

**4(d) Rule Limit 6  
Proposed Evaluation and Pending Determination**

**Title:** Yankee Fork and Panther Creek Snake River spring/summer Chinook salmon Hatchery and Genetic Management Plans (HGMPs)

**Plans Submitted by:** Idaho Department of Fish and Game (IDFG)  
Shoshone-Bannock Tribes (SBT)  
Bonneville Power Administration (BPA)

**ESU/DPS:** Snake River Spring/Summer Chinook Salmon ESU  
Snake River Fall Chinook Salmon ESU  
Snake River Steelhead DPS  
Snake River Sockeye Salmon ESU

**ESA 4(d) Rule:** Limit 6

**NMFS Tracking  
Number:** WCR-2017-7042

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## 1. EVALUATION

NOAA's National Marine Fisheries Service (NMFS) issued a final Endangered Species Act (ESA) 4(d) rule adopting regulations (50 CFR 223.203) to conserve listed salmon and steelhead (70 FR 37160 and 73 FR 55451; NMFS and NOAA 2005; 2008). However, under limit 6 of the 4(d) rule (the joint state-tribal 4(d) rule) ESA Section 9 take prohibitions for listed species do not apply to hatchery activities described in a resource management plan (RMP) or Hatchery Genetic Management Plan (HGMP) that meet certain requirements. This evaluation document considers HGMP hatchery plans submitted under limit 6 of the 4(d) rule.

Section 9 of the ESA prohibits the take of endangered species and, pursuant to §4, NMFS has extended that prohibition to threatened salmon and steelhead. Under the joint state-tribal 4(d) rule (50 CFR 223.203(b)(6)), those prohibitions don't apply to hatchery activities described in an RMP, provided that:

- The joint plans applying for 4(d) Limit 6 review will be implemented and enforced within the parameters set forth in *U.S. v. Oregon* or *U.S. v. Washington*; and
- The Secretary of Commerce has taken comment on how any HGMP addresses the 4(d) rule limit 6 criteria (§223.203(b)(6))

The Idaho Department of Fish and Game (IDFG) and The Shoshone-Bannock Tribes (SBT), as co-managers of the fisheries resource under *United States v. Oregon* (1974) as well as the United States Fish and Wildlife Service (USFWS) through the Lower Snake River Compensation Plan (LSRCP) and the Bonneville Power Administration (BPA) have provided NMFS with two hatchery and genetic management plans (HGMPs) proposed for implementation in the Snake Basin (Table 1). The applicants have provided the HGMPs (SBT 2017b; 2017a) for review and determination by NMFS pursuant to either the 4(d) rule limit 6. Each HGMP serves as an RMP for this evaluation. The proposed plans contain similar provisions regarding shared salmon population recovery and harvest augmentation objectives and effects; fish collection locations; fish rearing and release sites; and monitoring and evaluation activities.

The HGMPs were reviewed and NMFS determined that they were sufficient for NMFS to proceed in its evaluation of plan effects on ESA-listed species.

The following discussion evaluates whether the submitted plans address the criteria in Section 223.203(b)(6) of the 4(d) rule for salmon—the appropriate criteria for RMPs and TRMPs for hatchery programs<sup>1</sup>. All references below to the hatchery programs or HGMPs includes all HGMPs being considered as part of this proposed action, regardless of which regulatory provision applies to their submission.

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<sup>1</sup> The criteria listed in 223.203(b)(6) concerning the sufficiency of an HGMP are appropriate for evaluating TRMP consisting of HGMPs, because those are the relevant criteria NMFS considers in evaluating whether a hatchery program will appreciably reduce the likelihood of survival and recovery of listed salmon and steelhead. The determination to be made under Limits 5 and 6 of the 4(d) rule is functionally identical to the determination made under the Tribal 4(d) rule.

**Table 1. Proposed hatchery programs for Snake River spring/summer Chinook salmon requiring 4(d) Limit 6 evaluation.**

<b>Program</b>	<b>HGMP Receipt<sup>1</sup></b>	<b>Primary Program Operator<sup>2</sup></b>	<b>Funding Agency</b>	<b>Program Type and Purpose</b>	<b>ESA Review</b>
Yankee Fork Chinook	October 2016	SBT	BPA	Integrated Recovery	4(d) Limit 6
Panther Creek Chinook	October 2016	SBT	BPA	Integrated Recovery	4(d) Limit 6

<sup>1</sup> Most recent HGMP receipt (SBT 2017b; 2017a). Many HGMPs have been previously submitted and updated.

<sup>2</sup> Primary operators are listed, but all programs are coordinated between Idaho, Tribes, and Federal agencies collectively. Operators are: Idaho Fish and Game (IDFG), Shoshone-Bannock Tribes (SBT), United States Fish and Wildlife Service (USFWS), and the Bonneville Power Administration (BPA).

**1.1 5(i)(A) The HGMP has clearly stated goals, performance objectives, and performance indicators that indicate the purpose of the program, its intended results, and measurements of its performance in meeting those results.**

Each of the HGMPs has clearly stated its goal, performance objectives, and methods for measuring the progress toward achieving those objectives. The general program goals described in Section 1.7 of each HGMP for propagating hatchery fish are to:

- Mitigate lost natural-origin fish production
- Contribute to the recovery of the ESA-listed Snake River Spring/Summer Chinook Salmon ESU
- Fulfill federally protected reserved fishing rights for salmon and steelhead populations within the Snake River Basin by supporting tribal commercial, recreational, and tribal ceremonial and subsistence fisheries when consistent with conservation objectives
- Meet tribal fishery harvest allocations guaranteed through treaties and affirmed in *U.S. v. Oregon*

Performance objectives derived from the Northwest Power Planning Council Artificial Production Review (NPPC 2001), and performance indicators that would be used to gauge compliance with each objective, are described in Section 1.10 of each HGMP. Evaluation and monitoring to ensure standards and indicators are met is further described in Section 1.8 of this document and are summarized in Table 2. HGMP implementation would generally be designed to determine:

1. Program consistency with proposed hatchery actions and intended results (e.g., juvenile fish release and adult return levels)
2. Measurement of the program’s success or failure in attaining results
3. Effects of the program on listed natural-origin fish populations in the Snake River Basin.

Table 2. HGMP program performance standards and indicators.

Standard	Indicator
Produce fish for harvest while minimizing excess hatchery returns	<ul style="list-style-type: none"> <li>• Measure adult harvest and escapement</li> <li>• Mass marking to allow selective fisheries</li> </ul>
Supplement natural population (integrated conservation programs only)	<ul style="list-style-type: none"> <li>• Increasing proportion of returning natural-origin adults on spawning grounds</li> <li>• Increasing proportion of natural-origin smolts</li> </ul>
Proper broodstock collection and management	<ul style="list-style-type: none"> <li>• Collected randomly throughout the run</li> <li>• Weir/trap checked regularly</li> <li>• Proportion of natural-origin fish</li> <li>• Proportion of hatchery-origin fish above the weir</li> <li>• Sex ratio</li> <li>• Stray rates</li> </ul>
Meet hatchery juvenile production goal	<ul style="list-style-type: none"> <li>• Eyed egg to fry and/or smolt survival is as expected</li> <li>• Release targets</li> </ul>
Minimize interactions of releases with natural-origin fish	<ul style="list-style-type: none"> <li>• Juveniles released at sea-water ready life stages (when not intended for natural rearing or outplanting beyond impassable barriers)</li> <li>• Size and time of release accounts for listed stocks</li> </ul>
Life history characteristics of the natural population do not change	<ul style="list-style-type: none"> <li>• Stable life history patterns of natural-origin fish</li> <li>• Age and size data for natural population</li> </ul>
Natural population genetic variation does not change due to artificial propagation	<ul style="list-style-type: none"> <li>• Proportion of spawning hatchery-origin fish on natural-origin spawning grounds</li> <li>• Genetic assessment</li> </ul>
Limit pathogen amplification and transmission	<ul style="list-style-type: none"> <li>• Follows applicant fish health policies</li> </ul>

**1.2 5(i)(B) The HGMP utilizes the concepts of viable and critical salmonid population thresholds, consistent with the concepts contained in the technical document entitled “Viable Salmonid Populations.”**

HGMPs proposed for consideration under any of the 4(d) rules must use the concepts of viable and critical thresholds as defined in the NMFS Viable Salmonid Population (VSP) document (McElhany et al. 2000). Application of these VSP concepts is needed to adequately assess and limit the take of listed salmonids for the protection of the species. Section 2.2.2 of each HGMP describes the status of the listed Chinook salmon populations relative to “critical” and “viable” population thresholds within the Snake Basin and references the most recent Northwest Fisheries Science Center Status Review (NWFSC 2015).

**1.3 5(i)(C) Taking into account health, abundances, and trends in the donor population, broodstock collection programs reflect appropriate priorities.**

A prioritized purpose of a broodstock collection program using listed fish is to re-establish an indigenous salmonid population for conservation purposes, including restoration of similar at-risk populations within the same ESU, and reintroduction of at-risk populations to under-seeded

habitat. Under this 4(d) rule criterion, as described in the 4(d) rule, listed salmonids may be intentionally taken for broodstock only if:

1. The donor population is currently at or above the viable threshold and the collection will not impair its function, or
2. The donor population is not currently viable but the sole objective is to enhance the propagation or survival of the listed ESU, or
3. The donor population is shown with a high degree of confidence to be above the critical threshold although not yet functioning at viable levels, and the collection will not appreciably slow attainment of viable status for that population.

As described in the HGMPs, both hatchery programs included in the proposed action will use listed fish for broodstock. These programs are all considered *Integrated Conservation* programs and take listed salmonids for broodstock consistent with criterion number two, above, whereby the donor population is not viable but using it for broodstock will contribute to the propagation and survival of the ESU.

Taking into account biological considerations like status of the species, the broodstock collection plans in the HGMPs reflect appropriate priorities. Co-managers reached these decisions to integrate the hatchery programs based on various conservation considerations (e.g. donor population status, etc.). Refer to Sections 6, 7, and 8 in the HGMPs as well as the Broodstock Collection and Spawning section below for descriptions of the various considerations used when determining programs should be managed as *Integrated Conservation*.

#### **1.4 5(i)(D) The HGMP includes protocols to address fish health, broodstock collection and spawning, rearing and release of juveniles, disposition of hatchery adults, and catastrophic risk management.**

The proposed HGMPs include protocols, or “best management practices” (BMPs), for fish health, broodstock collection, broodstock spawning, rearing and release of juveniles, disposition of hatchery adults, and catastrophic risk management. These practices, when implemented, would be appropriate for their purpose of adequately limiting the risk of substantial direct and incidental adverse effects on listed fish.

*Fish Health:* As described in Sections 7, 9, and 10 in each HGMP, the hatchery programs would be operated in compliance with Federal, State, and Tribal fish health policies. The policies are designed to limit the spread of fish pathogens between and within watersheds by regulating the transfers of eggs and fish. The policies also outline standard fish health diagnosis, maintenance, and hatchery sanitation protocols to reduce the risk of pathogen amplification and transmission within the hatchery and to fish in the natural environment during broodstock collection and mating as well as fish incubation, rearing, and release. Fish health specialists and pathologists would provide fish health management support and diagnostic fish health services.

*Broodstock Collection and Spawning:* Sections 6, 7, and 8 in the HGMP describe hatchery broodstock and spawning. Both hatchery and natural-origin fish are used in Yankee Fork and Panther Creek programs in an attempt to integrate the program with the natural-origin population. This is consistent with the purpose of integrated conservation programs.

Broodstock are collected from adult fish returning to the hatchery release sites using a trap/weir. Any non-target fish from the programs would be released back into the natural environment consistent with abundance-based sliding scales. Spawning of broodstock occurs at Sawtooth Hatchery for Yankee Fork and at Pahsimeroi Hatchery for Panther Creek. Additional broodstock collection and spawning details are described in Table 3.

**Table 3. Broodstock collection and spawning details. NOR stands for Natural-Origin Return and HOR stands for Hatchery-Origin Return**

Program	Broodstock collection for Snake River spring/summer Chinook salmon ESU						
	Component and Purpose	Population	Number and origin	Location(s) and method	Approximate timing	NMFS PNI or pHOS targets and pNOB <sup>1</sup>	Spawning
<b>Yankee Fork</b>	<i>Integrated recovery</i>	Yankee Fork	358 (179 pairs) <sup>2</sup> HOR+NORs on a sliding scale <sup>2</sup>	Yankee Fork; picket weir	June through September	PNI > 0.5 to PNI > 0.67 depending on NORs (sliding scale)	1:1 (F:M); spawning at Sawtooth
<b>Panther Creek</b>	<i>Integrated recovery</i>	Panther Creek	214 (107 pairs) HOR+NORs on a sliding scale <sup>2</sup>	Panther Creek; picket weir	N/A	PNI > 0.5 to PNI > 0.67 depending on NORs (sliding scale)	1:1 (F:M); spawning at Pahsimeroi

<sup>1</sup> PNI = Proportionate Natural Influence [pNOB/(pNOB+pHOS)]; pHOS = % hatchery-origin fish on the spawning grounds; pNOB = % natural-origin fish in broodstock

<sup>2</sup> Sliding scale management will be implemented using Table 4 below

Source: (SBT 2017b; 2017a)

**Table 4. Yankee Fork and Panther Creek Broodstock Management**

Natural Origin Returns (NOR)	Max Proportion of Natural Run Collected	NORs Brood Stock	HORS Brood Stock	Total Brood Stock	pNOB	HOR Run Size at Weir								
						500			1,000			1,500		
						Total NOR+HOR Escapement	pHOS	PNI	Total NOR+HOR Escapement	pHOS	PNI	Total NOR+HOR Escapement	pHOS	PNI
100	35%	35	323	358	10%	242	73%	0.12	742	91%	0.10	1,242	95%	0.09
200	25%	50	308	358	14%	342	56%	0.20	842	82%	0.15	1,342	89%	0.14
300	25%	75	283	358	21%	442	49%	0.30	942	76%	0.22	1,442	84%	0.20
400	25%	100	258	358	28%	542	45%	0.38	1,042	71%	0.28	1,542	81%	0.26
500	25%	125	233	358	35%	642	42%	0.46	1,142	67%	0.34	1,642	77%	0.31
600	25%	150	208	358	42%	742	39%	0.52	1,242	64%	0.40	1,742	74%	0.36
700	25%	175	183	358	49%	842	38%	0.56	1,342	61%	0.45	1,842	71%	0.41
750	25%	188	171	358	52%	892	37%	0.59	1,392	60%	0.47	1,892	70%	0.43

*Rearing and Release of Juveniles:* Sections 9 and 10 of each HGMP describe the rearing and release of hatchery produced juveniles. All hatchery released spring/summer Chinook salmon would receive a mark (adipose clipped and/or PBT) or tag (CWT and/or PIT) prior to release to allow for their differentiation from natural-origin salmon. Release numbers, life stage, mark/tag types, and dates for all hatchery programs are detailed in Table 5.

**Table 5. Summary of annual release groups (number and life stage), marking, egg incubation and rearing locations, acclimation, and release times**

Program	Annual release groups (number and life stage)	Marking and Tagging <sup>1</sup>	Egg incubation Location	Rearing Location	Acclimation	Release Time
<b>Yankee Fork</b>	Up to 600,000 yearling smolt volitionally released into Yankee Fork	100% ad-clipped (PBT, CWT, and PIT tags TBD)	Sawtooth Hatchery with goal of rearing at Crystal Springs once constructed	Sawtooth Hatchery with goal of rearing at Crystal Springs once constructed	Yes	Late March-April
<b>Panther Creek</b>	Up to 400,000 yearling smolt directly released into Panther Creek	100% ad-clipped (PBT, CWT, and PIT tags TBD)	Pahsimeroi Hatchery with goal of rearing at Crystal Springs once constructed	Pahsimeroi Hatchery with goal of rearing at Crystal Springs once constructed	Yes	Late March-April
	Up to 800,000 Eggs	PBT	Pahsimeroi	Panther Creek egg boxes	instream	October-November

<sup>1</sup> CWT and PIT tagging levels may change based on budgets and evaluations into the future. If tagging rates are likely to change into the future, applicants will contact NMFS to discuss these details.

Source: (SBT 2017(SBT 2017a))

*Disposition of Hatchery Fish:* There are no excess fish associated with the SFCEP. For the remaining programs, excess adult, juvenile, and egg disposition is addressed in Table 6. Additional details regarding the disposition of hatchery fish are covered in Section 7.5 of the HGMPs.

**Table 6. Summary of disposition by life stage**

<b>Program(s)</b>	<b>Life stage</b>	<b>Disposition</b>
<b>Yankee Fork</b>	Adults	<ul style="list-style-type: none"> <li>● Released for volitional spawning</li> <li>● Recycled back through the fishery</li> <li>● Provided to the tribes for ceremonial subsistence use</li> <li>● Released for nutrient enhancement in local watershed</li> </ul>
	Juveniles	<ul style="list-style-type: none"> <li>● Culled</li> <li>● Released as eggs in Yankee Fork</li> </ul>
<b>Panther Creek</b>	Adults	<ul style="list-style-type: none"> <li>● Released for volitional spawning</li> <li>● Recycled back through the fishery</li> <li>● Provided to the tribes for ceremonial subsistence use</li> <li>● Released for nutrient enhancement in local watershed</li> </ul>
	Juveniles	<ul style="list-style-type: none"> <li>● Culled</li> <li>● Released as eggs in Panther Creek</li> </ul>

Source: (SBT 2017(SBT 2017a))

*Catastrophic Risk Management:* All facilities identified in Table 6 adhere to the applicants’ fish health policies and apply BMPs to reduce the risk of catastrophic loss of fish under propagation. All hatcheries have staff on site and low water alarms. Additional details for this are provided in the HGMPs in Section 5.8.

**Table 7. Facility water source and use for hatchery program operations (n/a = not applicable).**

Program and facility	Surface Water (cfs)	Ground Water (cfs)	Water Diversion Distance (km)	Surface water source	Discharge Location	Meet NMFS Screening Criteria; Year?	NPDES Permit?	Water Rights Permit
<b>Sawtooth (both components)</b>	43cfs	11.6cfs	1.48	Salmon River	Salmon River	LSRCP currently evaluating #	Yes; IDG131010	71-10934; 71-10937; 71-02088; 71-07079
<b>Pahsimeroi Upper (rearing)</b>	20cfs	13.53cfs	0.23	Pahsimeroi River	Pahsimeroi River	Yes; compliant rotating drum screen	Yes, IDG131007	7302168; 7307051, 7311961
<b>Pahsimeroi Lower (adult holding)</b>	40cfs	0.21cfs	0.4	Pahsimeroi River	Pahsimeroi River	Yes, compliant rotating drum screen	NA (adult holding only)	7307006, 7307055, 734041
<b>Yankee Fork Adult<sup>4</sup></b>	10cfs	None	0.38	Yankee Fork	Yankee Fork	Yes <sup>1</sup>	Yes	TBD
<b>Yankee Fork Juvenile<sup>1, 2</sup></b>	N/A <sup>2</sup>	None	N/A	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	Yes	N/A
<b>Panther Creek Adult<sup>4t</sup></b>	11 cfs	None	0.38	Panther Creek (10 cfs) Dummy Creek (1 cfs)	Panther Creek	Yes <sup>1</sup>	Yes	TBD
<b>Panther Creek Juvenile<sup>1</sup></b>	3 cfs		0.30	Panther Creek		Yes <sup>1</sup>	Yes	TBD
<b>Crystal Springs<sup>3</sup></b>	N/A	23cfs	N/A <sup>2</sup>			N/A – no fish access	Yes	

<sup>1</sup>Yankee Fork and Panther Creek intakes are being designed to meet current criteria

<sup>2</sup>Yankee Fork acclimation takes place in side channel ponds that already exist, and do not require

<sup>3</sup>Crystal Springs only uses groundwater, and does not use surface water in anadromy.

<sup>4</sup>The existing facility and any subsequent structures (as applicable) were built to design specifications at the time of construction. Structures are currently being evaluated relative to compliance with NMFS's 2011 Screening/Passage criteria. When final assessments for LSRCP facilities are completed, the LSRCP and facility managers/operators will coordinate with NMFS to determine compliance levels (e.g., in compliance, in compliance with minor variances, or out of compliance) and develop a strategy to prioritize appropriate/necessary modifications contingent on funding availability, program need, and biological impacts on listed and native fish.

**1.5 5(i)(E) The HGMP evaluates, minimizes, and accounts for the propagation programs' genetic and ecological effects on natural populations, including disease transfer, competition, predation, and genetic introgression caused by straying of hatchery fish.**

The Yankee Fork and Panther Creek spring/summer Chinook salmon HGMPs provide evaluations of potential genetic and ecological effects on listed salmon and steelhead in Section 2 and risk minimization measures in Sections 6-10.

Generally speaking, artificial fish production may result in a loss of within-population genetic diversity (the reduction in quantity, variety and combinations of alleles in a population), outbreeding depression (loss in fitness caused by changes in allele frequency or the introduction of new alleles), and/or hatchery-influenced selection (Busack and Currens 1995).

The primary ecological risks to natural-origin salmon and steelhead populations posed by salmon and steelhead hatchery programs are increased pathogen transfer, competition, and predation (NMFS 2012). As noted in the HGMPs and earlier in this document, all hatchery actions would be implemented in accordance with fish health policies as a means to account for and minimize the risks of pathogen amplification and transmission.

The HGMPs each account for and minimize genetic and ecological risks to listed salmon and steelhead populations through implementation of the following measures:

- Broodstock are randomly collected throughout the adult return to ensure full representation of run timing, return location, age class, and sex ratio
- Use sliding scale management to determine percentage of natural-origin fish used in broodstock and to limit hatchery-origin spawners above the weir to reduce negative genetic impacts
- All hatchery fish are marked to differentiate them from natural-origin fish
- Straying of program Chinook salmon is monitored using PBT, CWT, and PIT tags
- Fish are released as 1 year smolts that are ready to migrate
- Fish are outplanted as eyed-eggs in natural rearing areas to minimize hatchery selection and reduce straying (Panther Creek eggbox))
- Monitoring of residuals through PIT tag arrays and/or visual inspections prior to release

**1.6 5(i)(F) The HGMP describes interrelationships and interdependencies with fisheries management.**

Descriptions of this criterion occur in Section 3 of the HGMPs. Crossover with fisheries management occurs in:

- The *United States vs. Oregon Management Agreement (U.S. v. Oregon)*: hatchery programs would operate consistent with the fisheries framework identified in the *U.S. v. Oregon Management Agreement*, which requires that all parties cooperate and agree on the function, purpose, and fish production strategies.
- State recreational and tribal fisheries for hatchery-origin species produced through the programs may incidentally affect natural-origin Chinook, sockeye salmon, and steelhead, but these fisheries are not considered interrelated with or interdependent on these programs because these programs are not the sole producers of fish for the fisheries.

**1.7 5(i)(G) Adequate artificial propagation facilities exist to properly rear progeny of naturally spawned broodstock, to maintain population health and diversity, and to avoid hatchery-influenced selection and domestication.**

The Yankee Fork and Panther programs that propagate natural-origin and/or hatchery-origin ESA-listed fish utilize multiple facilities to properly rear progeny. As described in Sections 4 and 5 of the HGMPs, and Table 7, the hatchery facilities used to implement the programs have adequate surface and groundwater sources, fish trapping and holding facilities, egg incubation and fish rearing vessels, and fish release facilities to ensure proper rearing.

As described in each HGMP, water at all facilities is withdrawn in accordance with state-issued water rights. LSRCP facilities are being evaluated against the NMFS 2011 screening and passage criteria. The strategy is to work with NMFS and cooperators to discuss compliance outcomes and to prioritize those facilities with compliance issues that need to be addressed based individual risk, program risk, and compliance concern. Modifications and upgrades will be based on the prioritized list and acted upon as funding becomes available. Additional facilities will be adopting a similar approach to determine compliance with NMFS screening criteria.

Programs that rear over 20,000 pounds of fish operate under applicable National Pollutant Discharge Elimination System (NPDES) general permits. As mentioned previously, fish health is maintained throughout rearing by adhering to fish health policies and using pathogen-free water sources when possible. Minimization of catastrophic loss and genetic risks associated with these programs were addressed in Sections 1.3 and 1.4, respectively, of this document.

**1.8 5(i)(H) Adequate monitoring and evaluation exist to detect and evaluate the success of the hatchery program and any risks potentially impairing the recovery of the listed ESU.**

Monitoring and evaluation actions to identify the performance of each program and hatchery-related effects on ESA-listed fish are also described in each HGMP. These actions are summarized in Section 1.10 and Section 11 of each HGMP, and are further described in Table 8. Some of these activities may be covered using other ESA pathways (e.g., Section 10 research permit), but the information obtained may be relevant to our evaluation of the hatchery program. Monitoring and evaluation actions that would be implemented include:

- Hatchery- and natural-origin spring/summer Chinook salmon escapement to determine total escapement and smolt-to-adult return rates
- The number and distribution of marked and unmarked spring/summer Chinook salmon (via PBT and PIT tags) to inform harvest levels and proportion of hatchery-origin fish on the spawning grounds
- Abundance, timing, age class, sex ratio, and condition information for broodstock to assess run traits of the target populations
- Water withdrawal and effluent discharge to be able to qualitatively assess risk to listed species
- Operation of screw traps (and potentially electrofishing in the future) to determine emigration timing, size and age structure of natural-origin juveniles
- Monitoring of broodstock collection, composition, egg take, survival rates at all life stages, and smolt release levels for each program to determine compliance with program goals
- Fish health monitoring and reporting in accordance with fish health policies

**Table 8. Specific adult and juvenile RM&E activities for each of the five programs**

Program	Spring/summer Chinook salmon ESU		
	Adult Monitoring	Juvenile Monitoring	ESA coverage
All	Systematic tissue sample of adipose clipped adults at Lower Granite Dam to provide escapement estimates		NMFS Letter of Determination under 2014 FCRPS Supplemental Opinion and Permit # TE-82106B-0 under Section 10(a)(1)(A) for Bull trout
Yankee Fork	Yankee Fork weir and fish trap operation: data collection to include date, sex, length, marks, and tags; applying marks and collecting tissue samples	Monitoring of survival metrics for all life stages in the hatchery from spawning to release. CWT and/or PBT tagging representative groups of juveniles to estimate harvest in mixed stock fisheries downstream of Idaho. Stock composition of harvest in Idaho fisheries is estimated using PBT. PIT tagging representative groups of hatchery juveniles to estimate migration timing, outmigration survival rate, and adult returns. Adult PIT detections in the mainstem Columbia River and Lower Snake River dams are used to inform in-season fisheries management.	This Opinion for Spring Chinook Salmon

Program	Spring/summer Chinook salmon ESU		
	Adult Monitoring	Juvenile Monitoring	ESA coverage
	Multiple-pass spawning surveys, pre-spawning mortality, and carcass surveys, genetic monitoring	Operate rotary screw trap(s) in lower Yankee Fork; estimate juvenile production, estimate survival to Lower Granite Dam, and monitor migration timing; most fish counted/released or anesthetized, measured, weighed, and released; some receive PIT before release	This Opinion for Spring Chinook Salmon
Panther Creek	Pahsimeroi weir and fish trap operation; data collection to include date, sex, length, marks, and tags; applying marks and collecting tissue samples	Monitoring of survival metrics for all life stages in the hatchery from spawning to release. CWT and/or PBT tagging representative groups of juveniles to estimate harvest in mixed stock fisheries downstream of Idaho. Stock composition of harvest in Idaho fisheries is estimated using PBT. PIT tagging representative groups of hatchery juveniles to estimate migration timing, outmigration survival rate, and adult returns. Adult PIT detections in the mainstem Columbia River and Lower Snake River dams are used to inform in-season fisheries management.	This Opinion for Summer Chinook Salmon

Source: (IDFG 2016a; IDFG 2016b; IDFG 2017; NPT 2017; SBT 2017; SBT and IDFG 2010)

**1.9 5(i)(I) The HGMP provides for evaluating monitoring data and making any revisions of assumptions, management strategies, or objectives that data show are needed.**

Under the HGMPs in Section 1.10, data collected relating to hatchery program performance and effects would be evaluated by the applicants to determine whether performance standards are being met. Annual reports for the programs assembled by the applicants would be jointly reviewed by NMFS to document program results, and to determine if adjustments to the programs' assumptions and management strategies are warranted. Any changes would be incorporated into the *U.S. v. Oregon* Management Agreement, Annual Operating Plan documents, and/or the HGMPs as necessary. These programs are enforced through the *U.S. v. Oregon* Management Agreement forum, upon review of annual reports and operating plans. The tribes and IDFG employ enforcement officers throughout the ESA Action Area, who are responsible for on-the-ground enforcement of hatchery programs to prevent ESA violations.

We note here that both HGMPs identify the necessary procedures by which they will enforce the terms of the plans. These procedures include Research, Monitoring, and Evaluation actions to evaluate the success of the HGMPs, submittal of annual reports to NMFS to determine if performance standards were met, and a contingency plan in place if activities exceeded coverage.

**1.10 5(i)(J) NMFS provides written concurrence [with] the HGMP [that] specifies the implementation and reporting requirements.**

After completion of the public review and comment period for this proposed evaluation and pending determination document, and after consulting with itself under Section 7 of the ESA, NMFS will make a determination regarding the adequacy of the HGMPs. If the determination is made that implementing and enforcing the plans will not appreciably reduce the likelihood of survival and recovery of the ESA-listed species, and that the plans address all of the criteria specified in limit 6 of the 4(d) rule, NMFS will so notify the managers in writing, and will specify any necessary implementation and reporting requirements.

**1.11 5(i)(K) The HGMP is consistent with plans and conditions set within any Federal court proceeding with continuing jurisdiction over tribal harvest allocations.**

The Yankee Fork and Panther Creek spring/summer Chinook salmon HGMPs were developed by the applicants pursuant to the fisheries and hatchery framework in the *U.S. v. Oregon* Management Agreement. The HGMPs are one component of an effort to preserve and recover to a fishable status listed salmon and steelhead in the Snake River Basin. The final recovery plans for Snake River fall Chinook (NMFS 2017a), Snake River spring/summer Chinook salmon and steelhead (NMFS 2017b) and the Snake River sockeye salmon (NMFS 2015) have hatchery and habitat components, and include monitoring, research, and restoration recommendations to complement artificial production. The hatchery actions proposed in the HGMPs are included within, and consistent with, these recovery plans. There are no other plans or conditions set within Federal court proceedings—including memorandums of understanding, court orders, or other management plans—that direct operation of the proposed salmon and steelhead hatchery programs.

**2. PENDING DETERMINATION**

As required by limit 6 of the 4(d) rule, the Secretary is seeking comment from the public on the pending determination as to whether or not the HGMPs evaluated here would appreciably reduce the likelihood of survival and recovery of the listed salmon and steelhead. In addition, comment is sought on whether the TRMP meets the standards set forth in the Tribal 4(d) rule, and whether the remaining RMPs meet the requirements of limit 6 of the (non-tribal salmon and steelhead) 4(d) rule.

**3. RECOMMENDED DETERMINATION**

As required in (b)(6) of section 223.203 (joint state/tribal RMPs), after taking all public comments under consideration, the Secretary will publish notice of his determination as to whether each RMP appreciably reduces the likelihood of survival and recovery of affected threatened species, together with a discussion of the biological analysis underlying that determination.

#### 4. REEVALUATION CRITERIA

NMFS will reevaluate this determination if: (1) the actions described by the RMPs are modified in a way that causes an effect on the listed species that was not previously considered in NMFS' evaluation; (2) new information or monitoring reveals effects that may affect listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may affect NMFS' evaluation of the HGMPs.

#### 5. REFERENCES

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SBT. 2017b. Yankee Fork Chinook Salmon Supplementation Project Spring/Summer Chinook Salmon HGMP. May 16, 2017. 77p.