

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

**Title:** Five 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)  
Nez Perce Tribe (NPT)  
U.S. Fish and Wildlife Service (USFWS) through the Lower Snake River Compensation Plan (LSRCP)  
Idaho Power Company (IDP)  
Bonneville Power Administration (BPA)  
Bureau of Indian Affairs (BIA)

**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 and Tribal

**NMFS Tracking Number:** WCR-2017-7319

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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; NMFS and NOAA 2008). However, under limit 6 of the 4(d) rule (the joint state-tribal 4(d) rule) and the 4(d) Tribal rule, ESA Section 9 take prohibitions for listed species do not apply to hatchery activities described in a resource management plan (RMP) or tribal resource management plan (TRMP; Tribal Plan) that meet certain requirements. This evaluation document considers hatchery plans submitted under each of the two regulations.

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 Secretary of Commerce has determined pursuant to 50 CFR 223.204(b) [the Tribal 4(d) rule] and the government-to-government processes therein that implementing and enforcing the RMP will not appreciably reduce the likelihood of survival and recovery of listed salmon and trout
- 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 5 criteria (§223.203(b)(5))

Under the tribal 4(d) rule (50 CFR 223.204), ESA section 9 prohibitions do not apply to activities described in a TRMP submitted to NMFS, provided that the Secretary determines that implementation of such TRMP will not appreciably reduce the likelihood of survival and recovery of the listed salmonids. TRMPs must also specify the terms of their enforcement.

The Idaho Department of Fish and Game (IDFG), The Nez Perce Tribe (NPT), 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), Bonneville Power Administration (BPA), Idaho Power Company (IPC), and the Bureau of Indian Affairs (BIA), have provided NMFS with five hatchery and genetic management plans (HGMPs) proposed for implementation in the Snake Basin (Table 1). The applicants have provided the HGMPs (IDFG 2016a; IDFG 2016b; IDFG 2017; NPT 2017; SBT 2017; SBT and IDFG 2010) for review and determination by NMFS pursuant to either the 4(d) rule limit 6 or the Tribal 4(d) rule. 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.

As per the Tribal 4(d) rule, NMFS consulted with the applicants during the development of the HGMPs through government-to-government communication and technical work group meetings

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to provide technical assistance, to exchange information and discuss what would be needed to conserve the listed species, and to be consistent with legally enforceable tribal rights and the Secretary’s trust responsibilities to the treaty tribes. The HGMPs were reviewed and NMFS determined that they were sufficient (Jones 2017a; Jones 2017b; Jones 2017c; Purcell 2017) 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)(5) of the 4(d) rule for salmon and steelhead—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.

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

Program	HGMP Receipt <sup>1</sup>	Primary Program Operator <sup>2</sup>	Funding Agency	Program Type and Purpose	ESA Review
Little Salmon River Basin, Spring Chinook Salmon (Rapid River Fish Hatchery)	October 2016	IDFG	IPC	Segregated Harvest	4(d) Limit 6
Hells Canyon, Snake River Spring Chinook Salmon	October 2016	IDFG	IPC	Segregated Harvest	4(d) Limit 6
South Fork Salmon River Summer Chinook	March 2017	IDFG	LSRCP <sup>3</sup>	Integrated Recovery and Segregated Harvest	4(d) Limit 6
Johnson Creek Artificial Propagation Enhancement Project	February 2017	NPT	BPA	Integrated Recovery	4(d) Tribal Rule
South Fork Chinook Eggbox Project	June 2010	SBT	TBD <sup>4</sup>	Segregated Harvest with potential for being Integrated Recovery	4(d) Tribal Rule

<sup>1</sup> Most recent HGMP receipt (IDFG 2016a; IDFG 2016b; IDFG 2017; NPT 2017; SBT 2017; SBT and IDFG 2010). 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), Nez Perce Tribe (NPT), Shoshone-Bannock Tribes (SBT), United States Fish and Wildlife Service (USFWS), Bonneville Power Administration (BPA), and Idaho Power Company (IPC)

<sup>3</sup> The United States Fish and Wildlife Service (USFWS) is the funding agency through the Lower Snake River Compensation Plan (LSRCP)

<sup>4</sup> BPA and LSRCP have funded this program (previously the Dollar Creek Eggbox Program) in past years. Future funding for the South Fork Chinook Eggbox Program is TBD (to be determined).

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

<sup>1</sup> The criteria listed in 223.203(b)(5) 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.

**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, the Snake River Fall Chinook Salmon ESU, the Snake River Steelhead DPS and the Snake River Sockeye 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 (Northwest Power Planning Council 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 (SFSR and SFCEP)</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> </ul>

Standard	Indicator
Minimize interactions of releases with natural-origin fish	<ul style="list-style-type: none"> <li>• Release targets</li> <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, sockeye salmon, and steelhead 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.

The only hatchery programs included in the proposed action that will use listed fish for broodstock are the SFSR, SFCEP, and JCAPE. 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 the HGMP, all of 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. Hatchery-origin Snake River spring Chinook salmon are collected for the Rapid River program, Hells Canyon program, and the segregated component of the SFSR program. Both hatchery and natural-origin fish are used in the integrated component of the SFSR program and may be used in the SFCEP programs. This is consistent with the purpose of integrated conservation programs. Natural-origin fish are only used in the JCAPE program, which is also consistent with the purpose of integrated conservation programs. For all of the programs except for the SFCEP, broodstock are collected from adult fish returning to the hatchery release sites using a trap/weir. The SFCEP uses eyed-eggs from the SFSR program and does not require broodstock collection for the program to operate. Any non-target fish for the segregated components of the programs would be released back into the natural environment. Spawning of broodstock occurs in all of the programs except the SFCEP, which uses eyed-eggs from the SFSR program and does not require spawning for the program to operate. Additional broodstock collection and spawning details are described in Table 3.

**Table 3. Broodstock collection and spawning details. SFSR = South Fork Salmon River; JCAPE = Johnson Creek Artificial Propagation and Enhancement Project; SFCEP = South Fork Chinook Eggbox Project; EFSFSR = East Fork of the South Fork Salmon River. 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>Rapid River</b>	<i>Segregated harvest</i>	Little Salmon River	2,096 (1,048 pairs) HORs	Rapid and Snake Rivers; traps	Late-April through August	pHOS = 0 pNOB = 0	1:1 (F:M); spawning at RRFH
<b>Hells Canyon</b>	<i>Segregated harvest</i>	Little Salmon River	400 (200 pairs) HORs	Rapid and Snake Rivers; traps	Late-April through August	pHOS = 0 pNOB = 0	1:1 (F:M); spawning at RRFH
<b>SFSR</b>	<i>Segregated harvest</i>	SFSR	678 (339 pairs) HORs for SFSR program; 172 (86 pairs) HORs for the SFCEP 100% HORs (genetically linked with integrated); produce 300,000 eyed eggs; Up to 508 (254 pairs) for the Clearwater Summer Chinook program <sup>2</sup>	SFSR; weir	Late-June through early-September	<u>SFSR population:</u> PNI > 0.5 to PNI > 0.67 depending on NORs (sliding scale) <u>Segregated component:</u> pHOS=0; pNOB=0	1:1 (F:M); spawning at MCFH (SFSR adult trap facility)
	<i>Integrated conservation</i>	SFSR	104 (52 pairs) NORs on a sliding scale <sup>3</sup> ; produce 150,000 (up to 1 million) smolts	SFSR; weir	Late-June through early-September	<u>SFSR population:</u> PNI > 0.5 to PNI > 0.67 depending on NORs (sliding scale) pNOB = up to 90% (refer to <b>Error! Reference source not found.</b> and <b>Error! Reference source not found.</b> )	
<b>JCAPE</b>	<i>Integrated recovery</i>	East Fork of the SFSR	104 (52 pairs) <sup>4</sup> NORs on a sliding scale <sup>5</sup>	Johnson Creek; picket weir	June through September	<u>EFSFSR population:</u> PNI > 0.67 pNOB = 100%	1:1 (F:M); spawning at MCFH (SFSR adult trap facility)
<b>SFCEP</b>	<i>Segregated recovery</i>	SFSR	see SFSR	N/A	N/A	<u>SFSR population:</u> PNI > 0.5 to PNI > 0.67 depending on NORs (sliding scale)	1:1 (F:M); spawning at MCFH

<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>Broodstock collection for the Clearwater is planned to be phased out in the next few years.

<sup>3</sup>Refer to **Error! Reference source not found.** and **Error! Reference source not found.** regarding sliding scale broodstock collection

<sup>4</sup> This proposed increase for the JCAPE program production by up to 50,000 smolts, for a total production of up to 150,000 smolts annually would use up to 52 pairs

<sup>5</sup> If NORs are over 208 natural-origin returns then applicants will collect up to 52 pairs. When NORs are between 100 and 208, applicants are proposing to collect up to 50% of female and male NORs. If there are less than 100 NORs, applicants will consult with NOAA fisheries to determine broodstock numbers

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

*Rearing and Release of Juveniles:* Sections 9 and 10 of the HGMPs 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 4.

**Table 4. 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>Rapid River</b>	Up to 2.5 million voluntarily released into Rapid River and 150,000 into Little Salmon River (all yearling smolt)	100% ad-clipped and PBT, 120,000 smolts from the Rapid River releases receive CWT, and 52,000 from the Rapid River releases receive PIT tags	Up to 3 million eggs at RRFH (Up to 1.8 million green eggs are transferred to Oxbow Fish Hatchery each year for incubation to eye-up then returned to RRFH)	RRFH	Yes for Rapid River releases; none for LSR releases	mid-March
<b>Hells Canyon</b>	Up to 350,00 directly released into Snake River (yearling smolt)	100% ad-clipped and PBT	Up to 3 million eggs at RRFH (Up to 1.8 million green eggs are transferred to Oxbow Fish Hatchery each year for incubation to eye-up then returned to RRFH)	RRFH	None	mid-March
<b>SFSR</b>	Up to 1 million yearling smolts directly released in SFSR (150,000 of which from integrated program)	Minimum of 750,000 100% ad-clipped and PBT; some CWT/PIT; 150,000 to 250,000 100% CWT, some PIT	MCFH	MCFH	None	March-April
<b>JCAPE</b>	Up to 150,000 yearling smolts directly released in Johnson Creek mid-March to April (all yearling smolt)	100% CWT and PBT and some PIT	MCFH	MCFH	None	late March-early April
<b>SFCEP</b>	Up to 300,000 eyed-eggs reared in eggboxes in Cabin and Curtis creeks, SFSR tributaries; eggs collected as part of SFSR program	100% PBT	Cabin/Curtis creeks or SFSR eggboxes	Cabin/Curtis creeks or SFSR eggboxes	Yes	October

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

*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 5. Additional details regarding the disposition of hatchery fish are covered in Section 7.5 of the HGMPs.

**Table 5. Summary of disposition by life stage**

<b>Program(s)</b>	<b>Life stage</b>	<b>Disposition</b>
<b>Rapid River</b>	Adults	<ul style="list-style-type: none"> <li>transported back to mainstem Salmon or Little Salmon Rivers to be recycled back through the local fishery</li> <li>given to tribes for subsistence and ceremonial use</li> <li>charitable organizations</li> <li>research/educational purposes</li> <li>nutrient enhancement in local watersheds</li> <li>taken to rendering plants or landfills for disposal</li> </ul>
	Juveniles	<ul style="list-style-type: none"> <li>yearlings or unfed fry stocked in the Little Salmon River, Snake River below Hells Canyon Dam, or the Clearwater River</li> </ul>
	Eggs	<ul style="list-style-type: none"> <li>eggs stocked in the Clearwater River</li> </ul>
<b>Hells Canyon</b>	Adults	<ul style="list-style-type: none"> <li>transported to areas where Chinook salmon are not present to create fisheries</li> <li>recycling hatchery fish through the fishery in the Snake River downstream of Hells Canyon Dam</li> <li>given to tribes for subsistence and ceremonial use</li> <li>given to food banks or the public for human consumption</li> <li>nutrient enhancement in local watersheds</li> </ul>
	Juveniles	<ul style="list-style-type: none"> <li>yearlings stocked in the Little Salmon River and/or Snake River below Hells Canyon Dam</li> </ul>
<b>SFSR</b>	Adults	<ul style="list-style-type: none"> <li>recycling through active fisheries in SFSR</li> <li>given to tribes for subsistence and ceremonial use</li> <li>given to food banks or the public for human consumption</li> <li>transported to areas where Chinook salmon are not present to create fisheries</li> <li>outplanted as live fish to natural spawning areas in EFSFSR and SFSR (no more than 1000 in the EFSFSR and 500 in SFSR)</li> <li>nutrient enhancement in local watersheds</li> </ul>

<b>Program(s)</b>	<b>Life stage</b>	<b>Disposition</b>
	Juveniles	<ul style="list-style-type: none"> <li>unfed fry or yearlings may be stocked in the mainstem East Fork of the South Fork Salmon River above the “Glory Hole” passage barrier</li> </ul>
	Eggs	<ul style="list-style-type: none"> <li>provided to SBT Egg Box program</li> <li>eggs stocked in the mainstem East Fork of the South Fork Salmon River above the “Glory Hole” passage barrier</li> </ul>
<b>JCAPE</b>	Adults	<ul style="list-style-type: none"> <li>transfer to portions of Johnson Creek or East Fork of the South Fork Salmon River that remain underseeded (including but not limited to the mainstem East Fork of the South Fork Salmon River above the “Glory Hole” passage barrier)</li> </ul>
	Juveniles	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
<b>SFCEP</b>	Eggs	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>

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

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

Program	Facility	Surface Water (cfs)					GroundWater (cfs)			Number and type of instream structures	Meet NMFS screening criteria (specify year)?	NPDES Permit (provide number)?
		Source and water right	Average and maximum use	Diversion Distance (Meters)	Discharge Location	Months utilized	Water right	Average and maximum use	Months utilized			
<b>Rapid River and Hells Canyon</b>	Rapid River Fish Hatchery	Rapid River / 7802073 and 7802074	Combined, 34 avg and 46.6 max	208	Rapid River	1/1 to 12/31 and 1/1 to 12/31	n/a	n/a	n/a	1 intake, 1 diversion, 1 fish ladder	Yes (2017)	IDG131009
	Rapid River Fish Trap	Rapid River / water right pending	18 avg and 18 max	18	Rapid River	1/1 to 12/31	n/a	n/a	n/a	1 intake, 1 velocity barrier, 1 fish ladder/trap	n/a see below <sup>1</sup>	n/a
	Oxbow Fish Hatchery	Snake River / See below <sup>2</sup>	11.33 avg and 17 cfs max	55	Snake River	1/1 to 12/31	G-15440 (Oregon)	0.44 avg and 1.8 max	1/1 to 12/31	1 intake, pumped	Yes (2013)	n/a no fish fed on station
	Hells Canyon Fish Trap	Snake River / S-46410 (Oregon)	42 avg and 130 max	9	Snake River	1/1 to 12/31	n/a	n/a	n/a	fish ladder, 2 operation pumps (75 hp), 4 attraction pumps (25 hp), 1 shaft pump (3 hp)	Undetermined see below <sup>3</sup>	n/a
<b>SFSR, JCAPE, and SFCEP<sup>4</sup></b>	McCall Fish Hatchery	Payette Lake / 65-02466 and 65-12126	16 avg, 23 max	1,128	Payette River	1/1 to 12/31	n/a	n/a	n/a	n/a	n/a	IDG131005
<b>SFSR and SFCEP<sup>4</sup></b>	South Fork Salmon River Satellite	South Fork Salmon River / 77-07078	9.2 avg, 20 max	823	South Fork Salmon River	6/1 to 9/30	n/a	n/a	n/a	1 intake, 1 weir, 1 fish ladder	see below <sup>5</sup>	n/a
<b>JCAPE</b>	Johnson Creek Weir and Screw Trap	n/a	n/a	n/a	n/a	Weir: 6/1 to 9/30 Screw trap: 2/28 to 11/30	n/a	n/a	n/a	1 weir and 1 screw trap	n/a	n/a
<b>SFCEP</b>	Curtis and Cabin Creek Eggboxes	n/a	n/a	n/a	n/a	10/1 to 5/31	n/a	n/a	n/a	12 eggboxes	n/a	n/a

<sup>1</sup>The fish ladder associated with the Rapid River trap is unscreened so as to allow both upstream and downstream fish migration. During a portion of the year IDFG manages upstream movement of adult salmonids via its operation of the trap. During the remainder of the year the trap is reconfigured to allow unimpeded fish movement in both directions.

<sup>2</sup> The Oxbow Fish Hatchery surface water right and use from the Snake River is included in the water rights for State of Oregon Project 161. Amended in December 1961 from the original in December 1955, Article 3b says the licensee shall construct, maintain, and operate facilities for fish migration, propagation, or conservation under the license from Federal Power Commission Project No. 1971. HE 161 was issued on December 19, 1961, with priority dates of June 23, 1947 for 16,000 cfs; December 20, 1955, for 8,500 cfs; and December 4, 1961, for 2,000 cfs. Thus, total water right for the Oxbow Project is 26,500 cfs from the Snake River.

<sup>3</sup>The intake to the Hells Canyon Trap pump chamber is fitted with a trash rack comprised of horizontal bars with 1-inch openings between the bars. The location of trap is in the immediate tailrace of Hells Canyon Dam and presents a low risk of entrainment or impingement of juvenile or adult salmonids. Significant modification of the Hells Canyon Trap is anticipated in association with issuance of a new FERC operating license for the Hells Canyon Complex. Informal consultation with NOAA and the USFWS on the new Hells Canyon license, including review of trap modifications, is ongoing.

<sup>4</sup> SFCEP only utilizes the MCFH for broodstock operations and egg incubation until the eyed-up stage, which is covered under the SFSR HGMP

<sup>5</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 by operators relative to compliance with NMFS's 2011 Screening/Passage criteria. When final assessments are completed, facility managers/cooperators 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.

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

**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 Snake River 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.

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 (SFSR)
- Use 100% natural-origin fish in broodstock to reduce negative genetic impacts (JCAPE)
- All segregated 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 (Rapid River, Hells Canyon, SFSR, and JCAPE)
- Fish are outplanted as eyed-eggs in natural rearing areas to minimize hatchery selection and reduce straying (SFCEP)
- Segregated unfed fry and/or eyed eggs are occasionally outplanted in areas above passage barriers or where ESA-listed fish do not spawn to minimize hatchery selection, reduce straying, and minimize negative genetic impacts (Rapid River, Hells, Canyon, and SFSR)
- 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 SFSR, SFCEP, and JCAPE 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 6, 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 0, 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 7. 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 7. Specific adult and juvenile RM&E activities for each of the five programs**

Hatchery Program	Spring/summer Chinook salmon ESU				ESA coverage
	Adult		Juvenile		
	Monitoring	Program name	Monitoring	Program name	
All Programs	Systematic tissue sample collection at Lower Granite Dam to provide escapement estimates	N/A	N/A		NMFS Letter of Determination under 2014 FCRPS Supplemental BiOp and Permit # TE-82106B-0 under Section 10(a)(1)(A) for Bull trout
	N/A		Monitoring of survival metrics for all life stages in the hatchery from spawning to release. CWT and/or PBT tagging of 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	This opinion	

Hatchery Program	Spring/summer Chinook salmon ESU				
	Adult		Juvenile		ESA coverage
	Monitoring	Program name	Monitoring	Program name	
			dams are used to inform inseason fisheries management.		
Rapid River and Hells Canyon	Rapid River weir, Hells Canyon adult trap, genetic monitoring. Adult trapping and tissue collection. Data collection to include date, gender, length, marks, and tags	RR and HC M&E	Smolt trap downstream of Rapid River weir		This Opinion for Chinook; Currently under State of Idaho Section 6 Authorization for Bull Trout pending concurrent Section 7 Consultation efforts; Smolt trap covered under 4(d) 20863
SFSR	Carcass surveys, redd counts, genetic monitoring	Idaho Salmon Basin VSP Monitoring	Estimate juvenile production, estimate survival to Lower Granite Dam, and monitor migration timing; smolt trap located downstream of SFSR weir near Krassel Ranger Station; operated March-October; most fish counted/released or anesthetized, measured, weighed, and released; smaller groups receive PIT before release	Idaho Salmon Basin VSP Monitoring	4(d) Authorization 20863
	Adult trapping and tissue collection. Data collection to include date, gender, length, marks, and tags	SFSR M&E	N/A	SFSR M&E	This Opinion for Chinook; Currently under State of Idaho Section 6 Authorization for Bull Trout pending concurrent Section 7 Consultation efforts for

Hatchery Program	Spring/summer Chinook salmon ESU				
	Adult		Juvenile		ESA coverage
	Monitoring	Program name	Monitoring	Program name	
					hatchery operational activities
JCAPE	A temporary picket weir (RM 5.1 on Johnson Creek) is used to monitor adult return timing, escapement, origin, age and sex of most returns; it is also used to collect tissue for genetic monitoring; Multiple-pass spawning ground, and carcass surveys are conducted to inform population-based M&E performance measures	JCAPE M&E	A rotary screw trap (RM 3.9 on Johnson Creek) is operated March-November to monitor juvenile Chinook production/productivity, as well as migratory survival, and timing to Lower Granite Dam; most fish are anesthetized, measured, weighed, marked (via clips for trap efficiency estimates) and released; smaller groups receive PIT before release; small scale studies include mark observability, juvenile pedigree analysis, and ageing.	JCAPE M&E	The 4(d) limit authorized with this opinion replaces Section 10 permit 1134
SFCEP	Adult trapping and tissue collection. Data collection to include date, gender, length, marks, and tags.	SFCEP M&E	Monitor recruitment back to the South Fork weir from the eggbox program using PBT. Electrofishing may also be utilized utilized in Cabin and Curtis Creeks as well as the South Fork Salmon mainstem River.	SFCEP M&E	This Opinion for Chinook; Currently under State of Idaho Section 6 Authorization for Bull Trout pending Section 7

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 the TRMPs all 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 TRMPs, 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 or the Tribal 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 five 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 and the Tribal 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) and (b)(4) of section 223.204 (TRMPs), after taking all public comments under consideration, the Secretary will publish notice of his determination as to whether each RMP or TRMP 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 and TRMPs 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.

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