR PHASING OF NEW WEIR CONSTRUCTION TO PREVENT SEDIMENT FROM FLOWING DOWNSTREAM.
14. SEE SHEET C102 THRU C105 FOR ADDITIONAL REQUIREMENTS DURING CONSTRUCTION PHASING.

Source: McMillan LLC 2013.

Graphics ...00269.14 (2/15/16) AB

Figure C-2c
Erosion and Sediment Control Plan and Details for the Yankee Fork Facility



GENERAL NOTE:

1. SEE SHEET C102–C105 FOR CONSTRUCTION PHASING.

LEGEND:

- SF — SILT FENCE
- W — WATTLE
- SEDIMENT BARRIER
- TURBIDITY CURTAIN

EROSION AND SEDIMENT CONTROL PLAN SOUTH

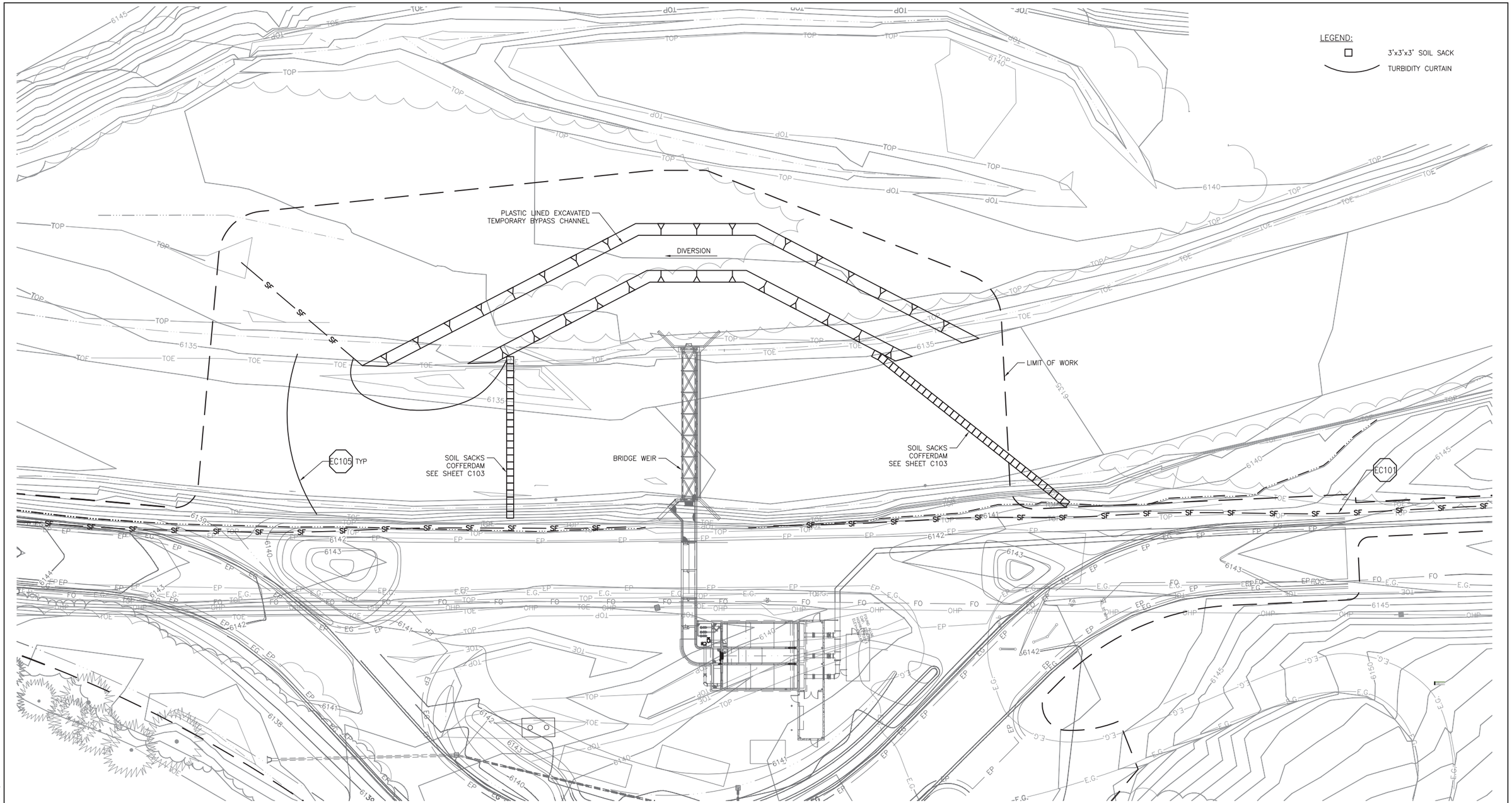
SCALE: 1"=30'

0' 30' 60'

Graphics . . .00269.14 (2/15/16) AB

Source: McMillan LLC 2013.

Figure C-2d
Erosion and Sediment Control Plan and Details for the Yankee Fork Facility



Source: McMillan LLC 2013.

Graphics...00269.14 (2/15/16) AB

Figure C-2e
Erosion and Sediment Control Plan and Details for the Yankee Fork Facility

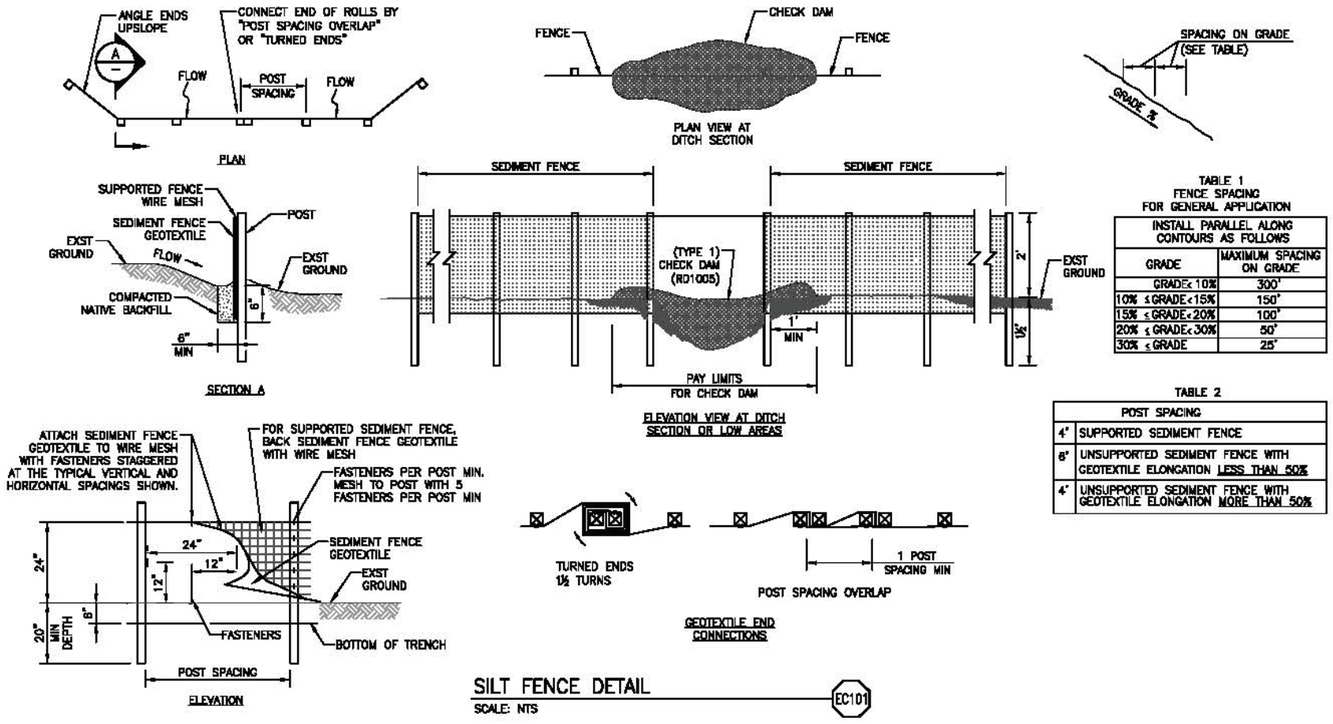


TABLE 1
FENCE SPACING
FOR GENERAL APPLICATION

INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
GRADE	MAXIMUM SPACING ON GRADE
GRADE< 10%	300'
10% ≤ GRADE < 15%	150'
15% ≤ GRADE < 20%	100'
20% ≤ GRADE < 30%	50'
30% ≤ GRADE	25'

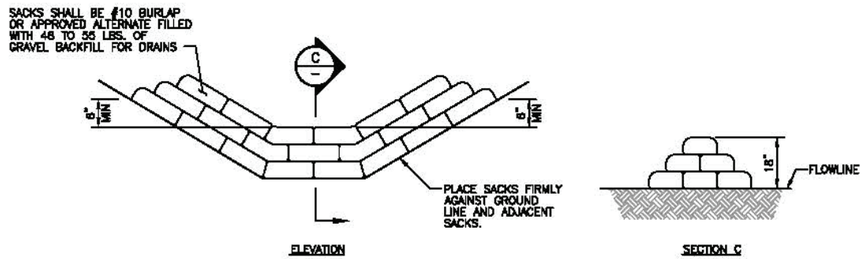
TABLE 2

POST SPACING	
4'	SUPPORTED SEDIMENT FENCE
6'	UNSUPPORTED SEDIMENT FENCE WITH GEOTEXTILE ELONGATION LESS THAN 50%
4'	UNSUPPORTED SEDIMENT FENCE WITH GEOTEXTILE ELONGATION MORE THAN 50%

SILT FENCE DETAIL

SCALE: NTS

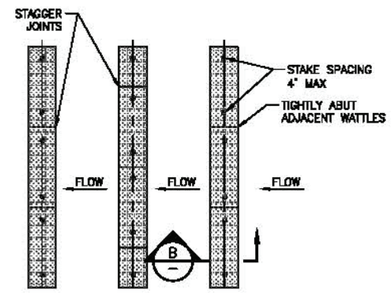
EC101

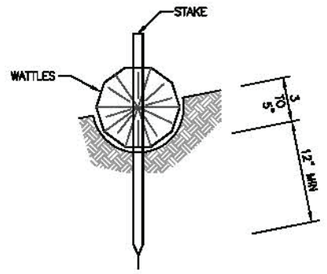


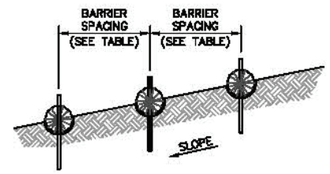
SANDBAG CHECK DAMS

SCALE: NTS

EC104







PLACE WATTLES ALONG SLOPE CONTOURS.

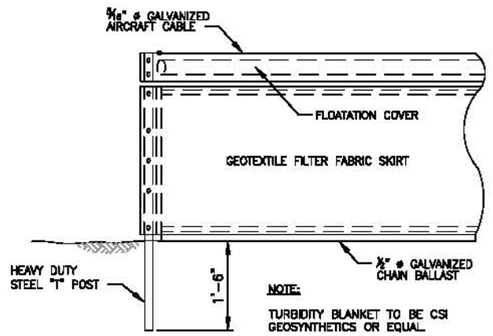
BARRIER SPACING
FOR GENERAL APPLICATION

INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS		
% SLOPE	% SLOPE	MAXIMUM SPACING ON SLOPE
10% FLATTER	1:10 OR FLATTER	300'
10 > % ≥ 15	10 > X ≥ 7.5	150'
15 > % ≥ 20	7.5 > X ≥ 5	100'
20 > % ≥ 30	5 > X ≥ 3	50'
STEEPER THAN 30%	STEEPER THAN 1:3	25'

SEDIMENT BARRIER

SCALE: NTS

EC102



TURBIDITY CURTAIN DETAIL

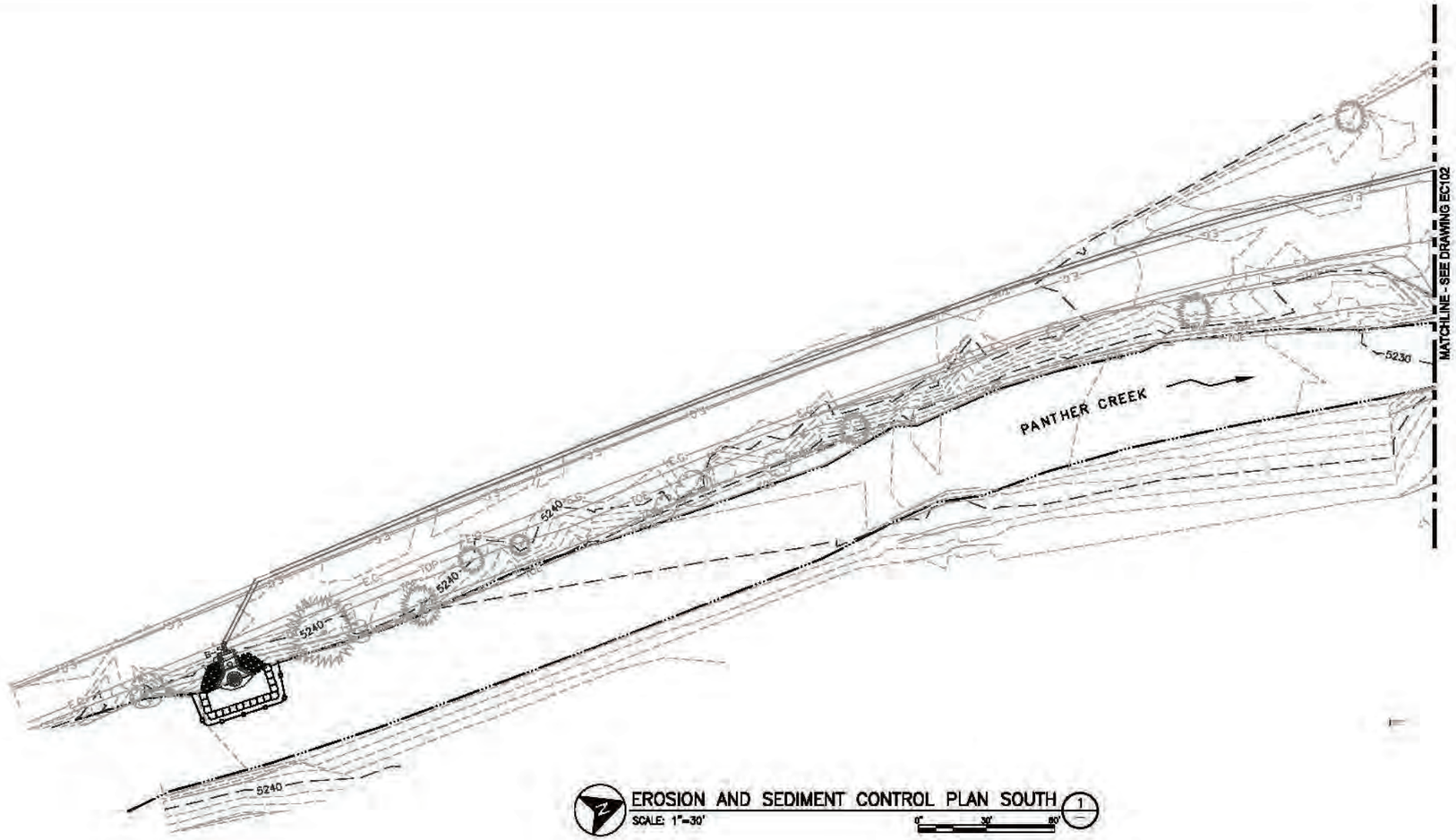
SCALE: NTS

EC105

Source: McMillan LLC 2013.

Graphics ...00269.14 (2/15/16) AB

Figure C-3a
Erosion and Sediment Control Plan and Details for the Panther Creek Facility



LEGEND:

- SF — SILT FENCE
- TURBIDITY CURTAIN
- EDGE OF WATER – NOVEMBER, 2011
- 3'x3'x3' SOIL SACK

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL SUBMIT AN EROSION AND SEDIMENT CONTROL PLAN FOR WORK DURING CONSTRUCTION, SIGNED AND STAMPED BY A REGISTERED CIVIL ENGINEER PRIOR TO THE START OF CONSTRUCTION, THAT MEETS ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
   A. ALL SLOPES SHALL BE PROTECTED FROM EROSION DURING ROUGH GRADING OPERATIONS AND THEREAFTER, UNTIL INSTALLATION OF FINAL GROUNDCOVER.
   B. ALL SLOPE PROTECTION SWALES SHALL BE CONSTRUCTED AT THE SAME TIME AS BANKS ARE GRADED.
   C. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES CONTAINED WITHIN THE CONTRACT SPECIFICATIONS. THE CONTRACTOR SHALL ALSO PROVIDE ANY ADDITIONAL EROSION CONTROL MEASURES (HYDROSEEDING, MULCHING OF STRAW, SAND DIVERSION DITCHES, ETC.) DICTATED BY FIELD CONDITIONS TO PREVENT EROSION OR THE INTRODUCTION OF DIRT, MUD, OR DEBRIS TO EXISTING PUBLIC OR PRIVATE ROADWAY OR ONTO ADJACENT PROPERTIES DURING ANY PHASE OF CONSTRUCTION OPERATIONS. SPECIAL ATTENTION SHALL BE GIVEN TO ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES NOTED ABOVE.
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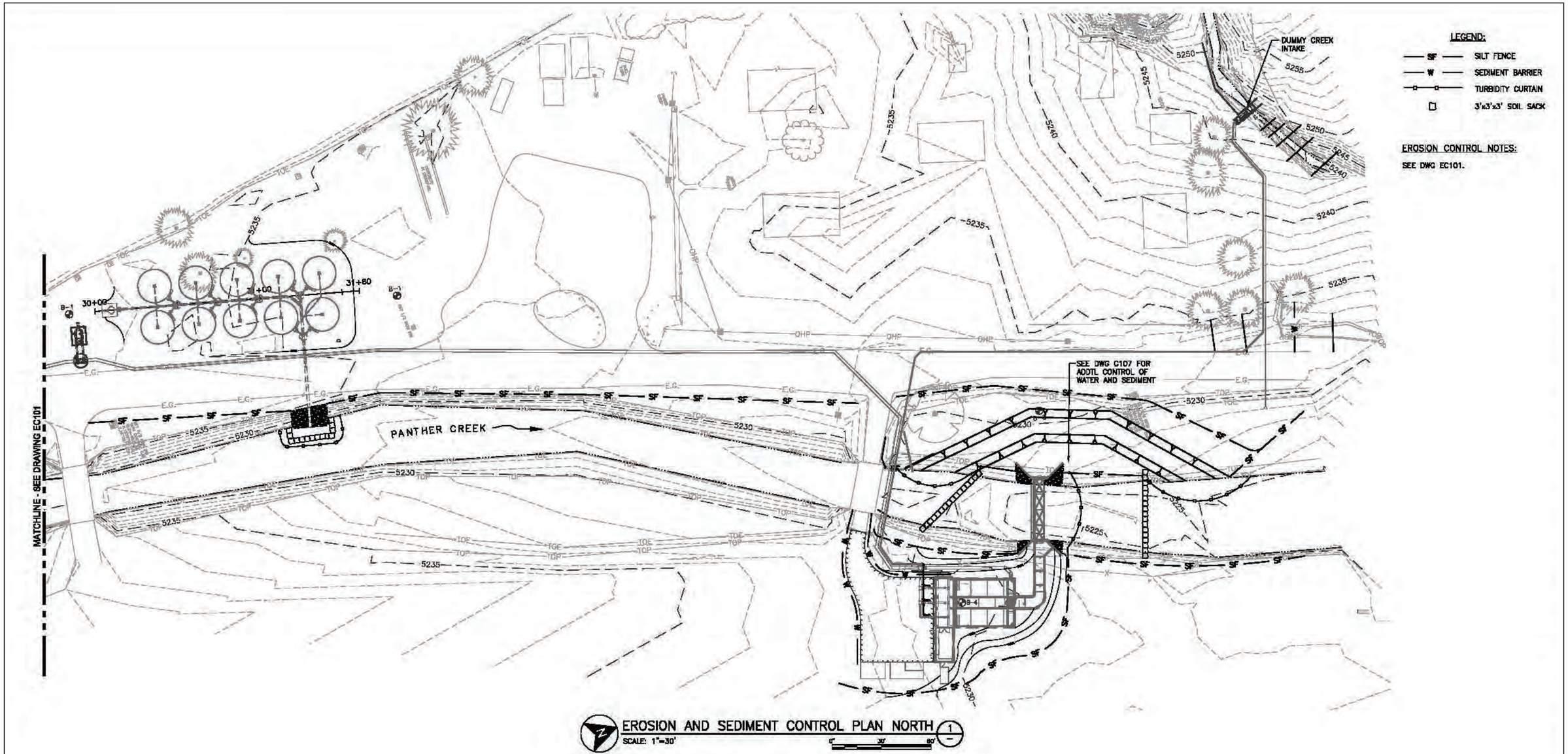
6. ALL RUNOFF FROM SITE CONSTRUCTION ACTIVITIES AND FROM RAINFALL EVENTS SHALL BE DETAINED ON SITE AND FILTERED PRIOR TO DISCHARGE.
7. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PREVENT:
   A. TRACKING OF MUD AND DIRT ONTO ROADS. ROAD SWEEPING IS REQUIRED IF TRACKING OCCURS.
   B. ACCUMULATION OF CONSTRUCTION WASTE AND LITTER ON SITE.
   C. NO GRADING OR CONSTRUCTION ACTIVITIES SHALL OCCUR OUTSIDE OF THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS FOR THE PROJECT.
9. STOCKPILED EXCAVATION MATERIALS SHALL BE PROTECTED FROM WATER AND WIND EROSION BY COVERING AS APPROPRIATE.
10. THE SILT FENCE AND/OR WATTLES SHALL BE CONSTRUCTED PRIOR TO ANY CONSTRUCTION ACTIVITIES.
11. CONTRACTOR SHALL PROVIDE DUST ABATEMENT OVER ALL DISTURBED AREAS BY WATER SPRAY.
12. MINIMIZE DISTURBANCES TO EXISTING VEGETATION – UTILIZE AS NATURAL BUFFER STRIPS.
13. CONTRACTOR SHALL HAVE ONSITE AT ALL TIMES SPILL PREVENTION AND CONTROL MEASURES AS PER IDEQ BMP-10.
14. TURBIDITY CURTAIN TO BE INSTALLED WITH CONTRACTOR PHASING OF NEW WEIR CONSTRUCTION TO PREVENT SEDIMENT FROM FLOWING DOWNSTREAM.

Source: McMillan LLC 2013.

Graphics...00269.14 (2/15/16) AB

Figure C-3b
Erosion and Sediment Control Plan and Details for the Panther Creek Facility



Source: McMillan LLC 2013.

Graphics . . .00269.14 (2/15/16) AB

Figure C-3c
Erosion and Sediment Control Plan and Details for the Panther Creek Facility

Appendix D
National Wild and Scenic Rivers Analysis

Appendix D
National Wild and Scenic Rivers Analysis

Appendix D contains the Wild and Scenic Rivers Act, Section 7 analysis for Yankee Fork of the Salmon River (Appendix D.1) and Panther Creek (Appendix D.2).

The information from Appendix D has been synthesized into Chapter 3, *Affected Environment and Environmental Consequences*, of this Environmental Impact Statement. The table below identifies where the discussion and effects analysis of each outstandingly remarkable value (ORV) can be found in the Environmental Impact Statement.

River	Outstandingly Remarkable Value (ORV)	Where to find
Yankee Fork		
	Free-flowing character	Section 3.1, *Land Use and Recreation* Section 3.5, *Groundwater and Surface Water Quality and Quantity*
	Recreation	Section 3.1, *Land Use and Recreation*
	Geology	Section 3.3, *Geology and Soils*
	Fish	Section 3.7, *Fish*
	History	Section 3.9, *Cultural Resources*
Panther Creek		
	Free-flowing character	Section 3.1, *Land Use and Recreation* Section 3.5, *Groundwater and Surface Water Quality and Quantity*
	Scenery	Section 3.12, *Visual Quality*
	Recreation	Section 3.1, *Land Use and Recreation*
	Geology	Section 3.3, *Geology and Soils*
	Fish	Section 3.7, *Fish*
	Wildlife	Section 3.8, *Wildlife*

Appendix D.1
Yankee Fork Segment A

Yankee Fork Permanent Weir and Fish Trapping Facility

Wild and Scenic River, Section 7 Analysis

July 2016

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1 Introduction

1.1 Background

The U. S. Forest Service (Forest Service) and Bonneville Power Administration (BPA) are evaluating a proposal from the Shoshone-Bannock Tribes of the Fort Hall Reservation (Tribes) to place a permanent fish collection and acclimation facility on the Yankee Fork. This facility is part of a larger program that BPA is analyzing in the Crystal Springs Hatchery Program Environmental Impact Statement (EIS). For the purposes of this Section 7 analysis, the term "Proposed Action" will refer to just the Yankee Fork weir facility rather than the entire program being evaluated in the EIS.

Yankee Fork has been determined by the Challis National Forest (Forest) to be eligible for designation under the Wild and Scenic Rivers Act, 16 U.S.C. 1271 *et seq.*, as a Recreation Wild and Scenic River (USFS 1989). As part of the agencies' evaluation of the Tribes' proposal, this analysis is being conducted to identify the effects the constructed facility might have on the Yankee Fork's values that make it eligible for designation as a Wild and Scenic River.

1.1.1 Classification and Protection Status of Yankee Fork

Two[1] eligible segments of the river relevant to this analysis are listed in the National Park Service's Nationwide Rivers Inventory[2] (Table 1). Segment A is the lower reach immediately upstream from the mouth; segment B is immediately upstream of segment A, from the private land boundary upstream of Pole Flat campground to Jordan Creek. The Proposed Action is within Segment A, very near its boundary with Segment B.

Table 1. Description of eligible reaches of Yankee Fork from the Nationwide Rivers Inventory

River	**Yankee Fork, segment A**	**Yankee Fork, segment B**
County	Custer	Custer
Reach	Mouth at Main Salmon River (NW 1/4 of Sec. 20, T.11 N., R.15 E.) to Pole Flat Campground (beginning of dredge tailings)	Pole Flat Campground to Jordan Creek
Length (miles)	2	6
Year Listed / Updated	1993	1993
Potential Classification	Recreation	Recreation
Outstandingly Remarkable Values	Recreation, Geology, Fish, History, Cultural	Recreation, Geology, Fish, History

[1] Three Segments of Yankee Fork were found eligible, Segments A, B, and C. Segment C is upstream from segment B, and far removed from Segment A and will thus not be discussed in this assessment.

[2] NPS Nationwide Rivers Inventory, at http://www.nps.gov/ncrc/programs/rtca/nri/states/id2.html

River	**Yankee Fork, segment A**	**Yankee Fork, segment B**
Description	"Native American religious and ceremonial fishery. Challenging white water for kayaking during high spring run-off. Spawning and rearing habitat for anadromous steelhead and Chinook salmon."	"Native American religious and ceremonial fishery. Challenging white water for kayaking during high spring run-off. Spawning and rearing habitat for anadromous steelhead and Chinook salmon"

While the segments of Yankee Fork have been determined to be "eligible," they have not yet been "designated." ***Eligibility*** is simply a determination made by a river-managing federal agency that this segment meets certain criteria and may be suitable for designation. ***Designation*** is only by an act of Congress or a State's application to the Secretary of the Interior. It is by designation that an eligible river attains Wild and Scenic River status and protection. Eligible rivers are not protected by the Act, but Forest Service policy is that a river found to be eligible and suitable[3] must be protected as far as possible to the same extent as a congressionally designated study river.[4] Forest Service policy for river corridors identified in the National River Inventory is to protect the river's free flowing characteristics and its Outstandingly Remarkable Values; and that management and development of the identified river and its corridor not be modified to the degree that eligibility or classification would be affected. This policy of protection is to be continued until a decision is made as to the future use of the river and adjacent lands.[5]

Section 7(a) of the Wild and Scenic Rivers Act provides a specific standard for review of developments below or above or on a stream tributary to a designated river. Such developments may occur as long as the project "will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area as of the date of designation."

1.1.2 Description of the Yankee Fork

The Yankee Fork is a major tributary to the upper reaches of the Salmon River. The two segments of the Yankee Fork discussed here extend from its confluence with the Salmon River (at Idaho Highway 75 between the towns of Stanley and Clayton) upstream to Jordan Creek, a distance of 8 miles (straight line). The Tribe's proposal is located at Pole Flat Campground, 3.3 river miles upstream from the confluence. This campground is just downstream of the dividing point between these two eligible segments and is immediately upstream of the site proposed for this project.

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[3] 'Suitability' is the second level of analysis for a potential Wild and Scenic River. First is 'eligibility,' second is 'suitability,' then the forwarding of a 'suitable' river for legislative consideration, then possible Congressional designation as a Wild and Scenic River. A Suitability Determination has not been conducted for Yankee Fork.

[4] Forest Service Manual 2354.21

[5] FSH 1909.12, Chapter 8, Section 8.12

The project site is located near (below) the downstream extent of extensive historical gold dredging that left the river wider and straighter than pre-dredging conditions with most of its former floodplain now dominated by mounded cobbles and boulders (Figure 1).

Figure 1. Historical dredge tailings along Yankee Fork

Not coincidentally, this location is also where the river changes character from flowing through a 0.25-mile wide floodplain (segment B) to narrowing down and flowing with higher velocity through a steeper and narrower canyon (segment A). The dividing line between segments A and B is at the lower extent of the historical dredge tailings, above Pole Flat Campground (Figure 2). The Tribes' proposed permanent weir is situated immediately below Pole Flat Campground near an existing temporary weir within Segment A. Its location is within the broader floodplain above the drop into the narrower canyon (Figure 2).

Figure 2. Dividing line (red) between Segments A and B

Details of this site's current hydrologic, geologic, vegetative and biotic conditions are described in Chapter 3 of the EIS. The discussion below focuses on the river's free-flowing and water quality characteristics, and the Outstandingly Remarkable Values (ORVs) for which the Yankee Fork was found eligible.

1.1.2.1 Free-Flowing Character

Section 2(b) of the Wild and Scenic Rivers Act (P.L. 90-542) requires that all rivers considered eligible for designation need to be "free-flowing." Section 15 (b) of the Act defines a "free-flowing" river as one which is in a "natural condition" and without impoundment, diversion, rip-rapping, or other modifications of the waterway. It also states that existence of low dams, diversion works, and other minor structures shall not automatically bar its consideration, though such construction is discouraged.

In the Forest's 1989 Wild and Scenic Rivers Evaluation Report (USFS 1989), Segment A was evaluated to be free-flowing in a natural condition for its entire length and that it contained one bridge. The report, however, stated that segment B was in question as to whether it met the intent of 'free flowing in a natural condition' because of past dredging activities that re-routed the river and changed its width, depth, banks, and slope from its natural condition (see Figure 3).

Nonetheless, the presence of this compromising condition did not prevent the Forest from finding both segments of the Yankee Fork eligible for Wild and Scenic River status in the "Recreation" classification. The "Recreation" classification allows for rivers that have undergone some impoundment or diversion in the past (16 USC §1273 (b) (3)).

Figure 3. Historical dredge tailing impacts in segment B compared to segment A

1.1.2.2 Water Quality

The Yankee Fork of the Salmon River is one of the main tributaries to the Salmon River, with a watershed covering about 122,000 acres. The Yankee Fork flows approximately 28 miles to its confluence with the Salmon River near Sunbeam, Idaho. Upstream of the proposed facility, the Yankee Fork has experienced extensive habitat alteration due to historical dredging for gold and other metals (dredge operations ceased in 1952).

All waters of the State of Idaho are designated for beneficial uses that include agricultural and industrial water uses, wildlife, and aesthetics. The Yankee Fork is further designated for domestic water supply, cold-water biota, salmonid spawning, primary contact recreation, and special resource water. The Upper Salmon River Subbasin Assessment and TMDL (IDEQ 2003) indicated water quality impairment in waters from Jordan Creek to the Salmon River for sediment and habitat alteration. Sections of the Yankee Fork within the Salmon-Challis National Forest were listed for sediment. However, a TMDL for sediment was determined to not be warranted by IDEQ (IDEQ 2003).

Historical and present mining activities have formerly resulted in water quality impacts from selenium, mercury, cyanide, and other pollutants associated with mining in the drainage. However, there are presently no chemical contaminants, which exceed IDEQ water quality standards in the basin (Reclamation 2012).

1.2 Outstandingly Remarkable Values

According to the Nationwide Rivers Inventory (Table 1) both segments of the river share ***Recreation, Geology, Fish***, and ***History*** as their ORVS (Table 1) and that Segment A includes a ***Cultural*** ORV that Segment B does not share. The Nationwide Rivers Inventory includes the following summary statement for all three segments (A, B, and C):

> *"Native American religious and ceremonial fishery. Challenging white water for kayaking during high spring run-off. Spawning and rearing habitat for anadromous steelhead and Chinook Salmon." (NPS 1993).*

There is little discussion in the Forest's 1989 eligibility determination report to support the conclusions concerning the ORVs identified for the Yankee Fork. Each segment does, however, have a conclusory descriptive statement as recorded below:

> **Segment A:** *"Unique geologic features associated with the canyon and a diversity of recreation opportunities. The corridor provides unique and outstanding whitewater kayaking experiences during spring high flow."*
>
> **Segment B:** *"Significant historic and cultural values; the corridor contains numerous sites which are eligible for National Historic Register. However, this segment is located entirely on private patented mining lands and has been significantly modified due to past dredge mining. It is questionable whether it meets the intent of free flowing in a natural condition due to channel alteration. Segment does exhibit sufficient flow to sustain values. With both segments A and C determined eligible it is logical to include the middle segment. The segment tells a story of the early history of the area."*

There is a discrepancy concerning Outstandingly Remarkable Values between the National Rivers Inventory and the Forest's 1998 evaluation. The National Inventory lists five ORVs, but the Forest lists only two. The Forest concluded that Yankee Fork Segment A's ***Historical/ Cultural*** values were "not outstanding" and only its ***Recreation*** and ***Geology*** values were outstanding. The Forest concluded that Segment B's ONLY outstandingly remarkable feature was its ***Historical/ Cultural*** values. The differences are displayed in Table 2.

Table 2. Difference between the National Rivers Inventory and the Challis National Forest's Assessment of ORVs

	Challis National Forest 1998 report	Nationwide Rivers Inventory
Segment A	Recreation and Geology	Recreation, Geology, Fish, History, Cultural
Segment B	Historical/Cultural	Recreation, Geology, Fish, History

For the purposes of this assessment, a review of the effects of the Proposed Action on the Yankee Fork's eligibility for Wild and Scenic River designation will be conducted against the list of Segment A's ORVs in the Nationwide Rivers Inventory because it is the most inclusive list. This will result in assessing the effects of the Proposed Action against three ORVS the National Forest did not consider in 1998 to be 'outstanding' (***Fish, History,*** and ***Cultural***).

This review will assess the effects of the Proposed Action against current and relevant conditions identified in Segment A, but will also consider conditions in the lowest areas of Segment B since the segments share all but the ***Cultural*** ORV and the Proposed Action is very near the line dividing the two segments. Additionally, the river and landscape features of the Proposed Action's site are somewhat inconsistent with both Segments A and B. Segment A is a fast, narrow river flowing through a series of rapids down a comparatively steep, narrow canyon in a natural landscape. Segment B is a slow, wide, channeled river flowing through a heavily-altered 0.25-mile-wide floodplain in a landscape visually dominated by human uses and past impacts. The Proposed Action site is in the transition zone between these two conditions on a gently flowing river (no rapids) through a narrowing floodplain within a natural-appearing landscape. Assessment of the Proposed Action's effects on all relevant ORV conditions in both segments (where relevant) will more fully inform the deciding official concerning the scale, relevance, and context of the Proposed Action's effects.

1.2.1 Recreation

Recreation in Segment A

For Segment A, the Forest's 1989 report states that:

> *"Variety and diversity of recreation opportunities are similar to those found within the comparison area*[6]*. Motorized recreation opportunities exist. The corridor includes developed recreation sites.*
>
> *Segment provides a unique and unusual white water recreation opportunity for kayaking and floating during spring high water. Other activities include fishing and supporting activities"*

Those recreation opportunities remain today. Segment A provides recreation opportunities consistent with the "Roaded Natural" classification within the Forest Service's Recreation

[6] Multiple references to this "comparison area" are made throughout the 1998 evaluations but no description of the "comparison area" is given. The assumption made for this evaluation is that the "comparison area" is the Challis National Forest.

Opportunity Spectrum.[7] Camping, sightseeing, fishing and kayaking are the primary recreation attractions, though none of these are popular enough to attract visitors in great numbers from outside the region to this specific river segment. The Salmon River, downstream, is the much larger attraction.

The segment cannot be considered remote, being entirely within 3 miles of State Highway 75 and having passenger car vehicle access on the paved Yankee Fork Road along its entire length. Three developed, rustic (Figure 4), **campgrounds** (Pine Flat, Blind Creek and Flat Rock) are located along this road with ready access to the river. They provide a less-developed camping alternative to the more crowded and more developed recreational experience along the Salmon River downstream.

Figure 4. Typical Campsite on the Yankee Fork segment A

Kayaking and rafting is popular on this segment of Yankee Fork and is known for relatively short, fast, kayak runs (Figure 5).[8] Rafters are attracted to the class two and three rapids scattered along its entire length. Though used by local kayakers and rafters, this segment of the Yankee Fork is not popular enough to warrant much attention by guides for paying customers, likely because of its short run, narrow channel, and low flows in summer (the main tourist season). It is also reported to be prone to having large wood and debris creating hazards in the channel for river runners.

[7] The Recreation Opportunity Spectrum is the framework the US Forest Service uses to describe recreational settings and desired recreation experiences (USFS 1979).

[8] Videos of kayaking this segment can be found at https://www.youtube.com/watch?v=hdimweGa7g8.

Figure 5. Kayaking on the Yankee Fork segment A

The installation of a temporary fish-trapping weir near Pine Flat campground created a barrier to rafters and kayakers on the river since the eligibility determination in 1989. Recreationists floating this section must now portage around the structure on the west bank, or begin their run below it. However, this weir is temporary and can be readily removed; and it is located at the upper end of the canyon, where kayakers and floaters are likely to start a trip down the canyon, rather than in the middle of a popular run.

Fishing is available the entire length of Segment A, though access to the river is limited at places by very steep banks. Fishing is very popular during salmon season on the Salmon River and up the Yankee Fork with the increase in numbers of returning steelhead and Chinook salmon. Fishing can be a peaceful and comparatively solitary experience in this area most other times of the year.

Recreation in Segment B:

For Segment B, the Forest's 1989 report states that:

> "*Recreation opportunities within this corridor are limited due to heavy modification of the corridor from dredge mining opportunities and private land. Motorized access is permitted. Conflicts between recreation activities and mining opportunities exist. Old historic dredge does provide a recreation opportunity for interpretation."*
>
> *"Water oriented recreation opportunities are also limited due to heavy modification of the stream* channel from mining. Size of stream tends to limit amount and diversity of activities."

This segment is nearly all private land, so public recreation opportunities are few and the attractions are limited to those created by business or other interests.

The river holds comparatively little recreation attraction in this segment since access and river condition (slow, wide, and shallow, with limited vegetative cover) is compromised by the dredge spoils. One fishing attraction, however, is the popular trout fishing in the remnant ponds created by these dredge spoils.

Very little has changed concerning the recreation opportunities available in Segments A or B between 1989 and the present (2016). As stated in 1989, this segment's inclusion was based on historic values (primarily from the gold mining days), and the fact that it is between two river segments (A and C) that are more consistent with Wild and Scenic River consideration.

1.2.2 Geology

The Forest describes geology in the Yankee Fork as follows:

> Segment A: *"Geologic features are unique and scenic. Steep rocky and narrow canyon is not common to the comparison area."*
>
> Segment B: *"Geologic features are similar to those commonly found within the comparison area."*

The summaries of geologic characteristics above simply conclude that Segment A is in a steep rocky narrow canyon and Segment B is in a gentle floodplain, and that the canyon features are less common across the National Forest than is the floodplain from a river visitor's perspective (Figure 6). The Proposed Action is located in a transition area from floodplain to narrow canyon and offers views of canyons downstream and views of a broader flatter floodplain when looking upstream. These geologic features are described in technical detail in Chapter 3 of the EIS.

Figure 6. Geologic formations along canyon wall in Yankee Fork segment A

In these river segments, the geologic features are valued for the scenic value, rather than for providing any recreation experience or economic values based on them such as rock climbing, rock/gem collecting, mining, etc. The scenic values of these features have not been changed by human activity (other than fire-related scenic changes) since they were recognized in 1989.

1.2.3 Fish

The Forest describes the Geology ORV in the Yankee Fork as follows:

Segment A: *"Segment supports fair fish populations of resident and anadromous fish species. Fishery is fair throughout the corridor. Steep stream gradient limits fishing success. Opportunities are similar to those found within the comparison area. Access to water's edge is difficult in some locations due to steep banks."*

Segment B: *"Segment supports fair fish populations of resident and anadromous fish species. Fishery is fair throughout the corridor. Tailing ponds are being used as fish rearing ponds. Opportunities are similar to those found within the comparison area. Tailing ponds are also being stocked and provide high fishing success. Tailing ponds provide high fishing success. Tailing pond provides better fishing opportunities than main channel due to past mining impacts."*

Fish populations and recovery activities for ESA-listed species are fully described in Chapter 3 of the EIS. A significant amount of recovery effort has been applied to restore salmon runs to the Yankee Fork since the recognition of these river segments in 1989. As such, the ***Fish*** ORV for these river segments is significant, and actions that enhance or support this ORV are desired. The sole purpose of this project is for just such restoration.

1.2.4 History

The Forest describes the History ORV in the Yankee Fork as follows:

Segment A: "*Cultural resource sites of less importance and significance are present within the corridor*."

Segment B: *"Significant and unique historical/cultural resource sites exist within the corridor. Bonanza town site, Native American village sites, cemetery, Bonanza Guard Station, CCC Camp, and dredge are all eligible for the National Historic Register. Unique interpretive opportunities"*

The values for this ORV were recognized primarily in Segment B, with the many features and structures potentially eligible for listing in the National Register of Historic Places. At the project site, the nearby historical suction dredge tailings, and two historical road segments (the historic Stanley to Bonanza Wagon Road and the Custer Motorway Adventure Road segment) are the features of consideration (see EIS, Chapter 3). These features were not mentioned in the 1989 descriptions, which focused on buildings; town and village sites; and other features distant from this Proposed Action. There has been no measurable change to the historical features mentioned in the 1989 document; their value endures in Segment B.

1.2.5 Cultural

The Forest provides no description for the Cultural ORV in the Yankee Fork for either Segments A or B other that its quick reference under 'History,' above. They were, however, included in the list of ORVs for Segment A in the National Rivers Inventory.

The Forest's focus on ***Cultural*** values for segment B in the 1989 eligibility determination was limited to physical features such as "Native American Village sites" (see 'History,' above). There is no mention of Native American cultural values associated with the land or the fish, apart from places they occupied or archeological artifacts they left behind. There is no detailed information in the National Rivers Inventory about which cultural values are to be considered for Segment A beyond their summary statement, which mentions "*religious and ceremonial fishery."*

For the purposes of this assessment, both the sites in Segment B and the Tribes' cultural values associated with traditions tied to traditional fish harvesting (applicable to Segment A) will be considered.

1.3 Existing Facilities

Subsequent to the 1998 evaluation, the Forest authorized the Tribes to install and operate a temporary weir at Pole Flat Campground within Segment A for trapping fish for population restoration purposes. See Figure 2 for location and Figure 7 for close-up detail. As can be seen clearly in Figure 7, the weir extends the entire width of the river, interrupting its free flowing

characteristics. It does not, however, impound water, divert flow, straighten or narrow the channel. Though it appears to compromise the free-flowing nature of the Yankee Fork, this weir is temporary and can be readily removed with no major disturbance to the river's bed or banks. Because it is temporary, it does not constitute a feature that eliminates this river's continued eligibility for potential future designation as a Wild and Scenic River.

Figure 7. Existing weir on Yankee Fork

Along with the existing temporary weir, the Tribes use other two other structures to monitor fish movement along Yankee Fork. These include a rotary screw trap and a passive integrated transponder (PIT) tag array. The rotary screw trap is located downstream of the Pole Flat weir, and is used to monitor and enumerate juvenile spring Chinook and steelhead. The PIT tag array is located in Yankee Fork, approximately 2 miles upstream of the Salmon River, and is used to detect and identify fish marked with PIT tags. Both structures provide the Tribes with information about the use of Yankee Fork by anadromous and resident fish. The screw trap and PIT tag array would continue to be used as part of the Proposed Action.

2 Proposed Action

The proposed weir on Yankee Fork is part of the larger Crystal Springs Hatchery Program, which includes a new fish hatchery near Springfield, Idaho, and two fish trapping weirs: Panther Creek and Yankee Fork. While this program achieves an array of purposes for differing federal agencies and the Tribes (see EIS, Chapter 2), its fundamental function is to support the recovery of ESA-listed Snake River spring/summer Chinook salmon. The description of facilities below will focus only on those associated with the weir in Yankee Fork. The Crystal Springs hatchery and the weir on Panther Creek are far removed from Yankee Fork and have no impact on its Wild and Scenic River values.

2.1 Purpose and Need

The purposes of the Yankee Fork weir is to catch, hold and spawn, adult Chinook salmon to obtain eggs and milt for the hatchery; manage returning adult Chinook salmon; and monitor program success in meeting production and adult return numbers. The need is to contribute to the recovery of the Snake River spring/summer Chinook salmon Evolutionarily Significant Unit.

Yankee Fork, though eligible for designation as a Wild and Scenic River, was selected as the location for this weir and associated Chinook salmon restoration actions because of the historical use of this watershed by this species, and their near extirpation from it.

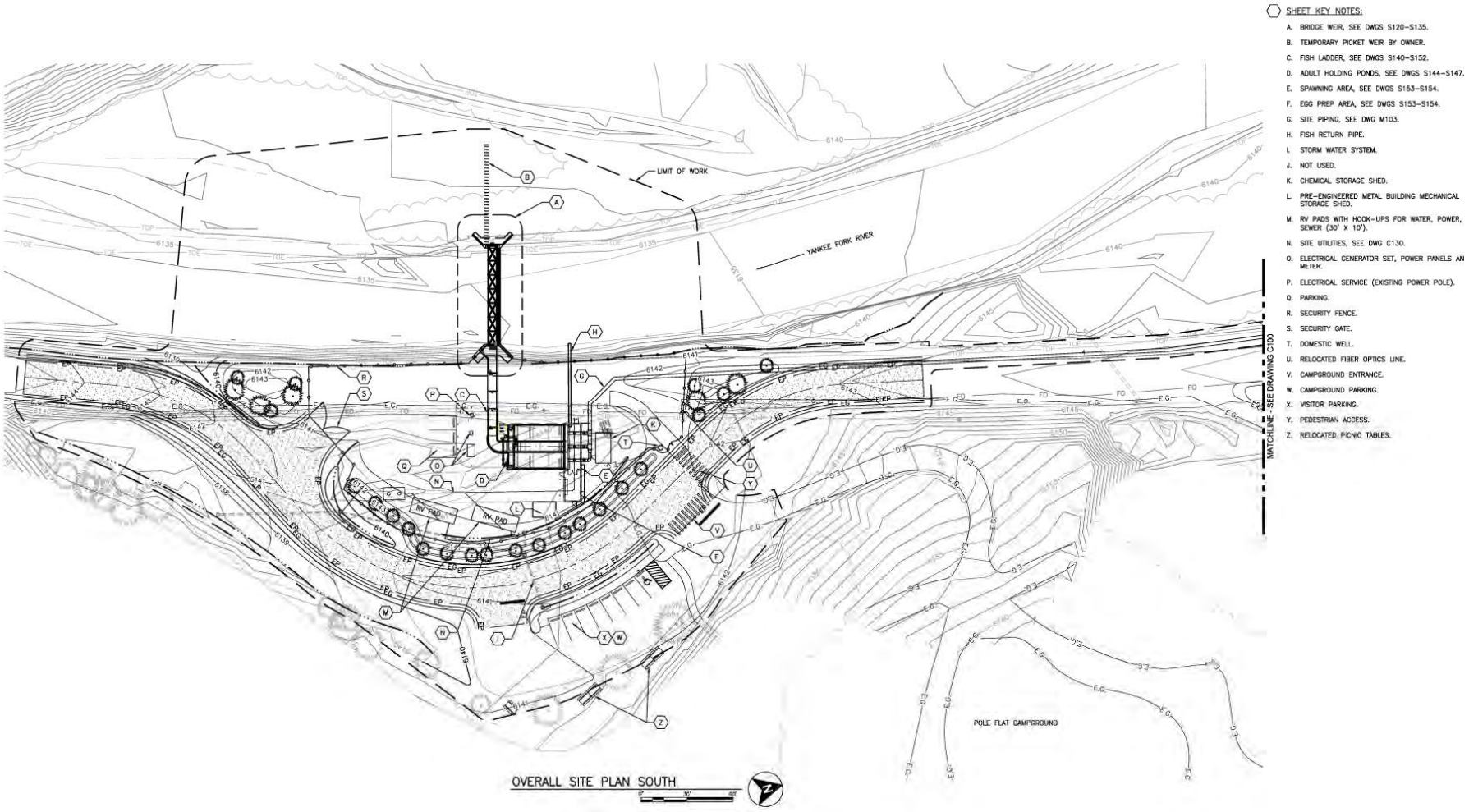
2.2 Construction Components

Under the Proposed Action, a new permanent fish trapping weir and fish holding and spawning and juvenile fish acclimation facilities would be built at the Yankee Fork location. The weir site on the Yankee Fork would be on USFS-managed land at Pole Flat Campground (Figure 2). The Tribes currently use this location and set up a temporary weir and a temporary field station on opposite sides of the heavily used Yankee Fork Road. At the weir site, the road is immediately adjacent and parallel to the top of the left bank (east bank) of the Yankee Fork. The existing onshore work area for the weir (fish handling area) is on the opposite side of the road from the weir. The proposed facilities would include the weir, adult fish holding and handling facilities, juvenile acclimation facilities and crew and equipment accommodations (Figure 9). Eggs would be transported from the Yankee Fork weir facility to the Crystal Springs hatchery for hatching and rearing. Once the Chinook salmon are ready for release, they would be transported by truck back to the Yankee Fork weir facility for acclimation and release.

Along with the existing temporary weir, the Tribes use other two other structures to monitor fish movement along Yankee Fork. These include a floating, portable, rotary screw trap (exemplified in Figure 8) and a PIT tag array. The rotary screw trap is located downstream of the Pole Flat weir, and is used to monitor and enumerate juvenile spring Chinook and steelhead. The PIT tag array is located in Yankee Fork, approximately 2 miles upstream of the Salmon River, and is used to detect and identify fish marked with PIT tags. Both structures provide the Tribes with information about the use of Yankee Fork by anadromous and resident fish. The screw trap and PIT tag array would continue to be used as part of the Proposed Action.

Figure 8. Example of a rotary screw trap

Figure 9. Yankee Fork weir facility components



- **Bridge Weir.** A new 65-foot long bridge weir (as exemplified in Figure 10) is proposed to be located a short distance downstream of the existing temporary weir site in order to locate the ladder entrance at a more defined stream bottom near the left bank of Yankee Fork. This weir would allow water to flow through a set of pickets, but would limit fish passage directing them toward the fish ladder leading to holding tanks. Tribal operators may need to deploy a temporary picket weir to extend the weir on the right bank to seal off fish passage.[9] Within the creek, the weir would be based on U-shaped pre-cast concrete sections excavated approximately 7 feet into the stream bottom, which would be backfilled with cobbles and gravel and support an 8-foot-wide flat segment of concrete (the sill). Gates to control stream flow elevations would be mounted onto the sill at the streambed elevation up to the walkway. The bridge portion of the weir would be steel construction, spanning the width of the creek. Rotating picket panels would attach to the upstream edge of the bridge and drop into place to seal against the concrete sill. Chain link fences and gates would be used to prevent public access to the bridge structure, and signage would be provided to indicate a portage around the right abutment for watercraft floating the river.

Figure 10. Example of a bridge weir in operation

[9] Deployment of this temporary picket weir would be limited to high flow events (when the Yankee Fork overtops its bank) during the early June Chinook trapping season. It is anticipated that this would be an extremely rare occurrence and is included in the design in the event of an unusual water year.

- **Jib Crane.** A jib crane is a permanent crane that would be installed adjacent to the bridge weir and used to remove debris from the weir and possibly for lifting fish for transfer to transport trucks or from a live box to the holding pools if the fish ladder is not effective at attracting fish at certain times (e.g. during low flow).
- **Fish Ladder.** The weir's panels are designed to guide fish to a 2-foot by 3-foot ladder entrance built into a precast concrete weir abutment. A vertical bar gate would control access into the fish ladder. A canal gate would also be installed to control water flow and completely isolate the ladder from the river for maintenance purposes. The five ladder pools average 12 feet long, 5 feet wide, and 5 feet deep and travel the required distance and elevation to the pre-sort holding pond. It is designed for 10 cfs flows over a range of creek elevations from 6,139 to 6,135 feet above mean sea level.
- **Adult Holding Ponds**. Three holding ponds for the collected adult salmon would be constructed adjacent to the weir on the east bank of the Yankee Fork. The ponds would be made of reinforced concrete walls and slabs. The pre-sort pond would be 6 feet wide and would be dedicated to holding adult fish prior to sorting. After sorting, fish would be placed in one of the two post-sort holding ponds. Pass-through gates would be provided in the pre-sort pool walls to minimize the amount of lifting required to move fish for the pre-sort to post-sort pools.
- **Egg Collection and Preparation Structures**. Adjacent to the three adult fish holding ponds, a three-sided structure would be built for collecting, fertilizing, and disinfecting eggs from the adult fish and a fully enclosed metal-sided one-story structure would be built for temporary egg storage prior to transport.
- **Chemical Storage**. A 10 foot by 20 foot pre-fabricated chemical storage building with built-in spill containment and explosion-proof construction would be installed adjacent to the fish holding ponds (to the north) to hold formalin (used for adult salmon treatments during holding and sorting) and iodophor (used to disinfect fertilized eggs for transport to the hatchery). The chemical storage shed would hold eight 55-gallon barrels of formalin and 5 liters of iodophor as well as the pumping and distribution piping. At the end of each season, the storage container would be removed and inspected prior to deploying it the next season.
- **Hopper Structure**. A fish hopper is a holding box and piping structure that aids in the transfer of fish from one holding pond to another. The hopper would measure approximately 6 foot by 6 foot.
- **Collection Facilities.** At the Yankee Fork adult collection facilities, sorting and processing activities would primarily take place in the spawning area. The egg preparation building would be utilized to store the eggs after spawning, along with egg transportation equipment. Both facilities would be located adjacent to the upstream end of the pre-sort and post-sort holding ponds.
- **RV Pads**. Two 30 foot by 10 foot areas would be graded and graveled to be able to park 2 RVs that would house employees during the adult trapping season. Human waste would be collected in a holding tank and would be pumped out as needed (disposed of offsite at an RV septic service or through a disposal service used by the USFS to service the Pole Flat Campground).
- **Water Source**. Water would be supplied through an intake structure in Yankee Fork. The water would flow through the facility back to the river without loss. The distance between the intake and the discharge through the fish ladder is approximately 1,260 feet.

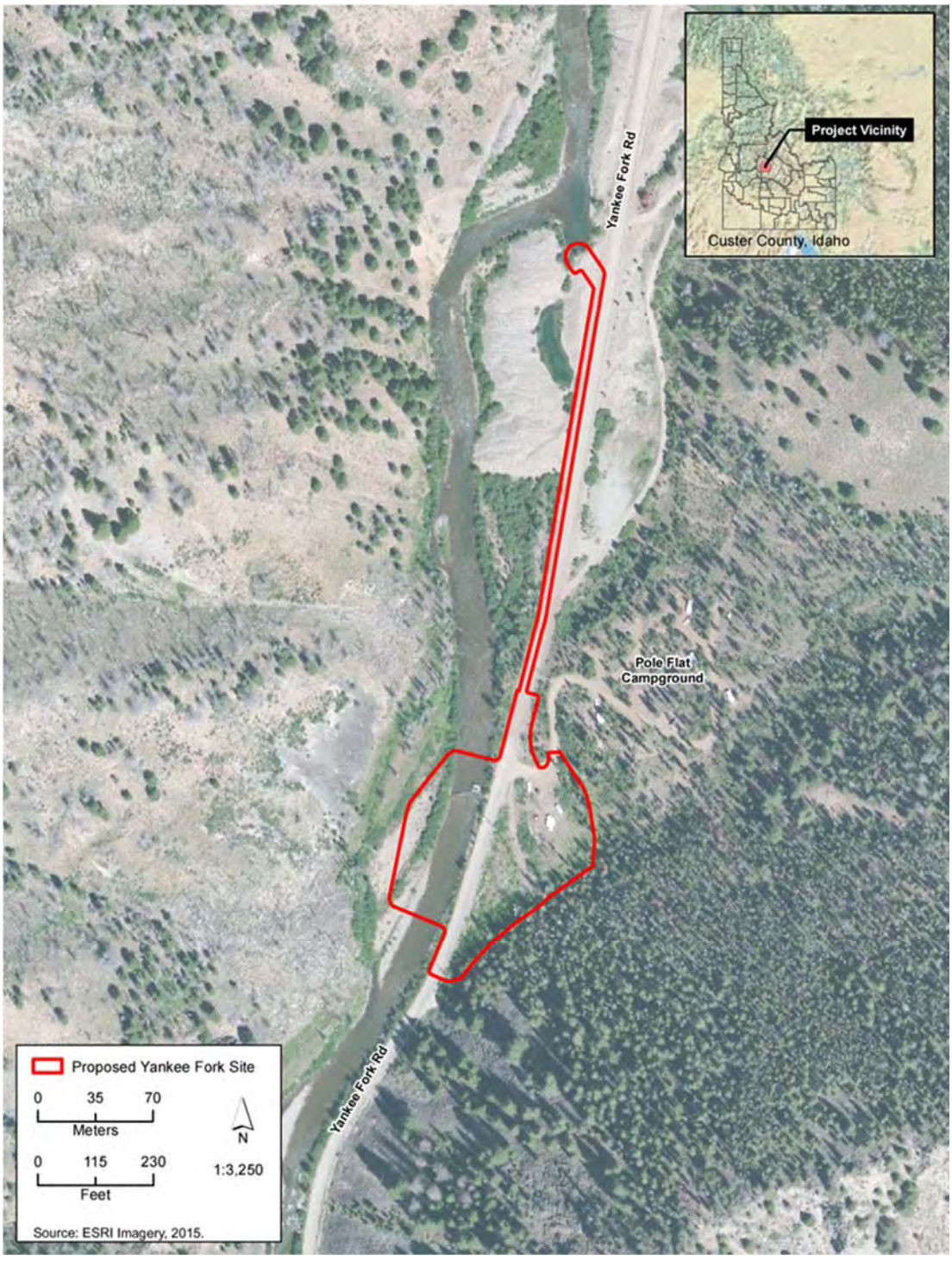
It is anticipated that the water required for the facility would be 10 cfs, approximately less than 5% of average stream flow. Potable water for the RV units would be provided by a small domestic well. If approved for construction, the Tribes would apply for a non-consumptive water right from the Idaho Department of Water Resources to operate the Yankee Fork weir facility.

- **Water Intake**. A gravity flow intake for the collection facility water supply would be located approximately 1,100 feet upstream of the facility site (Figure 11). The proposed intake screen would be a self-cleaning cone screen installed in a pre-cast concrete structure built into the stream bank in order to protect the screen from vandalism and to provide maintenance access. A 24-inch supply pipeline would route water from the intake screen to the facility along the west side of Yankee Fork Road. The pipeline would discharge into the holding tank diffusers. The water would pass through the holding pools and ultimately collect into the fish ladder. The water would discharge back to Yankee Fork through the ladder entrance.

- **Juvenile Acclimation.** Juvenile salmon would be acclimated in **e**xisting off-channel ponds located about 0.25 miles upstream of Pole Flat Campground. These ponds would receive juvenile fish trucked in from the hatchery for short-term acclimation and stress relief prior to release into Yankee Fork. The Yankee Fork ponds would provide for short-term holding of at least 165,000 fish at 10 fish per pound.

- **Yankee Fork Road Realignment.** About 425 feet of the existing paved road would be removed and a new 675-foot section of road would be constructed to the east and curved to circumvent the weir site. The road would consist of the same look and materials as the existing road section and would include landscaping berms and signage to increase the safety of the road features and minimize visual effects. It would provide three new access points to the lands adjacent to the road; one would access the facility, one would access a new public parking area for visitors to the facility, and one would provide a new entrance to Pole Flat campground, adjacent to the facility site. Once the new section of road was completed, the traffic would be rerouted to the new section, and the old road section would be converted to use for the Yankee Fork weir facilities (most of the road would be removed; some portions would remain for facility use). The speed limit for the new, curved section of road would be set at 20 miles per hour. The realignment would be designed to provide a safe work environment by routing through-traffic around the trapping facility and the holding ponds. The design would meet state highway standards and appropriate code requirements for horizontal and vertical curves, sight distances, and roadway design.

Figure 11. Proposed weir site on Yankee Fork showing upstream water intake location



2.3 General Impact Minimization Measures

Mitigation measures to be applied during construction and operation of this weir facility, as well as the hatchery and facility on Panther Creek, are listed in Chapter 2 of the EIS. The list is detailed and lengthy and contains numerous requirements for

- prevention of water pollution, air pollution, and soil contamination;
- public safety;
- contouring and revegetation of disturbed sites following construction;
- invasive weed protections;
- control of erosion, sedimentation, and dust;
- protections for fish, wildlife, and their habitat during construction;
- protection of wetlands and floodplain functions;
- protection of cultural resources;
- design features and color requirements for compatibility with natural environment;
- minimization of noise and light pollution; and
- safe chemical handling.

Many of the measures apply to all three features of the larger project and while many have direct bearing on the effects of the Yankee Fork weir facility on Wild and Scenic River values, many do not. The measures below, however, are specific to the weir in Yankee Fork. They relate to public safety; and design criteria and construction requirements to protect the banks and bed of the river from erosion damage during high flows at key structural points.

- Minimize disruption and adverse impacts on the customary users of the Pole Flat Campground and picnic area near Yankee Fork weir facility using several strategies:
    - Coordinating with USFS staff to ensure access to the campground is maintained for as much time as possible. If facilities are temporarily or permanently relocated, signage for new or alternate facilities should be clearly posted.
    - Coordinating with USFS staff to schedule construction activities to coincide with lower-use periods during the recreational season (e.g., on weekdays, or during less favorable fishing conditions).
    - Coordinating with USFS staff to minimize noise and visual disruption to recreational users by efficiently scheduling construction activities and staging work areas away from recreational areas to the greatest extent possible.
    - Coordinating with USFS staff to provide signage, warning boaters on the Yankee Fork of the presence and seasonal use of the weir structure.
- Return all non-target species entering the fish ladder to the Yankee Fork upstream of the weir.
- Avoid clearing vegetation prior to the spring bird-nesting season (April 1 to July 15).
- Erect temporary fencing around areas that are not to be disturbed to protect them during construction.
- Develop and implement a plan to revegetate temporarily disturbed areas to provide wildlife habitats and reduce the risk of weed encroachment.
- Minimize lighting and use lighting fixtures that direct light downward and not towards off-site areas.
- Develop and implement a plan to manage predatory wildlife attracted to the facility
- Install fish screens at water intake structures to minimize entrainment of aquatic species.
- Prior to distributing carcasses of spawned adults, develop a plan to avoid human/wildlife conflicts.

3 Effects of the Proposed Action on Yankee Fork

The Proposed Action is to construct a permanent weir across the Yankee Fork with adult fish handling facilities and crew and equipment accommodations. These would all be constructed between a relocated Yankee Fork Road and the river immediately downstream of Pole Flat campground. This construction would introduce the following features into this river and its corridor.

- A permanent 65-foot river-spanning weir with concrete abutments into the banks and a slab along the streambed. The weir would have a steel footbridge across the top. The weir will include gates to allow for control of stream flow elevations. A portage will be provided around the weir on the west bank of the river for boaters' use.
- A concrete fish ladder 5 feet wide and 60 feet long would run from the weir up the east bank to a series of three contiguous aboveground, 5 feet deep, concrete holding and sorting ponds measuring approximately 30 feet by 40 feet altogether.
- A collection of metal-sided structures for egg collection (three-sided), egg preparation(10 feet by 20 feet one-story), chemical storage (10 feet by 20 feet one story),
- Two 30 foot by 10-foot recreational vehicle pads, visitor parking, vegetative screening, and chain link fencing surrounding the entire facility to prevent unauthorized access.

Yankee Fork Road would be realigned up to 30 feet to the east to provide the necessary space between the river and the road to accommodate this 120 foot by 240 foot (approximately 2/3 acre) facility.

The acclimation ponds are located approximately 0.5 mile upstream from the trapping facility, well within Segment B. These ponds, however, are separated from the river and across from Yankee Fork Road, though connected downstream by a small stream. There will be no modification of these ponds or any construction of facilities. Fish pens will be used to contain fish for a period in the spring then opened for fish to make their own way to the river.

3.1 Alteration of Within-Channel Attributes of Yankee Fork

3.1.1 Position of Proposed Activity

The Yankee Fork weir will require construction activities within, and temporary and permanent modifications to, Yankee Fork's banks and bed in a number of locations.

Temporary impacts on Yankee Fork's channel would include the

- diversion channel for rerouting Yankee Fork during construction of the bridge-supported weir/fish ladder, acclimation pond outfall, and upstream intake structure
- construction activities for the upland structures: the spawning and egg preparation structure, chemical storage shed, RV pads, water intake and pipeline, and road relocation

Permanent modifications to the Yankee Fork channel would include the excavation of the streambed and both banks to install the pre-cast concrete sill, bridge-supported weir abutments, and fish ladder.

3.1.1 Anticipated Effects to Channel Location, Slope, Geometry, Form

Though the Proposed Action will temporarily reroute and dewater Yankee Fork during the construction period, the only permanent alterations to the Yankee Fork's channel are the minor changes associated with the weir's abutments, sill, and water intake. These structures consist of two "V"-shaped concrete structures on each bank connected by a 10-foot-wide concrete "floor" (the sill) across the riverbed. These structures may create minor flow alterations immediately

around them they are not anticipated to make, or create any significant alteration to the Yankee Fork's channel.

The buildings on the uplands adjacent to Yankee Fork would be constructed on a generally flat terrace landform and will not affect the channel.

The concrete abutments and sill forming the foundation of the proposed bridge weir have the potential to create flow obstructions and hydraulic conditions that promote bed sediment scour at the weir. If the bed scours deep enough it could lead to undermining and destabilization of the weir structure. Project design measures would be used to minimize risk of seismic impacts, soil settlement and depletion, and channel scour to negligible levels. Therefore, the likelihood of the weir affecting the Yankee Fork channel's location, slope, geometry or form is very low.

Figure 12. Example of permanent weir with abutments visible

3.1.2 Water Quality

Water Quality Effects from Facility Construction

There will be short term and temporary impacts on Yankee Fork's water quality during the construction of the facility. Construction of the upland facilities and road realignment could result in runoff from the construction site to the Yankee Fork. A National Pollutant Discharge Elimination System (NPDES) permit, erosion and sediment control plan, and Spill Prevention Control and Countermeasure (SPCC) plan for all construction activities would be obtained prior to ground-disturbing activities and implemented during construction to prevent or minimize this effect.

Several factors would minimize the potential for water quality impacts during construction: the proposed adult holding and spawning facilities at Yankee Fork lie on relatively flat ground, most construction would occur during the dry season, and sediment control BMPs would be

implemented to minimize the potential for runoff to enter surface waters. In general, a sediment and erosion control plan and hazardous material spill prevention and containment plan would be prepared and implemented. Silt fencing would be installed along the perimeter of the construction site; stockpiled excavated materials would be protected from water or wind erosion by covering where appropriate; and any surface water (rain) would be detained on site and filtered before discharge. The water intake, weir, and fish ladder within the Yankee Fork would be installed during the dry season within the approved in-water work window to protect listed salmonids; the site would be dewatered during installation; only precast concrete would be used; and turbidity curtains would be used to minimize the potential for sediment introductions to surface waters from the installation of in-stream structures. A number of additional BMPs would be required for the in-channel work, including that all equipment operating within the dewatered channel would be washed and dried and inspected regularly to ensure that it is properly functioning and leak-free. All cleaning and refueling activities would occur at least 300 feet from surface waters to minimize the potential for wash water and fuels to enter the Yankee Fork.

The weir and fish ladder would be constructed in three phases. During Phase 1, a lined diversion channel would be constructed on the west bank of the Yankee Fork to facilitate the diversion of water around the weir/fish ladder construction site. During Phase 2, the diversion channel would be breached, coffer dams made with plastic lined soil sacks (sand bags filled with clean native material) would be installed at the upstream and downstream ends of the diversion channel to facilitate the diversion of water into and out of the channel and provide a dewatered construction area for the weir and fish ladder. Further, a turbidity curtain would be installed below the downstream cofferdam. During Phase 3, the cofferdams would be slowly removed to return flow through the construction site, and the diversion channel would be filled and restored to preconstruction conditions.

Because of these conditions and implementation of mitigation measures and BMPs, the potential for temporary impacts on surface water quality from construction of the Yankee Fork weir facilities would be low.

Water Quality Effects from Facility Operation

The weir would be operational from June through August. Chinook salmon would be collected at the weir, moved to holding ponds, and held there until they are ready for spawning through September and October. From June through October, approximately 10 cfs of water would be diverted from the intake in the Yankee Fork through the holding facilities and back to the Yankee Fork through the fish ladder. This operation does not include fish feeding, only holding of the adults for spawning; thus, organic solids associated with feed would not be discharged to the Yankee Fork.

During this holding period it is possible that adult fish may need to be treated with formalin in the event of thermal stress during holding or an observable outbreak of infections in the holding ponds. Any such treatments would be prescribed at doses consistent with use of therapeutic chemicals within hatcheries as regulated under EPA's *Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category* (EPA 2004), which establishes limitations for aquaculture chemicals. In addition, the handling, application, and disposal of formalin would adhere to U.S. Department of Agriculture and U.S. Food and Drug Administration Center for Veterinary Medicine regulations and other state and federal regulations to protect human and environmental health.

If on-site staff determines there is a concern of pathogen infections to fish being held at the facility, and formalin treatment is considered necessary for fish health, then water flow through the ponds and fish ladder would be turned off to prevent discharge into Yankee Fork while treatment measures are applied. Following treatment and confirmation that all three ponds and

the fish ladder are free of formalin, the weir operator would restore water flow through the ponds and re-open access to the fish ladder so upstream fish passage could resume. Following these protocols and accepted standard practices by appropriately trained staff, treatment applications would be applied only when necessary, at dosages not harmful to fish or other biota, and of short duration. Therefore, the potential impacts of formalin treatment on the Yankee Fork water quality would be **low**.

The potential effects on water quality from acclimation activities in the Yankee Fork are expected to be low. Acclimation of Chinook salmon smolts would occur in batches in existing off-channel ponds upstream of the facility in the spring (April through June). Though there may be organic solids (i.e., feces) produced in the pond due to smolts feeding on native prey, these fish would not be fed thus minimizing such impacts on Yankee Fork. No therapeutic chemicals would be used during acclimation.

3.1.3 Navigation of Yankee Fork

This facility would prevent passage by recreational rafters and kayakers. These river users would have to take out and portage their gear approximately 300 feet around the facility. The location of this facility is at a logical put-in or take-out on the east bank, and a portage route around the west bank of the facility is available. When flows are adequate, short segments of Yankee Fork (of which this in not one) are used for advanced kayaking.

There would be low to no impact on navigation by recreation users.

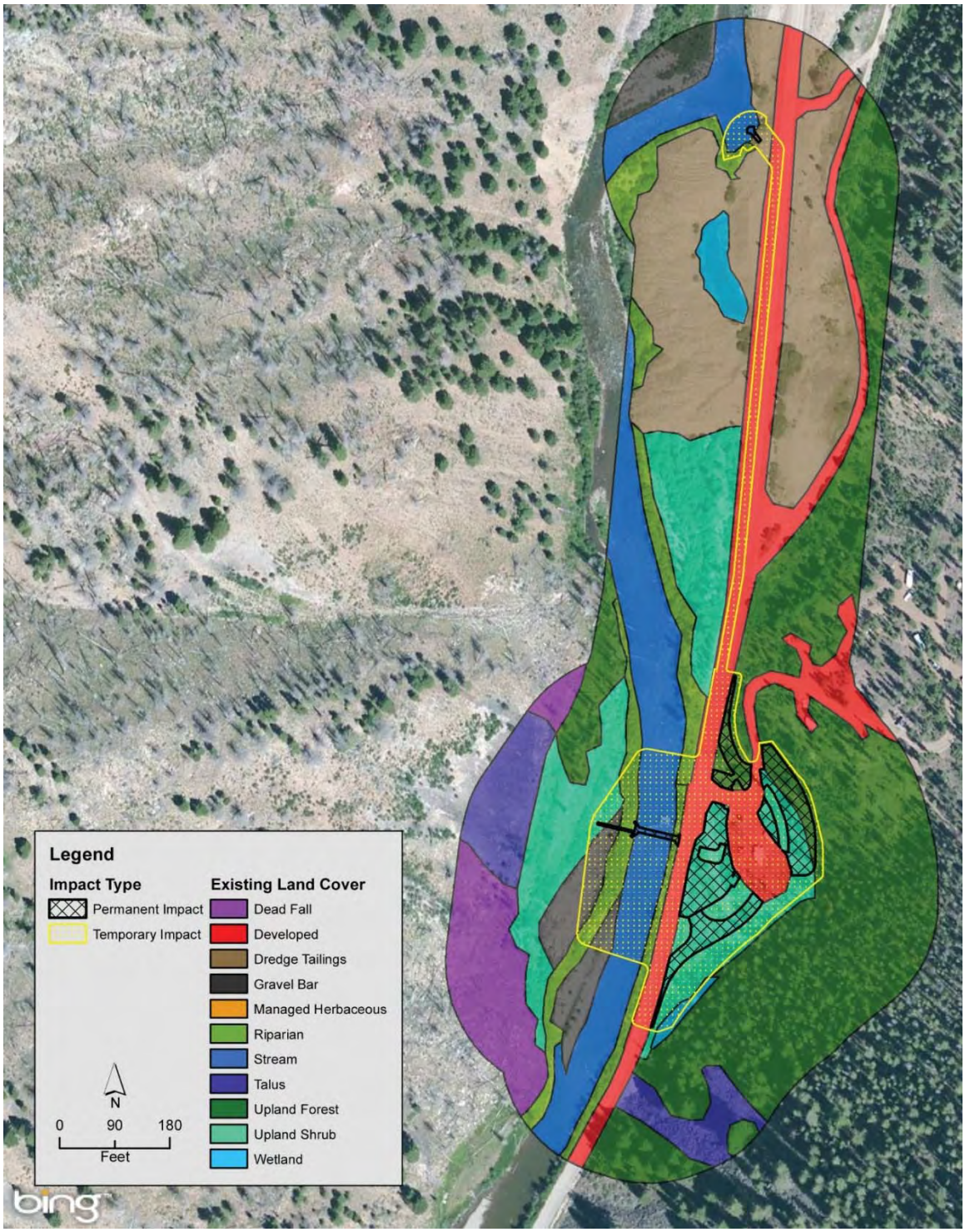
3.2 Alteration of Riparian and/or Floodplain Conditions

3.2.1 Riparian Vegetation

The Yankee Fork weir facility site has been previously disturbed by gold mining activities, road construction, and the development of adjacent recreational facilities (e.g., campgrounds) thus only narrow riparian areas are now present along the banks of the Yankee Fork. Figure 13 demonstrates the limited extent of riparian vegetation within the project area. The riparian cover type occurs along both sides of Yankee Fork. On the east bank, riparian areas are present in a narrow strip between the channel and Yankee Fork Road and at the northern tip of the site. On the right (west) bank, riparian areas occur along an exposed gravel bar. Dominant vegetation in this cover type is mountain alder, with Geyer's willow, other willows, twinberry, swamp birch, bluebunch wheatgrass, and other grasses also common. Several young lodgepole pine saplings and a few larger trees are also present along the left (east) bank. Overall, the riparian cover type occupies 1.31 acres (6%) of the Yankee Fork weir facility site.

The new facility would remove approximately 10 square feet of wetland vegetation and impact approximately 60 feet of streambank by installation of the abutments. These small amounts are of very little effect to stream function, floodplain function, fish and wildlife habitat, scenic and recreation values, etc. Only 0.01 acres of riparian habitat (total for the entire facility) would be permanently disturbed.

Figure 13. Existing cover types with permanent and temporary impact locations identified



3.2.2 Soil Properties

Construction of the new site facilities would result in conversion of existing soil surfaces into human-made surfaces that would result in the loss of soil resources. Most of the conversion would be due to the construction of gravel surfaces for the day-use area, RV pad, and staging area around the proposed bridge weir and adult holding and spawning facilities. Additional conversion would be due to concrete poured for a road through the site. About 425 feet of the existing Yankee Fork Road would be removed and a new 675-foot section of road would be constructed to the east and curved to circumvent the weir site. Concrete would also be used for foundations for other smaller facilities, such as the holding ponds and the weir.

Soil erosion could occur at the Yankee Fork site on fresh cut ground or areas where hydrologic runoff patterns are altered due to grading and new site infrastructure (e.g., channelized flow, slope over-steepening) that would result in the loss of soil resources. The potential for soil erosion is considered low due to the generally flat topography at the site and the coarse alluvium that makes up the terrace where construction would occur. Upon completion of construction, the primary source of stormwater runoff concentration that could cause soil erosion in the long-term would likely be created by realigning and lengthening the new concrete road proposed for the site, since this would create additional impervious area at the site. Impacts from the construction of the Yankee Fork weir facility on geology and soils would be low.

3.2.3 Floodplain Properties

Although there are no FEMA-mapped floodplains on the Yankee Fork weir facility site (FEMA 1988), the 100-year floodplain was determined for the middle and lower Yankee Fork by Reclamation during a 2012 tributary assessment using 1-meter LiDAR data modeling at the geomorphic reach level. Based on this assessment, Reclamation determined that the historic floodplain along much of Yankee Fork is disconnected from the channel by dredge tailings (Reclamation 2012). As such, the current floodplain is largely confined to the channel. The present channel is similar to the pre-dredging condition, when the channel was moderately confined by higher surfaces, alluvial fans, and bedrock into a relatively straight, free-formed alluvial channel.

The proposed temporary bypass channel, portions of the bridge-supported weir abutments, and the intake structure would be located within the 100-year floodplain of Yankee Fork. Construction of these features would require the excavation of native material from these areas and the placement of rock backfill, concrete, and other materials (e.g., plastic liner). Material removed from the excavation of the bypass channel would be temporarily stockpiled in the floodplain. This would occur during the summer, when flood risks are minimal. Following construction, the diversion channel would be re-filled with this material and re-vegetated with native plants. The other features would remain as permanent structures in the floodplain, resulting in a total floodplain impact of 668 square feet (0.015 acres). These temporary and permanent impacts would not result in significant changes to floodplain capacity nor would they alter flood flows. With mitigation, impacts on the Yankee Fork floodplain would be low. Due to the low risk of flooding during construction, the implementation of mitigation measures during construction activities, and the minimal area of permanent structures in the floodplain relative to the size of the floodplain, impacts would be low.

3.3 Alteration of Upland Conditions

The Yankee Fork weir facility site has been previously disturbed by gold mining activities, road construction, and the development of adjacent recreational facilities (e.g., campgrounds).

Vegetated areas within the site include narrow riparian areas along the banks of the Yankee Fork; upland and wetland shrubland located along the east side of Yankee Fork Road and around the current worksite; and upland forested areas located near the Pole Flat Campground entrance and on the steeper slopes to the east. Un-vegetated areas within the site include exposed gravel bars, areas of dredge tailings, the Yankee Fork channel, and existing roads and parking areas. Surrounding land cover includes forested areas and talus on the surrounding slopes to the east and west, including a previously burned area on the west side of the channel that contains a considerable number of standing snags and downed woody debris.

Vegetative cover types and the impacts of project activities are displayed in Figure 13 (above) and enumerated in

Table 3. Construction impacts on vegetation cover types

Vegetation Cover Type	Total Area in Site (Acres)	Total Impacts (Acres)	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Riparian	1.31	0.33	0.33	0.01
Wetland Scrub-Shrub	0.19	0.02	0.02	0
Upland Shrub	2.66	0.92	0.31	0.62
Upland Forest	6.27	0.30	0.08	0.21
Dead Fall	1.04	0	0	0
Stream	2.30	0.53	0.51	0.02
Gravel Bar	0.82	0.16	0.16	0
Dredge Tailings	3.53	0.04	0.04	0
Talus	0.90	0	0	0
Developed	2.80	1.05	0.45	0.60
Total	**21.82**	**3.35**	**1.89**	**1.46**

Clearing and grading for construction of the permanent Yankee Fork weir facility would result in the permanent removal of 0.86 acres and the temporary removal of 1.44 acres of vegetation (Figure 13). Permanently cleared areas would be replaced with asphalt and gravel road, gravel parking areas, and other facility infrastructure (e.g., bridge-supported weir, adult holding and spawning facility).

The majority of the activities would occur in the upland shrub cover type, affecting approximately 0.92 acre of this type. Clearing and grading work in this cover type would remove mostly native species including mountain alder and willows. Approximately 11 native trees, (mostly lodgepole pine and quaking aspen saplings) would also be removed. Construction of the temporary bypass channel and weir would require the removal of approximately 0.33 acre of riparian vegetation (mostly mountain alder and willows). Of this, only 0.01 acre would be a permanent removal associated with permanent structures, the temporary vegetation removal, which affects the inlet and outlet of the temporary bypass channel, would be replanted when construction is complete.

The operation of the Yankee Fork weir facility could increase potential for the spread of invasive species and noxious weeds, though development and implementation of a site-specific vegetative

management plan (as required in the mitigation measures) would minimize this potential at the weir site and in the immediate vicinity.

Overall, only 11.47 acres are currently vegetated (total area minus 'developed,' 'talus,' 'dredge tailings,' and 'stream'). Of these, only .84 acres would be permanently affected. This is approximately 7% of the vegetated area within the project site and less than 4% of the entire project area. The effects on upland vegetation conditions are low.

3.4 Alteration of Hydrologic or Biological Processes

3.4.1 Ability of the Channel to Change Course, Re-occupy Former Segments, or Inundate Its Floodplain

Aerial photographs show very little channel migration of the Yankee Fork between 1999 and 2004. The channel is constrained by sections of riprap along its eastern bank, which parallels Yankee Fork Road. No lateral movement and migration into the terrace feature along the channel's western bank, which is a heavily vegetated area, is evident from the aerial photographs.

Construction of the weir in the place of the road's existing riprap will not change the river's potential to change course or migrate within its floodplain to the east. Future channel migration would be most likely to occur on the west bank, which is not along Yankee Fork Road. This would be no change from the current condition.

3.4.2 Streambank Erosion Potential, Sediment Routing and Deposition, or Debris Loading

The proposed bridge weir would create a backwater effect while operating with the bridge and picket panels deployed in the channel by increasing depths and reducing flow velocities. The backwater effect would reduce the sediment transport potential of the Yankee Fork in the affected reach upstream; this could lead to sedimentation. Since the Yankee Fork is a moderately steep channel, the backwater effect would be relatively low and not extend far upstream. The physical barrier created by the weir would block sediment and debris coming downstream. The potential for the bridge weir to trap sediment and debris is most likely to occur during the high-flow months of late spring and early summer. Because of this, the bridge and picket panels would be rotated out of the channel during high-flow months to an elevation 2 feet above the 100-year flood elevation leaving only the weir sill and abutments in place. The precast concrete boxes that create the weir sill would be set approximately 8 feet into the channel bed with the tops aligned so they are approximately at grade with the existing substrate profile. Furthermore, a jib crane would be permanently installed adjacent to the bridge weir and would be used to remove debris from the weir that may accumulate during low-flow conditions. These measures would prevent the weir from creating a major flow obstruction that would lead to problematic sedimentation or debris accumulation. Any sediment deposited upstream of the weir during low-flow conditions would likely be transported quickly out of the reach with the return of higher flows.

3.4.3 Amount and Timing of Flow

The proposed permanent Yankee Fork weir facility would require the diversion of approximately 10 cfs of water from the Yankee Fork through the adult holding facilities. Since the facility is a non-consumptive use, the entire water volume would be discharged back to the Yankee Fork approximately 1,260 feet below the intake via the fish ladder. Water would be diverted between June and mid-October of each year when the monthly mean flow of the Yankee Fork would range between 934 cfs and 73 cfs, (USGS 2015a); thus, the diversion would vary between a spring minimum of 1% of Yankee Fork flow, and a late summer maximum of 14% of Yankee Fork flow

(Table 4). These flow changes would only affect the 1,260 feet of the Yankee Fork located between the intake diversion and the discharge.

The proposed Yankee Fork weir facility would not require water diversion for acclimation of Chinook salmon smolts in the spring. The smolts would be acclimated in existing ponds connected to the river.

For these reasons, impacts on the flows in the Yankee Fork would be localized, would not result in a basin-wide or annual decrease in flow, and would, therefore, be **low**.

Table 4. Mean monthly discharge (2012–2014) and percent to be diverted for adult holding

	Month					
	May	**June**	**July**	**August**	**September**	**October**
Yankee Fork						
Mean Monthly Discharge (cfs)	934	596	196	88	73	90
Percent Diversion	1.1%	1.7%	5.1%	11.4%	13.7%	11.7%

3.4.4 Flood Storage (Detention Storage)

Operation of the bridge-supported weir would not be expected to adversely affect the 100-year floodplain of the Yankee Fork. The permanent structures in the floodplain (bridge-supported weir abutments, intake structure) would likely not significantly obstruct the floodway or cause a rise in the 100-year flood elevation. Although the proposed weir panels would extend below the 100-year flood elevation when deployed, they could be rotated out of the river channel during high flows and are designed to be approximately 2 feet above the 100-year flood elevation in the up position. There would be no change to the detention storage capacity of the floodplain from the construction or operation of this facility.

3.4.5 Biological Processes

3.4.5.1 Reproduction, Vigor, Growth and/or Succession of Streamside Vegetation

As discussed in Section 3.2.1, riparian vegetation within the project area is limited to a narrow corridor immediately alongside Yankee Fork and the new facility will temporarily impact approximately 60 feet of streambank during installation of the abutments with only 0.01 acre being permanently lost within the final footprint of the structures. This small amount is of very little effect to stream or floodplain function, and will have no impact on the remaining habitat's reproduction, vigor, growth and/or successional development.

3.4.5.2 Nutrient Cycling

Given the very small amount of streambed, bank, and riparian habitat altered there is expected to be very little, if any, impact on nutrient cycling within this stream. There will likely be an increase of nutrients during the spring acclimation period as fish waste from the acclimation ponds will flow into the Yankee Fork. As discussed above, however, fish will be acclimated in batches and the discharged organic solids would not be highly concentrated to minimize adverse impact from this additional input. The effect on nutrient cycling, if any, is expected to be localized, with no effect upstream or further downstream in Yankee Fork.

3.4.5.3 Fish Spawning and/or Rearing Success

Effects on fish spawning and/or rearing success would come from temporary impacts on their habitat during construction, long-term losses or impacts on their habitat from the presence and operation of the completed facility, and the direct impacts from trapping fish.

Construction Impacts

During construction there will necessarily be a high degree of short-term impact on spawning habitat from the operation of machinery in and along the Yankee Fork and the sedimentation, vegetation loss, and disturbance such activity entails. This activity, however, is temporary and timed to occur outside of the spawning and juvenile migration period so spawning or migrating fish will not be directly affected. Construction will also proceed under the constraints of multiple mitigation measures designed to protect water quality and fish habitat.

Operational Impacts

During operations, the primary effect on fish and fish habitat is the reduction in flow in the 1,260-foot reach between the water intake and the outflow at the fish ladder (Section 3.4.3). This reduction, however, is small relative to typical year-to-year variations caused by flow variation under natural conditions (Table 4). The section of river with reduced flow is a small proportion of the habitat available in the basin as a whole, and is not of exceptional value relative to adjacent upstream and downstream reaches of the stream. There is ample habitat for spawning and rearing upstream of the intake as well as downstream of the outfall. This small reduction in the proportion of available flow between the intake and fish ladder is not sufficient to produce an impediment to migrating fish. Because the water use would not dewater the stream, and fish use would likely be concentrated in deeper areas during extreme low flows, it is likely that fish in the affected section of the stream would only experience a small reduction in available habitat.

As discussed in Section 3.1.2 there would be negligible impact on water quality from fish occupancy of the acclimation ponds and chemical uses during active trapping and holding activities. Little, if any, effects to fish spawning or rearing is anticipated from this level of water quality impact.

Short-duration, localized turbidity inputs from use of the jib crane can be expected creating temporary impacts on fish in the immediate work area by impairing foraging, delaying migration, or exposing their gills to silt.

Fish Capture Impacts

The Yankee Fork fish trapping facilities would be operated from June to September each year to collect Chinook salmon for broodstock. This directly impacts their natural spawning behavior and opportunity.

The weir would direct fish to the fish ladder and to the sorting and holding facilities. In the sorting pond, fish would be sorted, and non-target fish, such as bull trout, steelhead, and other game and non-game fish would be released upstream of the weir. In addition, if bull trout were observed congregating above or below the weir, some of the weir pickets would be temporarily rotated out of the water to allow passage by the fish.

Operation of a weir could affect fish in several ways. Direct impacts such as injury could occur at the time of capture, while indirect impacts such as changes in behavior or health from delayed migration could occur later. Fish would be typically trapped and handled at the weir and the presence of a weir could lead to delay in upstream and downstream migration of fish. Consequences of migration delay can vary depending on site-specific conditions and context. Extended migration delay lasting more than 24 hours or delay during periods when temperature

and habitat conditions are unfavorable can have a number of adverse effects on salmonids (McCullough 1999; Goniea et al. 2006; Bjornn and Reiser 1991). Delayed migration in high-current areas can increase energy expenditure, reducing energy reserves necessary for successful spawning. Delay during periods with elevated water temperatures can increase exposure to unfavorable temperature conditions, resulting in reduced survival and fitness. Migration delay in locations without suitable cover can expose migrating fish to predation and poaching mortality (Cuenco and McCullough 1996; McCullough et al. 2001).

Measures to avoid, minimize, and mitigate effects to ESA-listed fish from these activities would be implemented as advised by consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. These would include measures such as limiting the duration and frequency of collection activities to avoid and minimize migration delays, and adopting procedures intended to minimize stress and injury from handling and release after inadvertent capture in trap facilities.

3.4.5.4 Riparian Dependent Avian and Amphibian/Mollusk Species' Needs

The riparian habitats near the Yankee Fork weir are likely used by a wide range of species associated with rivers, including osprey , great blue heron, mink, and water vole. The river and associated wetlands and side channels are likely used by amphibians, such as Pacific chorus frog, long-toed salamander, western toad, Idaho giant salamander and possibly the Columbia spotted frog, a USFS Sensitive Species. Birds that may use riparian areas include grouse, willow flycatcher, Wilson's warbler, and song sparrow. No sensitive or listed species of mollusk are known to inhabit the area.

Short-term construction impacts

Construction would involve re-routing the main Yankee Fork channel into a temporary channel for approximately two weeks during low flows in the fall. While this may affect amphibians and aquatic invertebrates using this portion of the river, amphibian use of the main channel is likely low due to the high flow energy and low water temperatures in the stream, and the overall effect is expected to be low and temporary.

Construction would avoid vegetation clearing during the spring breeding season (April 1 to July 15) to avoid disturbing active nests or den sites during construction. Most wildlife could thus simply avoid the site during construction. Smaller animals that may be present on site throughout the year, such as amphibians and rodents, may be injured or killed during site clearing, grading, and dewatering, a moderate impact.

Construction would potentially result in mortality of any slow-moving amphibians present in the areas of clearing and active construction, but as the facility area contains little habitat suitable for frogs and both construction and operations would occur subsequent to their late-spring breeding period, few individuals are anticipated to be at risk. The resulting impact would be **low**.

Long-term operational impacts

The permanent footprint of the proposed facility would eliminate the habitats that would be displaced by it. Only .01 acres of riparian habitat will be permanently lost so the overall impact on riparian dependent species would be low.

The water diversion serving the holding ponds and fish ladder have the potential to entrap amphibian adults, larvae, or eggs through the intake systems. The use of fish screens would help to minimize such mortality.

Disturbance from noise, lighting, and human activities is expected to be low. This area is adjacent to a campground and has seen weir operations for many years, so species in this area are likely accustomed to human generated noise, light, and activity.

3.5 Magnitude and Extent of Potential Off-Site Changes

As discussed above, there would be minimal changes and effects from this action on flow, hydraulics, and floodplain function for Yankee Fork. The scale of likely changes to the banks and channel is measured in fractions of an acre and well within the degree of change the river naturally experiences. Flow of water below the facility would not be altered in either amount or timing.

There is thus no potential for physical effects to extend to other parts of the river system and no off-site changes as a direct result of this project other than a likely future increase in returning Chinook salmon in the Columbia, Snake, and Salmon Rivers. This is not an adverse effect, but a desired condition that would support potential future Wild and Scenic River designation for Yankee Fork. The indirect effects of these restored runs will likely increase recreation activity (fishing demand would likely increase along with camping, sightseeing, and recreation-based economic activity such as fishing guides, lodging and dining services on private lands, etc.).

3.6 Time Scale of Effects

There are two time scales to consider when evaluating effects of this facility. First is the construction period, which is expected to occur in a single year during the low flow months of July through October. The second period is long term, where the effects of facility operations must be considered.

Effects during the construction time frame are expected to be realized within a single year, with perhaps some residual effect during vegetative and physical 'recovery' of the site for perhaps two to five years thereafter. Construction impacts and effects (vegetation impacts, turbidity, traffic, noise, etc.) to Wild and Scenic River values during this timeframe will be temporary, with the expectation that few (e.g. vegetation recovery) will be evident even one year following construction.

The operational effects, and those resulting for the presence of the facility, however, have no scheduled end. These effects can include the minor localized effects on water quality and flow through the stream length of the facility, and significant improvements in fish populations.

The long-term goal of recovery of ESA-listed Chinook salmon is the overriding interest and focus when evaluating time-scale of effects from this project.

3.7 Project Effect on Wild and Scenic River Management Goals

3.7.1 Effects on Free Flow

The Proposed Action will not change the free-flowing character of the river downstream from the facility. There are no impoundments, and no straightening or redirection of the river. There is however a 1,260 foot-long non-consumptive water diversion, abutments on each river bank, and a narrow slab across the river bed with temporary/ removable screening sufficient to trap fish and block passage from June through September, with no hindrance to fish or animal movement at other times of the year.

3.7.1.1 Water Diversion Effects

There is no consumptive water diversion that would reduce flows downstream from the facility. There may be a small volume of water loss due to evaporation, spills, or any leaks during flow-through, but this will likely be miniscule.

There would be a non-consumptive water diversion between the intake and the fish ladder as described above. The distance between the intake and the discharge through the fish ladder is approximately 1,260 feet. The water flow rate through the facility would be approximately 10 cubic feet per second (cfs), so flow in the Yankee Fork would be diminished by this amount in the reach between the intake and the discharge.

Flow in the Yankee Fork typically ranges from a winter low of about 40 cfs to a spring peak of up to 2000 cfs. The facility would be operated between June and October, during which time the monthly mean flow of the Yankee Fork ranges between 934 and 73 cfs, respectively (USGS 2015a). On average, facility water requirements would divert up to a late summer maximum of 14% of Yankee Fork flow (10 cfs usage relative to mean flows of 73 cfs). Historically, flows in the Yankee Fork have been as low as 48 cfs (daily mean) in September, which would result in use of up to 21% of the streamflow for facility operations. Earlier in the summer, when flows are higher, the flow reduction would generally be less than 5% of streamflow. These flow reductions in this length of stream are expected to have minimal effect on fish and riparian habitats.

3.7.1.2 Weir Effects

The weir neither impounds water nor redirects its flow. It merely serves as a support for the panels that will direct fish passage into a fish ladder and holding tanks. It has no effect on the flow of water down Yankee Fork beyond its immediate passage over the sill (see Section 2.2).

3.7.1.3 Allowance for Structures in Recreation Wild and Scenic Rivers

The Act allows for "minor structures at the time any river is proposed for inclusion in the Wild and Scenic River System." For these segments, that time of *formal proposal* has not yet arrived. These segments have been found *eligible*, but a *suitability determination* (which must precede a *proposal*) has not yet been made, so full protection from structures is not yet required. Additionally, the scale of the structures considered here is consistent with the scale of structures discussed as being allowable for rivers proposed for designation under the 'Recreation' category (Forest Service Handbook 1909.12 8.2).

Thus, construction of this facility does not automatically compromise this Segment's eligibility for Wild and Scenic River designation. The deciding official can consider whether the in-stream structures proposed here can be authorized in this decision and likely fit the category of 'minor' allowable structures that would not compromise the free flowing characteristics of the river at the time it is formally proposed, if ever.

The Wild and Scenic Rivers Act makes clear, however, that such allowance for structures "shall not be construed to authorize, intend, or encourage future construction of such structures in components of the national wild and scenic rivers system."[10] While this only applies to rivers within the system, the intent appears clear, when considered alongside the protective intent of Forest Service policy, that such allowance not be construed as liberty to construct. Nonetheless, as discussed below, these structures are intended solely to enhance **Fish**, a critical ORV for this

[10] Public Law 90-542 at Section 15. (b).

river. Additionally, the structures are intended for removal once species have fully recovered; they aren't intended to be there in perpetuity, as is the designation of a Wild and Scenic River. Therefore, a case for responsibly considering and approving these structures can be made.

3.7.2 Effects on Water Quality

As discussed in detail in 3.1.2 above, there will be insignificant impacts on Yankee Fork's water quality from the construction and operation of the weir facility.

3.7.3 Effects on Floodplain Conditions

As discussed in detail in 3.2.3 and 3.4.4 above, there will be insignificant impacts on Yankee Fork's floodplain conditions from the construction and operation of the weir facility.

3.7.4 Effects on ORVs

3.7.4.1 Effect of the Proposed Action on the Recreation ORV

The Proposed Action will not change the flow of the river downstream from the facility. Recreation opportunities dependent on river flow such as fishing, kayaking, swimming, etc., would not be affected below the facility. There may, however, be an effect on launching sites for kayakers. At present, kayakers can park in or near the Pine Flat Campground and launch their kayaks below the temporary weir, carrying their craft only 100 to 150 feet to get to the river bank below the weir with a single crossing of Yankee Fork Road. The proposed development, however, creates a scenario where river users must walk approximately 300 to 400 feet, most of it along Yankee Fork Road, before being able to launch their craft below the weir facility. The proposed development provides parking sites, but no convenient or safe access to the river above or below the facility.

The installation of a permanent weir across the river would adversely impact river rafting and kayaking as the temporary weir does now. The existing temporary weir was not in place when the original eligibility determination was made, so it was not a consideration when eligibility was determined. Launching sites above the canyon, yet below the gravels on private land upstream are limited to this section of the river at Pine Flat campground for those seeking to run the canyon below. The limiting of safe river access by this facility detracts from the Outstandingly Remarkable Recreation Value.

The Proposed Action places an industrial-style facility (concrete structures, metal buildings, and chain-link fencing) on the banks of the Yankee Fork very near a developed campground. These structures, however, would be constructed to minimize the potential for adverse visual effects by using color and texture to best blend in to both the natural landscape and the existing structures in this valley (in Segment B). A vegetated berm would be constructed to screen this development from the Yankee Fork Road and Pole Flat Campground, and lighting would be muted to minimize light pollution. The effects of this development using the mitigations described above are disclosed in Chapter 3 of the EIS under 'Visual Quality.' The conclusion there is that there would be no adverse visual effects and that the Visual Quality Objective of 'Retention' (the most protected, pristine, etc.) would be met. However, this assessment of negligible visual impact is accomplished through mitigation and is designed primarily for the benefit of those traveling on Yankee Fork Road. The facility is not rendered invisible and would be readily seen by viewers on the river and its banks. Road travelers may not see it in its fullness, but river users would, and the primary focus of this ORV is river-focused recreation.

In summary, the development would have an adverse effect on river-based recreation at this location. It removes river frontage from access near a campground and at a location with limited river access above the canyon and below private land. It creates a barrier around which river

users must portage, and it places an industrial-appearing facility within a near-natural-appearing landscape.

While the facility compromises the ***Recreation*** ORV at this location in Segment A, such a compromise is not wholly inconsistent with the nature of Segment B immediately upstream (thus the efficacy of the visual mitigation measures discussed in Chapter 3 of the EIS). Segment B is characterized by human activity and development on private land.

Nearly all of Segment A is downstream of the proposed facility, and would remain unaffected. The ***Recreation*** ORV within the canyon remains unchanged. Once a river user enters the canyon, the scenery and river conditions change measurably, and expectations of a human-influenced landscape are left behind. Only the small stretch of river within Segment A above the canyon is affected.

Both Segments A and B were found eligible under the ***Recreation*** category for Wild and Scenic Rivers that, according to Forest Service Handbook 1909.12.8.2 for designated rivers allow for existing minor instream structures (low-head dams, diversions, rip rap etc.) but prohibits new structures and developments. These segments are not yet designated, nor yet assessed for their suitability (see distinctions under "***Free Flowing***" above). As such, constructing the facility at this time may not be prohibited by USFS policy and may not compromise continued eligibility of this Segment. In addition, by including improvements and mitigation for river-based recreational use at the site (by providing safer access than exists now and a modest launch site below the weir), the facility can be made to improve river-based recreation such that a future suitability determination might even be strengthened. The site is not wholly inconsistent with Segment B, and can augment recreation values within Segment A.

While there would be impacts on the ***Recreation*** ORV, the effects of those impacts do not necessarily disqualify this River from continued eligibility for future Wild and Scenic River designation.

3.7.4.2 Effect of the Proposed Action on the Geology ORV

The geology of the area would not be affected by the construction of a weir across the Yankee Fork. Views of the geology in the canyon below the proposed development would not be affected. The only place where views of the geology in Segment 3 might be affected could be where travelers on the Yankee Fork Road travel downstream through the scenic transition from the valley (with its evident human occupation) to the canyon (where human occupation is absent). This weir facility would be the last constructed facility visible as they might view the upcoming canyon-forming geologic features. This is likely to be of no consequence to most river users and is not expected to have any adverse effect on the ***Geology*** ORV as it relates to the eligibility determination for this river segment.

3.7.4.3 Effect of the Proposed Action on the Fish ORV

The effects on fish (Section 3.4.5.3) from the Proposed Action are variable depending on the species and/or the timeframe considered. Adverse effects to fish could be expected during construction of the weir and its attendant facilities. There may be some adverse effect to bull trout, which have benefitted in the absence of Chinook salmon, but the overriding effect of the Proposed Action is an expected restoration of threatened Chinook salmon runs sufficient to support Tribal and recreational fishing in the future. This is an overwhelming beneficial effect on this ORV and strengthens this river segment's eligibility for future designation.

For the purposes of this assessment, it is important to recognize that salmon restoration efforts and their attendant facilities, such as this project, are intended to be temporary until fish runs are restored. 'Temporary' in this context may mean many decades, but the intention is that these

artificial means of re-establishing and supporting fish runs would ultimately become unnecessary as native and naturalized populations provide all the reproduction and escapement necessary to maintain populations at desired levels. From a Wild and Scenic Rivers perspective, this translates into short and medium-term impacts for long-term gains.

3.7.4.4 Effect of the Proposed Action on the History ORV

There would be no adverse effect to the ***History*** ORV. The original finding of the 1998 team focused on structures, town sites, cemeteries, etc. in Segment B. The Proposed Action impacts none of these, as none are present within, or visible from, the project site. The only effect to historic values is the relocation of Yankee Fork Road (see EIS, Chapter 3) which overlays portions of the historic Stanley to Bonanza Wagon Road and the Custer Motorway Adventure Road segment. Both of these, however, were found to lack sufficient integrity within the project area to warrant protection. There will thus be no effect on eligibility for potential Wild Scenic River Status from any impacts on the ***History*** ORV.

3.7.4.1 Effect of the Proposed Action on the Cultural ORV for Segment A

Similar to the discussion under ***History*** above, no cultural sites eligible for listing in the National Register of Historic Places were identified as being likely affected by the Proposed Action. There would, however, be a positive effect on the cultural values of the Tribes as they relate to fish and fishing.

Implementing the Proposed Action's facilities and programs will enable the Shoshone-Bannock peoples to better meet their "solemn obligation to protect, preserve and enhance native species of deep cultural significance to the Tribe" (Shoshone-Bannock Tribes 2011). The Tribes' cultural objective for this project is to ensure that Shoshone-Bannock peoples can harvest salmon in Yankee Fork by their traditional hunting methods as well as contemporary methods.

Construction and successful operation of this facility would have a beneficial and strengthening effect to the ***Cultural*** Outstandingly Remarkable Value considered for this river segment's eligibility.

3.7.5 Effects on River Classification

The installation of a permanent fish-trapping weir as proposed for the Yankee Fork in this Proposed Action would not nullify the eligibility of Segment A or Segment B for designation as a Recreation Wild and Scenic River.

The ***Recreation*** ORV would be the most affected by the placement of this industrial-appearing facility in a location that hinders access to the river at a desired launch location for kayakers and rafters. Facilities of this scale, however, are acceptable (prior to proposal) within rivers proposed as Recreation Wild and Scenic Rivers, and mitigation to resolve recreationists' safety concerns and improve river access might effectively override other concerns associated with the river-spanning weir or visual impacts.

4 Determination

This analysis discloses that installation of a weir across Yankee Fork would temporarily compromise the **free flowing** character of the river (during construction only), but would have no lasting effect. The analysis also discloses the concerns for visual effects, recreation access, and river-user safety these facilities generate that could compromise the ***Recreation*** **ORV.** The analysis also discloses that these facilities are integral to the recovery of Chinook salmon in the

Yankee Fork and that the increased fish returns that would result from construction and operation of these facilities would greatly enhance the ***Fish*** and ***Cultural*** **ORVs** for this river segment.

This analysis also supports the mitigation measures provided for in the EIS that can effectively offset the access and safety concerns affecting the **Recreation ORV**. Additionally, the analysis makes clear that these facilities and their effects are intended to be short and mid-term in duration with a long-term goal of removal as fish returns are restored.

Though the project creates some adverse impacts on some ORVs for which this river segment was found eligible as a Recreation Wild and Scenic River, it also provides benefits to other ORVs by the operation of the facilities, and by the mitigation proposed for the visual, access, and safety concerns identified.

Construction of the facilities on the Yankee Fork as disclosed in the Crystal Springs Hatchery EIS with the mitigations proposed in the EIS would not compromise the Yankee Fork's continued eligibility for inclusion in the Wild and Scenic River System and that Recreation would continue as an Outstandingly Remarkable Value.

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Appendix D.2
Panther Creek

Panther Creek Permanent Weir and Fish Trapping Facility

Wild and Scenic River, Section 7 Analysis

July 2016

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1 Introduction

1.1 Background

The U. S. Forest Service (Forest Service) and Bonneville Power Administration (BPA) are evaluating a proposal from the Shoshone-Bannock Tribes of the Fort Hall Reservation (Tribes) to place a permanent fish collection and acclimation facility on Panther Creek. This facility is part of a larger program that BPA is analyzing in the Crystal Springs Hatchery Program Environmental Impact Statement (EIS). For the purposes of this Section 7 analysis, the term "Proposed Action" will refer to just the Panther Creek weir facility rather than the entire program being evaluated in the EIS.

Panther Creek has been determined by the Forest Service to be eligible for designation under the Wild and Scenic Rivers Act, 16 U.S.C. 1271 *et seq.*, as a Recreation Wild and Scenic River. As part of the agencies' evaluation of the Tribe's proposal, this analysis is being conducted to identify the effects the constructed facility might have on the river's values that make it eligible for designation as a Wild and Scenic River.

1.1.1 Classification and Protection Status of Panther Creek

The Forest Service determined Panther Creek to be eligible under the "Recreation" classification for Wild and Scenic River status in 1993. This river is listed in the National Park Service's Nationwide Rivers Inventory[1] (Table 1).

Table 1. Description of Eligible Reaches of Panther Creek

River	Panther Creek
County	Lemhi
Reach	From the mouth in NW 1/4 of Section 19, T. 23N. , R.18E. to the origin in SE 1/4 of Section 2, T.17N., R.18E
Length (miles)	45
Year Listed / Updated	1993
Potential Classification	Recreation
ORVs	Scenery, Recreation, Wildlife
Description	The entire drainage is recognized as a distinctive visual resource. The upper portions of the stream are characterized by gentle canyon morphology. The lower half of the stream follows a deep, rugged canyon.

While Panther Creek has been determined to be "eligible," it has not yet been "designated." ***Eligibility*** is a determination made by a river-managing federal agency that this segment meets certain criteria and may be suitable for designation. ***Designation*** is only by an act of Congress or a State's application to the Secretary of the Interior. It is by designation that an eligible river attains Wild and Scenic River status and protection. Eligible rivers are not protected by the Act,

[1] NPS Nationwide Rivers Inventory, at http://www.nps.gov/ncrc/programs/rtca/nri/states/id2.html

but Forest Service policy is that a river found to be eligible and suitable[2] must be protected as far as possible to the same extent as a congressionally-designated study river.[3] Forest Service policy for river corridors identified in the National River Inventory is to protect the river's free flowing characteristics and its Outstandingly Remarkable Values (ORV); and that management and development of the identified river and its corridor not be modified to the degree that eligibility or classification would be affected. This policy of protection is to be continued until a decision is made as to the future use of the river and adjacent lands.[4]

Section 7(a) of the Wild and Scenic Rivers Act provides a specific standard for review of developments below or above or on a stream tributary to a designated river. Such developments may occur as long as the project "will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area as of the date of designation."

1.1.2 Description of Panther Creek

Panther Creek is a major tributary to the middle reaches of the Salmon River. With a watershed covering about 1,800 square miles, it flows for approximately 45 miles from its headwaters to its confluence with the Salmon River. The location of the proposed permanent fish collection and acclimation facilities site of the Proposed Action is located approximately 25 miles up from the confluence with Salmon River (river mile 25).

Panther Creek's flows can be quite variable. It averages about 285 cubic feet per second (cfs) but can be as low as one tenth of that or as high as ten times that average. Varying snowmelt patterns within the watershed cause significant runoff events in early spring through late summer. Snowmelt in the lower reaches begins in the early spring while snowmelt on the higher reaches occurs in early to mid-summer. The greater snow pack in the higher elevations causes greater runoff in the summer months, thus causing larger stream flow discharge in the mid to late summer.

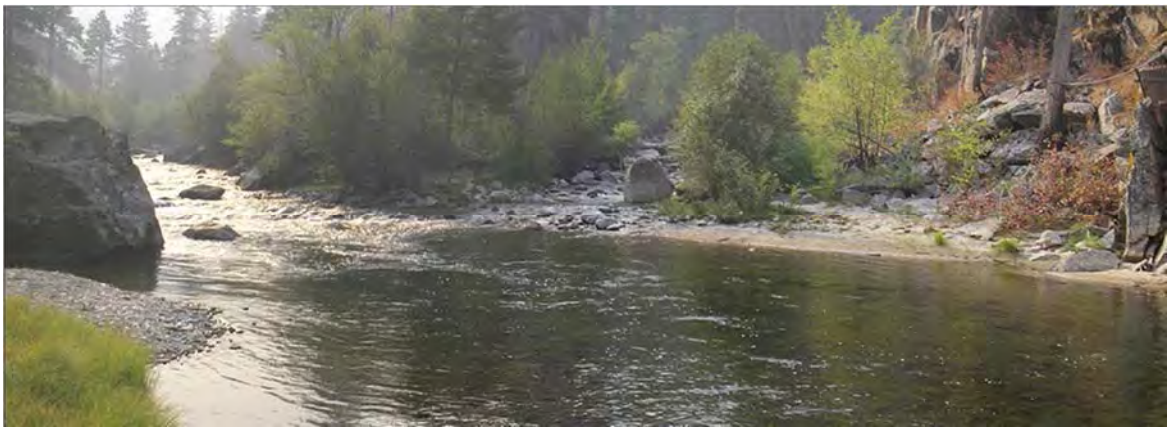
The river flows through mountains that are generally flat-topped with steep "V"-shaped drainages supporting dense conifer forests on their northerly slopes with sagebrush and grassland plant communities on south-facing slopes. In the lower half of the watershed, the river flows through a variety of landforms where its character changes dramatically (see further discussion under ***Scenery***, below).

[2] 'Suitability' is the second level of analysis for a potential Wild and Scenic River. First is 'eligibility', second is 'suitability', then the forwarding of a 'suitable' river for legislative consideration, then possible Congressional designation as a Wild and Scenic River. A Suitability Determination has not been conducted for Panther Creek.

[3] Forest Service Manual 2354.21

[4] FSH 1909.12, Chapter 8, Section 8.12

Figure 1. Panther Creek



1.1.2.1 Free-Flowing Character

Section 2(b) of the Wild and Scenic Rivers Act (P.L. 90-542) requires that all rivers considered eligible for designation need to be "free-flowing." Section 15 (b) of the Act defines a "free-flowing" river as one which is in a "natural condition" and without impoundment, diversion, rip-rapping, or other modifications of the waterway. It also states that existence of low dams, diversion works, and other minor structures shall not automatically bar its consideration, though such construction is discouraged.

In the Salmon-Challis National Forest's 1993 Wild and Scenic Rivers Evaluation, the Forest Service determined that Panther Creek was eligible for designation under the Wild and Scenic River System. It is inferred that the Forest Service determined Panther Creek to be free-flowing in a natural condition for its entire length. Though no record of that determination is available, this is the minimum criteria that must be met for eligibility determination. That same free-flowing condition remains today as it was in 1993. Though there are numerous bridges that cross the river, there are no impoundments or major de-watering diversions that significantly alter the river's flow.

Panther Creek Road is located in the valley bottom almost its entire length from the mouth of Panther Creek to a few miles below the Morgan Creek Summit, and encroaches on the stream and floodplain in some locations. Throughout this sub-watershed, particularly from Deep Creek upstream to Blackbird Creek, Panther Creek Road has encroached on the floodplain. From the Cobalt town site up to Blackbird Creek the road encroaches on the active channel and the road is flooded at high water events. This encroachment has resulted in reduced capacity for flood flows and a reduction in riparian vegetation and stream cover (USFS 2008). This condition, however, was present in 1993 and deemed by the Forest Service at that time to not compromise the free-flowing character of this river sufficient to disqualify it from consideration.

1.1.2.2 Water Quality

The Panther Creek drainage has experienced significant water quality issues associated with present and historical mining operations, particularly in the Blackbird Creek drainage, downstream of the proposed fish collection facility. Panther Creek is on the 303(d) list for copper from Blackbird Creek to Big Deer Creek, which lies downstream of the proposed weir site. This listing occurred in 1998, five years after the eligibility determination, though it appears from the timelines outlined in the Idaho Department of Environmental Quality's 2001 Subbasin Assessment for Panther Creek (IDEQ 2001) that the Salmon-Challis National Forest likely knew of the water quality concerns, yet found the river eligible anyway.

Water quality above Blackbird Creek, which enters Panther Creek 0.9 miles below the facility, is considered 'good' with no identified pollutants of concern (IDEQ 2001).

1.2 Outstandingly Remarkable Values (ORVs)

The Nationwide Inventory and the Salmon Nation Forest records differ on Panther Creek's ORVs.

The Nationwide Rivers Inventory lists Panther Creek as being found eligible with ***Scenery***, ***Recreation*** and ***Wildlife*** as its ORVs, and includes the following summary: "*The entire drainage is recognized as a distinctive visual resource. The upper portions of the stream are characterized by gentle canyon morphology. The lower half of the stream follows a deep, rugged canyon.*"

There is no documentation available from the Forest Service concerning the evaluation of this river. The only documentation available is a single table titled "*Results of Wild and Scenic River Eligibility*" dated September 21, 2004. In this list, Panther Creek is identified as having ***Scenery***, ***Recreation***, ***Geology***, ***Fish, and Wildlife*** as its ORVs with no additional rationale provided.

Table 2. Salmon-Challis National Forest and National Rivers Inventory assignment of ORVs

	Salmon-Challis National Forest	Nationwide Rivers Inventory
ORVs	*Scenery, Recreation, Geology, Fish, Wildlife*	*Scenery, Recreation, Wildlife*

For this assessment, a review of the effects of the Proposed Action on Panther Creek's eligibility for Wild and Scenic River designation will be conducted against the Salmon-Challis National Forest's list of ORVs since it is the most inclusive.

1.2.1 Scenery

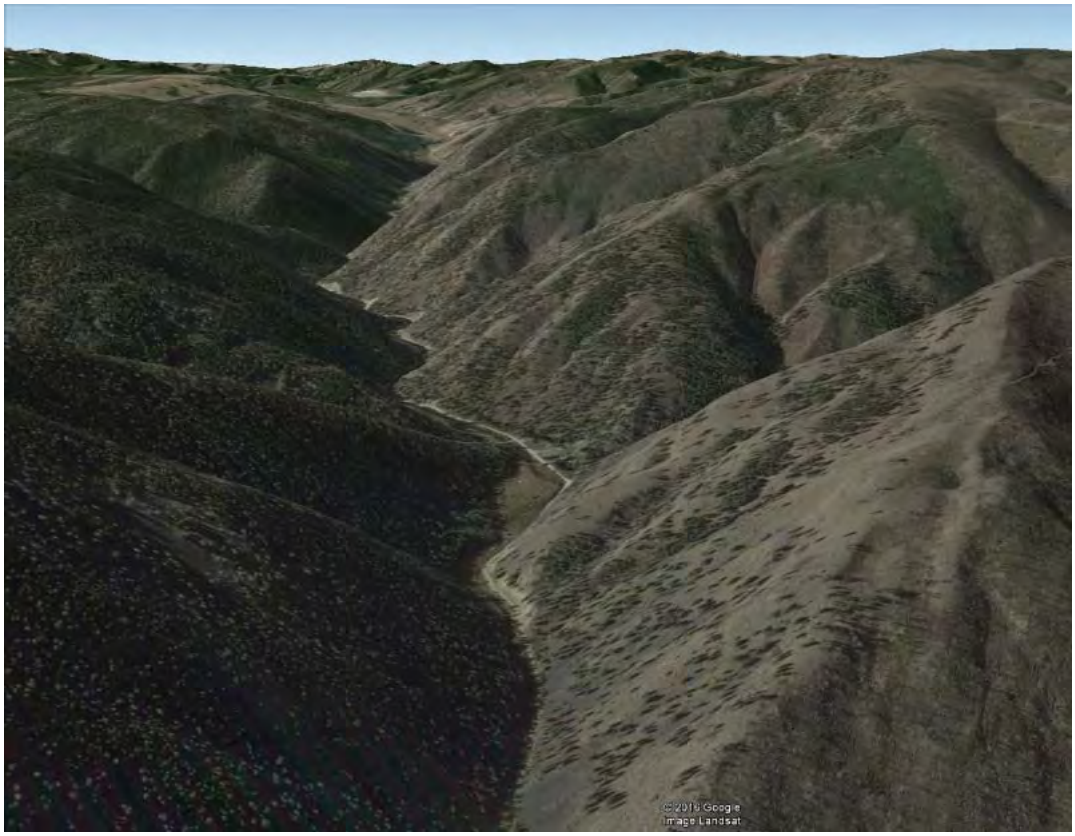
The Panther Creek Watershed is a unique and scenic area with striking contrasts between areas of extensive resource development and disturbance (such as is found in the Blackbird Mine area), and areas with relatively little evidence of human use (USFS 2008). That contrast is especially evident in views available from Panther Creek Road. Panther Creek Road is an often-recommended scenic tour that travels the entire length of Panther Creek from near its headwaters to its confluence with the Salmon River. Along this route, travelers can view wide-open panoramic scenes of forests on north-facing slopes; open sage and grassland vegetative communities on south-facing slopes; narrow canyons with striking geologic features; and a river that changes character dramatically with the seasons and the landscape through which it flows (Figure 2).

Figure 2. Diverse Scenery along Panther Creek

This diversity of scenery is most evident in the lower half of the river, while the stretch of Panther Creek along the Proposed Action's location is comparatively unremarkable. This scenery is described in detail in Chapter 3 of the EIS.

The stretch of the Panther Creek corridor near the Proposed Action site is scenically unremarkable compared to other locations along Panther Creek. This setting displays neither the canyon features nor the open vistas discussed above. Here, the road winds through a narrow canyon that limits views of the surrounding scenery yet without eye-catching rock outcrops or dramatic canyon features. The overall visual setting is captured well in the Google Earth view captured in Figure 3.

Figure 3. Southwestern (upstream) view of project area (near meadow along river in center of photo)



1.2.2 Recreation

The ORV of Recreation along Panther Creek is its diverse offering of recreation opportunities across all four seasons. No specific single recreational pursuit stands out as Outstandingly Remarkable along Panther creek; it provides many widely-varying opportunities. Opportunities exist for both social interaction and moderate isolation from the sights and sounds of humans. Panther Creek offers scenic vistas and opportunities for sightseeing, kayaking, rafting, hunting, hiking, backpacking, horseback riding, mountain-biking, riding off-highway-vehicles, camping, picnicking, and fishing. Winter sports include cross country skiing and snowmobiling. There are two developed campgrounds along Panther Creek Road (McDonald Flat and Deep Creek), both adjacent to Panther Creek. There are numerous dispersed camping sites and four trailheads (including equestrian). While there is some use of these facilities for summer camping and picnicking, the majority of the dispersed camping occurs during the fall hunting seasons.

1.2.2.1 Hunting

Hunting, though perhaps the most common recreational use of the Panther Creek watershed, is likely not the outstandingly remarkable recreation value considered for eligibility simply because neither the river, nor its 0.25-mile corridor on either side is the focus of this recreational activity. Wild and Scenic Rivers ORVs should be directly river-related; they should "owe their location or existence to the presence of the river."[5] The river corridor here primarily serves hunters by providing camping locations, spotting sites (using binoculars and spotting scopes), and access routes (roads and trails) to hunting areas higher up in watershed. The Wild and Scenic River corridor (the river and 0.25 mile each side) is not, however, the focal location where hunters actually stalk big game, nor is the river itself the primary ecological attractor of big game that makes hunting possible here.

1.2.2.2 Rafting and Kayaking

Whitewater rafting and kayaking is available on Panther Creek though it is recommended for advanced floaters only. Opportunities are flow dependent and thus limited mostly to high runoff periods. The river is narrow and the rapids can be dangerous at times in many places, but challenging and desirable opportunities for experts are there.[6] Whitewater kayakers primarily run the river below Trapper Flat, approximately 7 miles downstream of the proposed Panther Creek weir facility (American Whitewater 2016b). One whitewater blogger stated "If Panther Creek was in California, Oregon, or Washington this would be a coveted whitewater run. Instead, the creek is tucked away near the Frank Church Wilderness in Idaho."[7] The 4-mile stretch from Clear Creek down to the confluence with the Salmon River is classified as a Class III run, which is attractive to less-experienced floaters.

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[5] NPS website on Eligibility Descriptions at http://www.nps.gov/ncrc/programs/rtca/nri/eligb.html

[6] See the video at https://www.youtube.com/watch?v=79k46AyoIUA for a depiction of the rafting challenges, and the video at https://www.youtube.com/watch?v=6wDUPzhvd84 for a sense of the popularity and attraction of this area for kayaking.

[7] OREGONRAFTING.ORG at http://www.oregonrafting.org/panther-creek-june-10-2014/

Figure 4. Whitewater rafting on Panther Creek

1.2.2.3 Fishing

Panther Creek offers trout fishing in the summer, though it is less popular than other streams in the Salmon River drainage. Heavy metal pollution from historical operation at the Blackbird mine (higher in the watershed, up Blackbird Creek) may suppress fish populations (and fishing), and is a publicized heath risk for the river below Blackbird Creek. On-line reports of the fishing experience include comments like "few fish," "small fish," "beautiful setting," "great experience with or without the fishing," etc.

Salmon fishing is prohibited, since the species are federally listed, populations are low, and recovery efforts have not yet produced a sustainable population with enough fish to allow for sport fishing at this time.

1.2.2.4 Recreation at the Site of the Proposed Action

Recreation at the site of the Proposed Action is primarily 'quick-stop' picnicking, fishing, sightseeing, etc. given its close proximity to the Forest Service's work center and the agency's use of the meadow across the river for pasture. There is a campground not too far upstream, but this location provides limited dispersed camping opportunity, no trail access to higher areas, etc. The primary attraction here would be the Forest Service's historical work center.

1.2.3 Geology

The geology in Panther Creek was likely considered an ORV for its scenic value (Figure 5), though there is no record to support which specific geologic aspect was valued. There are commercial mining and suction dredging values in this watershed, but those are generally inconsistent with the purpose for Wild and Scenic Rivers. Panther Creek is known as a place where rock collectors might find cassiterite and common opal[8] but that feature attracts few people. There is no rock-climbing attraction in the area.

[8] Idaho Department of Lands Gemstone Guide at http://www.idl.idaho.gov/mining/rockhounding/gemstones.html

Figure 5. Geologic scenery along Panther Creek

The scenic values (within view of the river) of this geology are striking in places and have not been changed by human activity (other than fire-related scenic changes) since they were identified as outstandingly remarkable in 1993.

Steep canyon lands formed by stream cutting action characterize much of Panther Creek's geologic / geomorphologic character. Slopes range in places from 60 to 90% and are dissected by shallow parallel drainages. Rock outcrops and talus slopes are common. Most of Panther Creek flows through narrow valley bottoms in which it is actively cutting its channel in bedrock, and some reaches are in wide valley bottoms in which it is meandering across a wide floodplain.

1.2.4 Fish

Anadromous runs of federally threatened Chinook salmon and steelhead, estimated to have once numbered several thousand fish annually in Panther Creek, have been dramatically reduced by factors occurring both within and outside the watershed including mining, timber harvest, grazing, wildfire, and water diversion (USFS 2008).

The Middle Panther Creek Watershed is designated as a PACFISH[9] priority watershed, emphasizing restoration of its fisheries resources and aquatic habitats as a primary management direction. All perennial waters within the watershed have additionally been designated as critical habitat for federally threatened Snake River spring/summer Chinook salmon. The mainstem of Panther Creek and seven of its tributary streams have been designated as critical habitat for federally threatened Snake River Basin steelhead (IDEQ 2001).

A significant amount of effort by Idaho Department of Fish and Game has been applied to reintroduce salmon runs to Panther Creek since the late 1970's (USFS 2008) and while occurrences of adult spawning have been observed in recent years, Chinook salmon and steelhead

[9] PACFISH is a 1995 Management Strategy for anadromous fish-producing watersheds on federal lands in eastern Oregon and Washington, Idaho, and portions of California.

have been largely extirpated from the drainage. Although fish populations have increased along main Panther Creek in recent years, they are still categorized as depressed.

The ***Fish*** ORV for these river segments is significant, and actions that enhance or support this ORV are desired. The purpose of this project is for just such restoration.

1.2.5 Wildlife

The abundance, diversity, and visibility of big game and other wildlife viewing opportunities along the river and in its surrounding areas, rather than the presence of any unique species, is the ORV of ***wildlife*** in Panther Creek.

The Panther Creek watershed provides optimal quality summer habitat for elk, mule deer, and white-tailed deer. There are bighorn sheep in its upper elevations and winter range for them along the river's lower reaches. These species can often be seen from Panther Creek Road. Bighorn sheep are known to be in the northern portion of the watershed and suitable habitat is available for mountain goats along the east side of Panther Creek below Napias Creek. At least two wolf packs (Jureano and Moyer Basin) are well established in the watershed and the likelihood of another (Hoodoo) moving into the Panther Creek area is a realistic possibility (USFS 2008).

The openness of the landscape in many areas and the lack of vegetative cover (even before the Clear Creek fire[10]), along with the abundance of big game and other wildlife, make this an attractive wildlife viewing area. There is ample opportunity to view deer, elk, and bighorn sheep from Panther Creek Road, and Panther Creek is included as the Morgan Creek-Panther Creek Sub-loop of the Idaho Birding Trail.[11]

At the project site, the value of this ORV is likely compromised by human activity and human occupancy at the adjacent Forest Service Cobalt Ranger Station; and viewing opportunities of smaller animals here are no more likely than anywhere else along Panther Creek Road.

1.3 Existing Facilities

The Panther Creek facility is located on site within the Salmon Challis National Forest's Cobalt Ranger Station (Figure 6). The proposed weir would be located in the left quarter of Figure 6. Forest Service staff uses the station during the summer months to coordinate field activities and forest fire response. There are approximately a dozen structures and a gravel parking lot associated with the field station, located on the west side of Panther Creek Road. A small bridge crosses Panther Creek at the station, providing access to pasture on the east side of the creek. The pasture is used for Forest Service livestock, primarily horses. There are no other landowners adjacent to this location. The proposed site for the Panther Creek facility and adjacent Forest Service work center is shown in Figure 7.

[10] The Clear Creek Fire burned over 200,000 acres in the year 2000, much of it in the Panther Creek watershed.

[11] The Idaho Birding Trail is a network of sites and side-trips that provides the best viewing opportunities to see birds in Idaho. https://fishandgame.idaho.gov/ifwis/ibt/pub.aspx?id=about

Figure 6. Forest Service Cobalt Ranger Station at site of Proposed Action (looking south)

Figure 7. Proposed facilities in relation to Forest Service work center

2 Proposed Action

The proposed weir and associated facilities on Panther Creek is part of the larger Crystal Springs Hatchery Program, which includes a new fish hatchery near Springfield, Idaho, and two fish trapping weirs: Panther Creek and Yankee Fork. While this program achieves an array of purposes for differing federal agencies and the Shoshone-Bannock Tribes (see EIS, Chapter 2), its fundamental function is to support the recovery of ESA-listed Snake River spring/summer Chinook salmon. The description of facilities below will focus only on those associated with the weir in Panther Creek. The Crystal Springs hatchery and the weir on the Yankee Fork of the Salmon River are far removed from Panther Creek and have no impact on Panther Creek's Wild and Scenic River values.

2.1 Purpose and Need

The purposes of the Panther weir is to catch, hold, and spawn adult Chinook salmon to obtain eggs and milt for the hatchery; manage returning adult Chinook salmon; and monitor program success in meeting production and adult return numbers.

Panther Creek, though eligible for designation as a Wild and Scenic River, was selected as the location for this weir because of the need to restore the ESA-listed spring/summer Chinook salmon runs in this watershed. Locations on other rivers or streams would not have been effective in achieving this goal.

2.2 Construction Components

The proposal is to construct a permanent weir across Panther Creek with adult fish handling facilities and crew and equipment accommodations. These would all be constructed directly across the road and river from the existing Forest Service work center as shown in Figure 7.

The Panther Creek weir facility would consist of a bridge picket weir, a fish ladder, adult holding ponds, a spawning and egg preparation structure, acclimation ponds, pump station and valve vault, and an in-stream intake structure (as exemplified in Figure 8). The Panther Creek weir facility would be designed for up to 220 adult Chinook salmon. Top-hinged bridge weirs would be constructed to direct fish into a fish ladder that brings fish into a pre-sort holding pool. The fish ladder design flow is 10 cfs for this site. Holding pools are sized for long-term holding at 0.75 cubic feet per pound of fish, with water supply flow of 2.0 gallons per minute per pound of fish. Gravel access roads would service the fish trap infrastructure. The proposed construction components and construction activities are further described below.

Figure 8. Example of a bridge weir in operation

Fish holding tanks for juvenile acclimation are to be located immediately upstream of, and on the same side of the road and river as the Forest Service facility. This construction would introduce the following features into this river and its corridor:

- **Bridge Weir.** A new 38-ft weir with pedestrian bridge is proposed for Panther Creek. This weir would allow water to flow through a set of picket panels, but would limit adult fish passage, directing them toward a fish ladder leading to holding tanks. The bridge weir would be supported at each end by concrete abutments extending down to a

foundation on each side of the stream. Within the creek, the weir would be based on U-shaped pre-cast concrete sections excavated approximately 7 feet into the stream bottom, which would be backfilled with cobbles and gravel and support a flat segment of concrete (the sill). Gates to control stream flow elevations would be mounted onto the sill at the stream bed elevation up to the walkway. The bridge portion of the weir would be steel construction, spanning the width of the creek. Rotating picket panels would attach to the upstream edge of the bridge and drop into place to seal against the concrete sill. Chain link fences and gates would be used to prevent public access to the bridge structure.

- **Jib Crane.** A jib crane would be installed adjacent to the bridge weir and used for debris management and possibly for lifting fish for transfer to transport trucks or from a live box to the holding pools if the fish ladder is not effective at attracting fish at critical collection times (i.e. during low flow).
- **Fish Ladder.** The weir's panels are designed to guide fish to a 2-foot by 3-foot ladder entrance built into a precast concrete weir abutment. A vertical bar gate would control access into the fish ladder. A canal gate would also be installed to control water flow and completely isolate the ladder from the river for maintenance purposes. The four ladder pools are 8 feet long and travel the required distance and elevation to the pre-sort holding pool. It is designed for 10 cfs flows over a range of creek elevations from 5,226 to 5,229 feet above mean sea level. The design of these pools and height of ladder allows fish to pass at different life stages. The ladder would be supported by a reinforced concrete slab extending from the east abutment sloping up to the adult holding tanks.
- **Adult Holding Ponds.** A finger weir would separate fish between the fish ladder and the pre-sort holding pond. The pre-sort pond would be 6 feet wide and dedicated to holding fish prior to sorting. After sorting, fish would be placed in one of the two 10-foot-wide post-sort holding ponds. Pass-through gates would be provided in the pre-sort pool walls to minimize the amount of lifting required to move fish from the pre-sort to post-sort pools. The ponds would be 32 feet long and designed with a 5-foot water depth. The concrete bottom of the pond would be at a similar elevation as the fish ladder, and would hold approximately 4.5 feet of water.
- **Spawning and Egg Preparation Structure**. The spawning structure would be three-sided and the egg preparation structure would be a fully enclosed steel structure. Both facilities would be located adjacent to the upstream end of the holding ponds. Both areas would have electrical outlets, radiant heaters and hydrants supplying river water for wash down and cleaning. The spawning area would have a fish return pipe to transport native fish back to the river upstream of the weir. During high water events, the fish ladder could be partially submerged, and the holding ponds would need to be pumped down to allow manual crowding and sorting of the fish. A pump station with two low head/high flow pumps would be located at the downstream end of the holding ponds. The utility water pump would also be located at this pump station.
- **Chemical Storage**. Aquaculture disinfection would be achieved through the use of formalin dosing. Formalin would be pumped from barrels in the chemical storage shed underground to the water supply in the post-sort holding ponds. The chemical storage shed would hold an entire operating season's quantity of formalin (two 55-gallon barrels), as well as the pumping and distribution piping.
- **Fish Trap Access Roads**. Access roads to the facility would be gravel surfaced.
- **Water Source.** Water would be supplied through an intake structure in Panther Creek. The water would flow though the facility and discharge back to the creek approximately 1,250 feet downstream through the fish ladder. Additional water would be supplied by an intake on Dummy Creek (the creek immediately below the Forest Service work center), to provide a colder water source for the adult holding pond as described below. If

approved for construction, the Tribes would apply for a non-consumptive water right from the Idaho Department of Water Resources to operate the Panther Creek weir facility.

- **Water Discharge**. Chemicals that would be used for operations would include iodophor (a chemical containing iodine used to disinfect fish eggs), or formalin (to prevent fungus growth on the eggs). During adult holding, individual fish may be given injections of Erythromycin-200, oxytetracycline, or other prophylactic treatments to counter specific diseases. The use of therapeutic chemicals within hatcheries is regulated under EPA's Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category, which establishes narrative limitations for aquaculture chemicals (EPA 2006). These chemicals would be stored in a chemical storage shed that would hold an entire operating season's quantity of formalin and iodophor, as well as the pumping and distribution piping. At the end of each season, the storage container would be removed and inspected prior to deploying it the next season.
- **Water Intake**. A pre-fabricated cone screen would be anchored to the streambed on the left bank of Panther Creek approximately 1,250 feet upstream of the proposed weir and acclimation pond to provide a 10 cfs water supply to the adult holding tanks and acclimation ponds. An additional intake structure would be located on Dummy Creek to the west of the holding tanks and provide a 1 cfs water supply to the holding tanks only. Both of these water supplies would be provided by gravity flow. Dummy Creek water is colder than Panther Creek in the late summer and would be used to improve holding conditions for broodstock during that time period. Water temperature can affect salmonid health, and using colder water could reduce the need for chemical treatment of bacterial infections in the salmon being held. The proposed Panther Creek intake screen would be a self-cleaning cone screen installed in a precast concrete structure, and would meet NMFS criteria for juvenile fish protection (National Marine Fisheries Service 2011). A 24-inch supply pipeline would route water from the intake screen to the fish holding tank along the west side of Panther Creek Road. Approximately 1,150 feet downstream of the intake, a 3 cfs duplex pump station would be constructed on the 24-inch pipeline to lift water into the acclimation ponds during the early spring. During the late summer to early fall adult return season, the pipeline would discharge into the holding tank. The water would pass through the holding pools and then collect into the fish ladder. The water would discharge back to Panther Creek through the ladder entrance. An 18-inch bypass pipe would allow up to 7 cfs of Panther Creek water to be routed directly to the fish ladder in order to increase the ratio of Dummy Creek water used in the holding pools. A small intake structure on Dummy Creek would consist of a screened intake in the bottom of the creek channel, wing wall abutments, and a cut-off wall to stabilize the right bank of the creek upstream of the diversion structure, and would meet NMFS criteria for juvenile fish protection (National Marine Fisheries Service 2011).
- **Juvenile Acclimation.** The acclimation of juvenile fish would occur in early spring at Panther Creek. Modular portable raceways or circular ponds would be utilized to receive juvenile fish, which would be trucked in from the hatchery for short-term acclimation and stress relief. The Panther Creek weir facility would be designed for up to 135,000 fish at 10 fish per pound. Water supply flows would be approximately 3 cfs at Panther Creek. Batches of fish would be acclimated and released every week or two until the stocking goals are met.
- **Pump Station and Valve Vault.** The lift station would be approximately 9 feet below existing grade and would pump water for the acclimation ponds.

3 Effects of the Proposed Action on Panther Creek

3.1 Alteration of Within-Channel Attributes of Panther Creek

3.1.1 Position of Proposed Activity

The Panther Creek weir will require construction activities within, and temporary and permanent modifications to, Panther Creek's banks and bed in a number of locations.

Temporary impacts on Panther Creek channel total 0.16 acres, and would include:

- Excavation of the west bank below the ordinary high water mark to construct the entrance and exit of the temporary diversion channel;
- Placement of soil bag coffer dams to isolate 0.10 acre of the channel in four locations to provide work areas for the bridge-supported weir/fish ladder, acclimation pond outfall, and upstream intake structure;
- Excavation within the existing streambed to install the water supply lines for the fish ladder, adult holding ponds and the spawning and egg preparation structure.

Permanent modifications to the Panther Creek channel would include the excavation of the streambed and both banks to install the pre-cast concrete sill, bridge-supported weir abutments (exemplified in Figure 9), fish ladder entrance, acclimation pond outfall, and the water supply inlet structure. These features would require the removal of riparian vegetation and the disturbance of the natural substrate of the channel. As part of this work, less than 0.01 acre of the cobble, gravel, sand, and mud would be removed from the channel and replaced with pre-cast concrete structures and riprap. Approximately 10 square feet of wetland would also be permanently impacted by the installation of the left (west) bank abutment.

Figure 9. Example of permanent weir with abutments visible

3.1.2 Anticipated Effects to Channel Location, Slope, Geometry, Form

With the application of the mitigation measures and design criteria and the small footprint of the impacts, these actions are expected to have little, if any substantial functional effect on Panther Creek, Dummy Creek (a small adjacent tributary), or to other downstream wetlands and waters. There would be no permanent effects to stream channel location, slope, geometry, or form, beyond the footprint of the weir itself.

3.1.3 Water Quality

Potential effects to water quality in Panther Creek are associated with runoff during facility construction and nutrients and suspended sediment in discharges from the facility during operations. The Proposed Action will not affect the quality of the river's water upstream from the facility.

Construction effects to water quality are discussed in detail in Chapter 3 of the EIS. The construction activities would likely degrade water quality for a short period of time, but mitigation measures and Best Management Practices would be in place to minimize this short-term effect. These short-term effects will not affect water quality to any degree that could disqualify this river from continued eligibility for future designation as a Wild and Scenic River.

The adult holding operations are also deemed to not impact water quality since fish will not be feeding (or fed) or producing wastes (see EIS, Chapter 3) that would be discharged into the river. The operation of the acclimation ponds, however, would include feeding, and water discharged from the ponds will therefore include some measure of fish waste. As described in Chapter 3, however, fish will be acclimated in batches and the discharged organic solids would not be highly concentrated.

Formalin use would be conducted according to EPA guidelines. Because the use of formalin would follow accepted standard practices, treatment applications would be applied only when necessary and typically would be of short duration, and thus, the potential impacts on receiving water quality would be low.

3.1.4 Navigation of Panther Creek

This facility would prevent passage by recreational rafters and kayakers. These river users would have to take out and portage their gear approximately 300 feet around the facility. Panther Creek, however, is not frequently used by floaters for long trips down the river. When flows are adequate, short segments of Panther Creek (of which this in not one) are used for advanced kayaking, and others far downstream are used for rafting.

There would be low to no impact on navigation by recreation users.

3.2 Alteration of Riparian and/or Floodplain Conditions

3.2.1 Riparian Vegetation

The new facility will remove approximately 10 square feet of wetland vegetation and impact approximately 60 feet of streambank by installation of the abutments. These small amounts are of very little effect to stream function, floodplain function, fish and wildlife habitat, scenic and recreation values, etc.

3.2.2 Soil Properties

The soils at the new facility are composed of alluvial deposits forming a terrace landform that contains a diverse mixture of cobble, gravel, and sand-size material. The proposed development area is generally underlain by native alluvium consisting of dense silty gravel with sand and cobbles, with large cobbles and possibly small boulders encountered in test borings at depths of 15 to 20 feet (STRATA 2013). The erosion potential of the soil is considered low due to its overall coarse texture.

Construction of the new site facilities would result in conversion of existing native soil surfaces into hardened surfaces, which would result in the loss of soil resources. Most of the conversion would be due to the construction of gravel surfaces for the acclimation and adult holding areas. Additional conversion would be due to concrete poured for construction of portions of the holding area that do not use gravel.

The new facility would impact approximately 0.2 acres on the east side of Panther Creek where the abutment, fish ladder, holding tanks and other facilities will be located. On the west bank of Panther Creek it would remove less than 0.01 acre of the cobble, gravel, sand, and mud from the channel and replace it with pre-cast concrete structures and riprap for the abutment.

The acclimation tanks would be placed on a gravel surface that will impact approximately 0.2 acres of soil.

Together, they total approximately 0.5 acre of soil impact.

3.2.3 Floodplain Properties

The project site and Forest Service work center are located near the head of a small (16 acre) historical floodplain (Figure 10).[12] The work center occupies 2.5 acres of floodplain and the proposed weir and acclimation tanks would occupy an additional 0.31 acres. Together these facilities affect approximately 18% of this floodplain with structures, roadways, and associated hardened surfaces that reduce water infiltration and holding capacity. Within this 18% there are places with hardened surfaces (e.g. buildings, and roadways) where floodplain function is totally compromised, but the majority includes un-hardened surfaces (e.g., lawns and other unsurfaced areas) that still retain some level of floodplain function for infiltration and water holding capacity.

The new facility may hinder floodplain function with its removal of 10 square feet of wetland and the addition of some hardened surfaces, but the weir itself, by slowing the flow of water in flood conditions, could augment one function of floodplains: the slowing of flows.

The proposed bridge weir would create a backwater effect while operating with the bridge and picket panels deployed in the channel by increasing depths and reducing flow velocities. The backwater effect would reduce the sediment transport potential of Panther Creek in the affected reach upstream that could lead to sedimentation (a floodplain function and property). Since Panther Creek is a moderately steep channel, the backwater effect would be relatively minor and not extend far upstream. The physical barrier created by the weir would block sediment and debris coming downstream. These impacts would be most pronounced during high-flow events when the most sediment is transported by Panther Creek. The potential for the bridge weir to trap sediment and debris is most likely to occur during the high-flow months of late spring and early summer. Because of this, the bridge and picket panels would be rotated out of the channel during

[12] This "historical" floodplain is not the same as the "100-yr" floodplain mapped and discussed in the EIS. The "historical floodplain" is discussed here because it was considered more relevant to a Wild and Scenic Rivers discussion than the technical hydrologic definition, which limits discussion to current human-altered conditions.

high-flow months to an elevation 2 feet above the 100-year flood elevation, leaving only the weir sill and abutments in place. The precast concrete boxes that create the weir sill would be set approximately 8 feet into the channel bed with the tops aligned so they are approximately at grade with the existing substrate profile. Furthermore, a jib crane would be permanently installed adjacent to the bridge weir and would be used to remove debris from the weir that may accumulate during low-flow conditions. These measures would prevent the weir from creating a major flow obstruction that would lead to problematic sedimentation or debris accumulation. Any sediment deposited upstream of the weir during low-flow conditions will likely be quickly transported out of the reach with the return of higher flows.

Streambank stability, channel roughness, and erosion potential are expected to remain unchanged by the new facility.

Taken together, these impacts would likely not result in significant changes to floodplain capacity nor would they alter flood flows.

Figure 10. Forest Service work center and proposed facility inraltation to floodplain

3.3 Alteration of Upland Conditions

The entire weir and holding facility is located within the floodplain and riparian areas immediately adjacent to Panther Creek. Only the acclimation tanks are located in uplands across the road and to the west of Panther Creek. This site, however, is flat, immediately adjacent to the Panther Creek Road, and supports only a managed herbaceous plant community (a mowed field),

with some upland forest trees and plants. This 0.18-acre site will be cleared and replaced with a gravel pad to support acclimation tanks.

3.4 Alteration of Hydrologic or Biological Processes

3.4.1 Ability of the Channel to Change Course, Re-occupy Former Segments, or Inundate Its Floodplain

Aerial photographs show very little lateral movement in the channel between 1998 and 2004. The channel is constrained by sections of riprap along its western bank, which parallels Panther Creek Road. No lateral movement and migration into the terrace feature along the channel's eastern bank is evident from the aerial photographs. Furthermore, the existing bridge a short distance upstream of the proposed weir would also limit channel migration in the vicinity. Future channel migration would be most likely to occur on the east bank, unconstrained by Panther Creek Road. Migration into the east bank could damage the proposed bridge weir abutments and make the weir non-functional.

3.4.2 Streambank Erosion Potential, Sediment Routing and Deposition, or Debris Loading

Streambank stability, channel roughness, and erosion potential are expected to remain unchanged by the new facility.

Under non-flood flows there would be no change to sediment routing or deposition. During flood flows, the weir may slow water velocities and some sediment may be deposited in amounts or locations different from what might occur in the weir's absence, though this effect is expected to be minimal and localized to the area near the weir.

There may be minor changes to debris loading as the weir may intercept some floating debris, which would be extracted with the jib crane and moved off site.

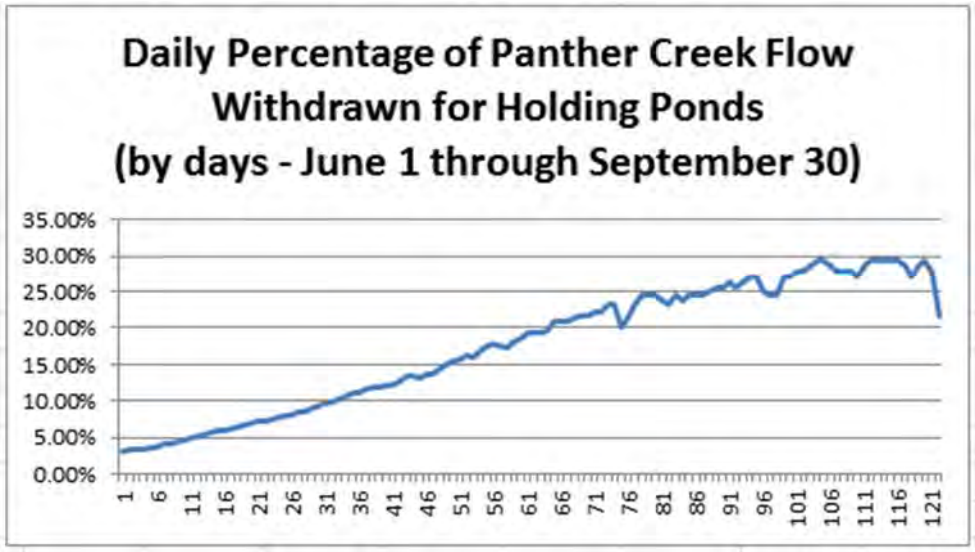
3.4.3 Amount and Timing of Flow

The Proposed Action will divert approximately 10 cfs of water from Panther Creek from June through September to support the adult holding ponds, and 3 cfs from April through June to support the acclimation ponds. This water would be diverted approximately 0.125 mile above the acclimation ponds. It would flow through the facility and be returned to the river through the fish ladder at the weir, for a total diversion length of about 0.25 mile.

Panther Creek flows at approximately 300 cfs in early June and drops about 35 cfs by mid-September.[13] The impact of 10 cfs in early June is minimal, but the effect by September is the removal of nearly one-third the water for a 0.25-mile stretch of the river (Figure 11). The Tribes may supplement 1 cfs from Dummy Creek during August and September for temperature regulation purposes, reducing this impact slightly. The effect of withdrawing between 20 and 30% of the flow from Panther Creek from mid-August through September, when stream temperatures are likely a concern can be expected to be measurable, visible, and impactful to the aquatic organisms in the 0.25-mile stretch affected.

[13] USGS data from Panther Creek stream gauge near Cobalt October 2011 through September 2016 available at http://waterdata.usgs.gov/usa/nwis/dvstat/?site_no=13306370&por_13306370_1=2549999,00060,1

Figure 11. Daily Percentage of Flow withdrawn from Panther Creek for Holding Ponds



Three cfs of water would be diverted to support the acclimation pond operations from April through June. Panther Creek is flowing from between 86 CFS to over 300 cfs during this period and this withdrawal amounts to only about 3%, with minimal if any effects to aquatic resources expected. In addition, this water would be discharged back into the river between the acclimation ponds and the weir, reducing the length of river affected by withdrawal.

These withdrawals would be non-consumptive; the water will be returned to the river below the facility with no measurable loss of volume. The impacts discussed above affect only 0.25 mile of the 45-mile-long Panther Creek eligible Wild and Scenic River.

3.4.4 Flood Storage (Detention Storage)

Approximately 0.5 acre of floodplain capacity would be compromised to some degree by the Panther Creek weir facility. This represents less than 2% of the 16-acre floodplain within which the facility is located, but only half of this area (1% of the floodplain) would likely be converted to a hardened surface with no filtration capability.

Only 10 square feet of wetland, with its floodwater storage capacity, would be lost.

3.4.5 Biological Processes

3.4.5.1 Reproduction, Vigor, Growth and/or Succession of Streamside Vegetation

The weir is located entirely within Panther Creek and the riparian area along its banks. The fish ladder and holding tanks are located within managed/mown pasturelands. The weir, its abutments, and a short segment of the fish ladder would, of course, permanently replace any riparian vegetation within its footprint, which would likely total less than 900 square feet. Approximately three times that amount would be disturbed during construction, but would be revegetated and full recovery to riparian vegetation conditions is expected.

3.4.5.2 Nutrient Cycling

Given the very small amount of streambed, bank, and riparian habitat altered there is expected to be very little if any impact on nutrient cycling within this stream. There would likely be an increase of nutrients during the spring acclimation period as fish waste from the tanks would be discharged into the creek. As discussed above, however, fish would be acclimated in batches and the discharged organic solids would not be highly concentrated to minimize adverse impact from

this additional input. The effect on nutrient cycling, if any, is expected to be localized, with no effect upstream or further downstream in Panther Creek.

3.4.5.3 Fish Spawning and/or Rearing Success

The project's construction and presence will have little effect on fish spawning or rearing, beyond the footprint of the weir itself. The operation of the completed facility, however, can be expected to significantly aid in the recovery of ESA-listed spring/summer Chinook salmon in the Panther Creek watershed.

3.4.5.4 Riparian Dependent Avian and Amphibian/Mollusk Species' Needs

Given the very small amount of streambed, bank and riparian habitat altered there is expected to be very little impact on riparian dependent species.

3.5 Magnitude and Extent of Potential Off-Site Changes

As discussed above, there would be minimal changes and effects from this action on flow, hydraulics, and floodplain function for Panther Creek. The scale of likely changes to the banks and channel is measured in fractions of an acre and well within the degree of change the river naturally experiences. Flow of water would not be altered in either amount or timing.

There is thus no potential for physical effects to extend to other parts of the river system and no off-site changes as a direct result of this project other than a likely future increase in returning Chinook salmon in the Columbia, Snake, and Salmon Rivers. This is not an adverse effect, but a desired condition that would support potential future Wild and Scenic River designation for Panther Creek. The indirect effects of these restored runs would likely produce changes in wildlife populations (salmon being a ready food source that will attract and support more fish-eating wildlife to Panther creek than currently), recreation activity (fishing demand would likely increase along with camping, sightseeing, and recreation-based economic activity such as fishing guides, lodging and dining services on private lands, etc.).

3.6 Time Scale of Effects

There are two time scales to consider when evaluating effects of this facility. First is the construction period, which is expected to occur in a single year during the low flow months of July through October. The second period is long term, where the effects of facility operations must be considered.

Effects during the construction period are expected to be realized within a single year, with perhaps some residual effect during vegetative and physical 'recovery' of the site for perhaps two to five years thereafter. Construction impacts and effects (vegetation impacts, turbidity, traffic, noise, etc.) to Wild and Scenic River values during this timeframe will be temporary, with the expectation that few (e.g. vegetation recovery) will be evident even one year following construction.

The operational effects, and those resulting for the presence of the facility, however, have no scheduled end. These effects can include the minor localized effects on water quality and flow through the stream length of the facility, and significant improvements in fish populations.

The long-term, (timeless) goal of recovery of ESA-listed Chinook salmon is the overriding interest and focus when evaluating time-scale of effects from this project.

3.7 Project Effect on Wild and Scenic River Management Goals

3.7.1 Effects on Free Flow

3.7.1.1 Water Diversion Effects

See Section 3.4.3 for a discussion of the effects of water diversion on the flows of Panther Creek. There would likely be a high level of effect during low-flow periods for a distance of 0.25 mile in the vicinity of the Forest Service work center as this stretch can have up to one third of its flow diverted. This effect is substantial, but limited in time (late summer) and space (only the area near the work center), as all water diverted is ultimately returned to Panther Creek below the facility.

3.7.1.2 Weir Effects

The project would not change the free-flowing character of the river downstream or upstream from the facility. There are no impoundments, and no straightening or redirection of the river. There is, however, the introduction of abutments on each riverbank, and a narrow slab across the riverbed with temporary/ removable screening sufficient to trap fish during migration periods. The expectation is that the weir would be operating (blocking fish passage) from June through September. It will not be blocking river passage by fish yearlong.

3.7.1.3 Allowance for Structures in Recreation Wild and Scenic Rivers

The Act allows for "minor structures at the time any river is proposed for inclusion in the Wild and Scenic River System." For these segments, that time of *formal proposal* has not yet arrived. These segments have been found *eligible*, but a *suitability determination* (which must precede a *proposal*) has not yet been made, so full protection from structures is not yet required. Additionally, the scale of the structures considered here is consistent with the scale of structures discussed as being allowable for rivers proposed for designation under the 'Recreation' category (Forest Service Handbook 1909.12 8.2).

Thus, construction of this facility does not automatically compromise this segment's eligibility for Wild and Scenic River designation. The deciding official can consider whether the in-stream structures proposed here can be authorized in this decision and likely fit the category of 'minor' allowable structures that would not compromise the free flowing characteristics of the river at the time it is formally proposed, if ever.

The Wild and Scenic Rivers Act makes clear, however, that such allowance for structures "*shall not be construed to authorize, intend, or encourage future construction of such structures within components of the national wild and scenic rivers system.*"[14] While this only applies to rivers within the system, the intent appears clear, when considered alongside the protective intent of Forest Service policy, that such allowance not be construed as liberty to construct. Nonetheless, as discussed below, these structures are intended solely to enhance ***Fish***, a critical ORV for this river. Additionally, the structures are intended for removal once species have fully recovered; they are not intended to be there in perpetuity, as is the designation of a Wild and Scenic River. Therefore, a case for responsibly considering and approving these structures can be made.

3.7.2 Effects on Water Quality

As discussed in Section 3.1.3, potential effects to water quality in Panther Creek are associated with runoff during facility construction (temporary effects); and nutrients and suspended sediment in discharges from the facility during operations (long term effects).

[14] 16 U.S.C. 1286(b).

The Proposed Action will not affect the quality of the river's water upstream from the facility.

Water quality will be slightly affected by fish waste from the acclimation ponds in the spring and from low levels of formalin used during summer trapping, holding, and breeding activities. These effects are minimal, localized, and of short duration. Their effects will be limited to the facility location and for short distances downstream. The effect is low and may be noticeable over less than 1% of the 45-mile length of Panther Creek. It would not constitute a significant adverse impact on the 'water quality' qualifying criterion for Panther Creek and its continued eligibility under this criterion is not affected.

3.7.3 Effects on Floodplain Conditions

There is minimal effect on floodplain conditions with no anticipated effect on floodplain function and the creek's ability to store and move floodwaters. As discussed above, the project does not redirect, channel, or block the creek beyond its current condition. Wetland storage capacity for floodwaters will be reduced by less than 10 square feet.

3.7.4 Effects on ORVs

3.7.4.1 Effect of the Proposed Action on the Scenery ORV

The primary impact of this proposal is the erection of a modern, industrial-appearing facility on the river adjacent to an historical Forest Service work center. Though its buildings and facilities would be painted and textured to be consistent with the existing work center as much as possible, it will still be evident as concrete structures, metal buildings, and chain link fencing and these features are inconsistent with the intent of Wild and Scenic River designation.

The scale of development is small, however, and it is located in a relatively confined canyon where it would not mar background scenery consistent with the values for which ***Scenery*** was identified as an ORV. Additionally, travelers along the Panther Creek Road are likely to be visually attracted to the human developments here as points of interest, rather than to natural features. The industrial appearance, however, will be evident and likely not a compliment to the site. However, interpretive signage explaining the purpose and function of the facility might possibly turn this potential scenic detriment into a positive recreational, point-of-interest asset.

With or without interpretive signage, the eligibility of the river for future consideration as a Wild and Scenic River is not compromised given the scale of the facility, its proximity to existing development, its location within the canyon, and the allowance of Recreation Wild and Scenic Rivers for some level of development and structures.

3.7.4.2 Effect of the Proposed Action on the Recreation ORV

The Proposed Action's only impact on recreation will be in the immediate location of the facility. It will not change the flow of the river downstream nor upstream of the facility, so recreation opportunities would not be affected below or above it. Activities dependent on river flow such as fishing and swimming, etc. will be hampered during the late summer given the operation's impact on flows, but again, this is only within the 0.25 mile between the water diversion's intake and the weir.

Kayaking and rafting is likely an uncommon recreational pursuit in this reach, and limited, of course, to those times of year with adequate flow. As mentioned in Section 1.2.2 above, Panther Creek is used by whitewater kayakers primarily below Trapper Flat, approximately 7 miles downstream of the proposed Panther Creek weir facility. The weir, however, is a barrier and will require floaters that might use this reach to stop and haul their craft around it.

The proposed facility is designed to restore Chinook salmon runs to Panther Creek, and while the facility may detract from recreational values in the short and mid-term, its resulting long-term

impact, as salmon are restored, will have a highly positive effect on recreation. Salmon fishing is extremely popular where fish populations and regulations allow it, and that is ultimately the goal here: to restore salmon sufficient to restore Tribal/cultural and recreational fishing opportunities.

Panther Creek was found eligible under the ***Recreation*** category for Wild and Scenic Rivers that, according to Forest Service Handbook 1909.12.8.2 for designated rivers allow for existing minor instream structures (low-head dams, diversions, rip rap etc.) but prohibits new structures and developments. These segments are not yet designated, nor yet assessed for their suitability (see distinctions under "***Free Flowing***" above). As such, constructing the facility at this time may not be prohibited by Forest Service policy and may not compromise continued eligibility of this Segment especially considering its long-term goals. In addition, by including improvements and mitigation for river-based recreational use at the site (by providing user-friendly portage, and signage for safety and site interpretation), the facility can be made to appropriately accommodate various recreation users in the near term such that a future suitability determination might not find the site wholly inconsistent. While there would be impacts on the ***Recreation*** ORV, the effects of those impacts do not necessarily disqualify this River from continued eligibility for future Wild and Scenic River designation.

3.7.4.3 Effect of the Proposed Action on the Geology ORV

The geology of the area will not be affected by the construction of a weir and its associated facilities along Panther Creek. People's view of the geology in the canyon above or below the proposed development will not be affected. The only possibility for effect would be at the site, and as noted in the ***Scenery*** description above, this location does not include any geologic features that the Forest Service likely recognized as outstandingly remarkable when Panther Creek was determined eligible for Wild and Scenic River consideration.

There is no adverse effect on the ***Geology*** ORV as it relates to the eligibility determination for this river.

3.7.4.4 Effect of the Proposed Action on the Fish ORV

The sole purpose of this facility is to restore anadromous fisheries resources within the Panther Creek drainage. In the long term, therefore, this action will be entirely beneficial to the ***Fish*** ORV.

The effects on fish (see EIS, Chapter 3) from this proposal are variable depending on the species and/or the timeframe considered. Adverse effects to fish may be expected during construction of the weir and its attendant facilities and there may be some adverse effect to bull trout, which have benefitted in the absence of Chinook salmon. There would be localized adverse impacts during late summer when flows above the facility will be reduced by up to one third. The overriding effect of this proposal, however, is an expected restoration of threatened Chinook salmon runs sufficient to support Tribal and recreational fishing in the future. This is a beneficial effect on this ORV and strengthens this river segment's eligibility for future designation.

For the purposes of this assessment, it is important to recognize that salmon restoration efforts and their attendant facilities, such as this project, are intended to be temporary until fish runs are restored. 'Temporary' in this context may mean many decades, but the intention is that these artificial means of re-establishing and supporting fish runs would ultimately become unnecessary as native and naturalized populations provide all the reproduction and escapement necessary to maintain populations at desired levels. From a Wild and Scenic Rivers perspective, this translates into acceptable short and medium-term impacts for long-term gains.

The Proposed Action does not adversely affect the ***Fish*** ORV to any degree that would adversely affect Panther Creek's continued eligibility as a Recreation Wild and Scenic River.

3.7.4.5 Effect of the Proposed Action on the Wildlife ORV

As discussed under the other ORVs above, the impacts on ***Wildlife*** will occur only at the immediate site of the Proposed Action. These effects are discussed in Chapter 3 of the EIS.

The ***Wildlife*** ORV, however, is a focus on wildlife viewing: primarily big game, raptors and other birds and mammals that people find uncommon. Big game viewing opportunities (other than resident deer) are likely few in the Proposed Action's site given the nature of the landscape, its habitat, and the presence of human activity. Local birds, small mammals and resident deer are most likely what can often be seen here.

The operating facility, however, will attract wildlife that people enjoy viewing. Species such as king fisher, great blue heron, osprey, raccoon, otter, and perhaps bears will likely be attracted to the weirs, fish ladder, and holding ponds because of the ready food source (fish).

In the canyon above and below the facility, there will be no adverse impact on wildlife viewing opportunities. In the long term, however, with restored fish runs, an increase in wildlife viewing opportunities is anticipated. Running salmon are a sight themselves, and their runs may attract otters, bears, raccoons, osprey, eagles, and even wolves, increasing the opportunity for people to see them as they travel Panther Creek Road. The success of this facility will increase the value of ***Wildlife*** as an ORV much as it would the ***Fish*** ORV in the long term.

3.7.5 Effects on River Classification

The classification of Panther Creek as eligible for designation as a "Recreation" river under the Wild and Scenic Rivers Act would be unchanged. The effects would not be sufficient to disqualify its potential as a "Recreation" river, as there is no lesser designation. The benefits from the Proposed Action are insufficient to elevate Panther creek for consideration as either a "Scenic" or a "Wild" river under the Act.

4 Determination

The installation of a permanent fish-trapping weir as proposed for Panther Creek in this Proposed Action will not nullify its eligibility for designation as a Recreation Wild and Scenic River. As discussed above, the effects to the river's free-flowing nature, water quality, and floodplain function would be low.

The Recreation ORV would be the most affected by the construction of this industrial-appearing facility and its effects on scenery and on-site river recreation. Facilities of this scale, however, are acceptable (prior to the Tribes' proposal) within rivers proposed as Recreation Wild and Scenic Rivers, and mitigation such as interpretive and safety signage, and safe accommodations for portage, might effectively override other concerns associated with the river-spanning weir or visual impacts.

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Appendix E
Assumptions Used to Calculate Greenhouse Gas Emissions and Detailed Results

Appendix E
Assumptions Used to Calculate Greenhouse Gas Emissions and Detailed Results

Implementation of the Crystal Springs Hatchery Program (Hatchery Program) could contribute to an increase in greenhouse gas concentrations through the activities described in this appendix. The assumptions and methods used to determine the Hatchery Program's contribution to greenhouse gas levels, as well as detailed results, are described in the following sections.

Assumptions

The assumptions and methods used to calculate greenhouse gas emissions for construction and operation of the Hatchery Program are described in the sections that follow.

Construction

Project construction for Alternative 1 and Alternative 2, including both the full production and 50% production options, would take approximately 18 months, with peak construction activity, including road and structure installation, occurring during a 14-month-long period. Yankee Fork and Panther Creek weir sites would each take approximately 4 months to complete within the peak construction timeframe. Non-peak construction activities would include installing and removing best management practices, site preparation, establishing staging areas, moving equipment and materials into and out of the project area, and restoration work. Most non-peak construction work would occur at the Crystal Springs hatchery site.

The transportation components of greenhouse gas emissions were estimated based on the approximate number of vehicles that would be used during project construction and the approximate distance those vehicles would travel. Greenhouse gas emissions were calculated for both the 14-month-long peak construction period and the 4-month-long non-peak construction period.

Overestimating the number of round trips ensures that greenhouse gas emissions estimates are conservatively high. The number of round trips was deliberately overestimated using the following assumptions:

- All workers would travel in separate vehicles to the project area each day.
- A maximum number of workers would be required to construct the Hatchery Program.
- Fuel consumption is based on the average fuel economy for standard pickup trucks of 17 miles per gallon (EPA 2013a). Again, this is likely an overestimation as more efficient vehicles may be occasionally used.

Up to 30 construction workers would work on the hatchery and weir facilities during the peak construction period (14 months) and an estimated 10 workers would be present during the non-peak construction period (4 months).

Tribal staff would travel to the Crystal Springs hatchery and weir sites for various purposes, such as road inspection, work inspection, staff meetings, environmental compliance monitoring, and meetings with landowners. Staff would travel an estimated one round trip every week from Fort Hall, Idaho to each of the remote weir sites on Yankee Fork and Panther Creek, and three round trips every week to the hatchery site near Springfield during the 18-month-long construction period. Travel to the Yankee Fork site would result in a total of 16 round trips at an estimated 380 miles per trip. Travel to the Panther Creek site would result in a total of 16 round trips at an estimated 462 miles per trip. Travel to the Crystal Springs hatchery site would result in 216 round trips at an estimated 60 miles per trip.

Fuel consumption and greenhouse gas emissions would also result from operation of on-site heavy construction equipment. Heavy construction equipment may include augers, bulldozers, excavators, graders, heavy-duty trucks, and front-end-loaders. Similar to the transportation activities described above, increased use of heavy construction equipment would occur during peak construction.

Greenhouse gas emissions associated with equipment operation were overestimated to account for all potential construction activities and associated material deliveries to and from the construction site. Although it is difficult to develop an accurate estimation of total fuel consumption associated with heavy construction equipment operation, the following assumptions were used:

- A maximum of 6 pieces of equipment would be in operation during peak and non-peak construction.
- The average size of the equipment would not exceed 250 horsepower. All equipment would operate at maximum power for 8 hours per day and 5 days per week throughout the construction phase. This is an overestimation because equipment commonly operates in idle or at reduced power.
- Equipment would operate at approximately 35% efficiency, representing the percentage of productive energy extracted from the diesel fuel relative to the maximum potential energy within the fuel (i.e., 128,450 British thermal units per gallon of diesel) (AFDC 2013).

Operation

Normal hatchery operations would include four off-site employees who would drive to and from the Crystal Springs hatchery daily, seven days a week (44 miles round trip). Crystal Springs hatchery employees would drive off-site once per day for supplies (44 miles round trip). At the Yankee Fork and Panther Creek weir facilities, one truck would bring one or two employees to each of the facilities where they would stay for a four-day period (40 miles and 65 miles round trip, respectively). Yankee Fork employees would make one 40-mile round trip per day for supply runs (one round trip per week employee travel, four round trips per week for supply runs). Total employee trips during operation at Panther Creek would be one 65-mile round trip per day for daily supply runs (one round trip per week employee travel, four round trips per week for supply runs). Trip distances are based on the nearest locality for each facility.

Detailed Results

The greenhouse gas emissions, or storage loss, are quantified below for each type of activity described above.

Construction Emissions

Table E-1 displays the results of calculations for the construction activities that would contribute to greenhouse gas emissions. Construction of the Hatchery Program would result in an estimated 5,916 metric tons of CO_2e[1] emissions for the 18-month construction period, or 3,944 metric tons of CO_2e in the first year of construction.

Table E-1. Estimated Greenhouse Gas Emissions from Construction Activities

Estimated Greenhouse Gas Emissions from Construction Activities	CO_2 (metric tons)	CH_4 (CO_2e)[a,b] (metric tons)	N_2O (CO_2e)[b] (metric tons)	Total CO_2e (metric tons)[c]
Peak construction transportation	542	438.3	2,040.4	3,020.7
Off-peak construction transportation	51.6	41.7	194.3	287.7
Tribal employee transportation	15	12.1	56.3	83.4
Peak construction equipment operation	2,103.8	2.6	13.5	2,120.0
Off-peak construction equipment operation	400.7	0.5	2.6	403.8
Total[c]	**3,113.2**	**495.3**	**2,307.1**	**5,915.5**

Notes:
CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
CO_2e = units of equivalent carbon dioxide

a. Carbon dioxide emissions factors calculated from The Climate Registry (2014).
b. Methane and nitrous oxide emissions have been converted into units of equivalent carbon dioxide (CO2e) using the Intergovernmental Panel on Climate Change global warming potential (GWP) factors of 25 GWP for methane and 298 GWP for nitrous oxide (The Climate Registry 2014).
c. The sum of the individual entries may not sum to the total depicted due to rounding.

[1] CO_2e is a unit of measure used by the Intergovernmental Panel on Climate Change that takes into account the global warming potential of each of the emitted greenhouse gases using global warming potential factors. See Table E-1.

Operation Emissions

Table E-2 displays the contribution to greenhouse gas emissions that would result from operation of the new hatchery and weir facilities through the life of the Hatchery Program (assumed 50 years). Facility operation would result in an estimated 285.5 metric tons of CO_2e emissions annually.

Table E-2. Estimated Greenhouse Gas Emissions from Operation of New Hatchery and Weir Facilities

Type of Activity	CO_2 (metric tons)	CH_4 (CO_2e) (metric tons)	N_2O (CO_2e) (metric tons)	Total CO_2e (metric tons)[a]
Worker travel and supply runs: Crystal Springs hatchery	2,097.7	662.5	7,896.7	**10,656.9**
Worker travel and supply runs: Panther Creek weir facility	441.5	139.4	1,661.9	**2,242.8**
Worker travel and supply runs: Yankee Fork weir facility	271.7	85.8	1,022.7	**1,380.2**
Total[a]	**2,810.8**	**887.7**	**10,581.4**	**14,279.9**

Notes:
CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
CO_2e = units of equivalent carbon dioxide
[a] The sum of the individual entries may not sum to the total depicted due to rounding.

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Appendix F
NEPA Disclosure Statement

NEPA DISCLOSURE STATEMENT FOR PREPARATION OF THE
Crystal Springs Hatchery Program
Draft Environmental Impact Statement
DOE/EIS-0500

CEQ Regulations at 40 CFR 1506.5(c), which have been adopted by the DOE (10 CFR 1021), require contractors who will prepare an EIS to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term "financial interest or other interest in the outcome of the project" for purposes of this disclosure is defined in the March 23, 1981 guidance "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 FR 8026-18038 at Question 17a and b.

"*Financial or other interest in the outcome of the project*" includes "*any financial benefit such as a promise of future construction or design work in the project, as well as indirect benefits the contractor is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients).*" 46 FR 18026-18038 at 18031.

In accordance with these requirements, the offeror and any proposed subcontractors hereby certify as follows: (check either (a) or (b) to assure consideration of your proposal).

(a) ___X___ Offeror and any proposed subcontractor have no financial or other interest in the outcome of the project.

(b) _____ Offeror and any proposed subcontractor have the following financial or other interest in the outcome of the project and hereby agree to divest themselves of such interest prior to award of this contract.

Financial or Other Interests

1.
2.
3.

Certified by:

Amanda G. Mulhern

_____
Signature

Amanda A. Mulhern Contracts Administrator
Printed Name and Title

ICF Jones & Stokes, Inc.
Company

7/15/2016
Date