

Memorandum

To: Wells, Rocky Reach, and Rock Island HCP Hatchery Committees and Priest Rapids Coordinating Committee Hatchery Subcommittee Document Date: November 8, 2023

From: Tracy Hillman, HCP Hatchery Committees Chairman and PRCC Hatchery Subcommittee Facilitator

cc: Larissa Rohrbach, Anchor QEA, LLC

Re: Minutes of the October 18, 2023, HCP Hatchery Committees and PRCC Hatchery Subcommittee Meetings

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan Hatchery Committees (HCP-HCs) and Priest Rapids Coordinating Committee's Hatchery Subcommittee (PRCC HSC) meetings were held in person at the Chelan PUD Headquarters and on Teams on Wednesday, October 18, 2023, from 10:00 a.m. to 3:40 p.m.

Attendees are listed in Attachment A to these meeting minutes.

Action Item Summary

Long-Term

Joint HCP-HCs and PRCC HSC

- Keely Murdoch and Mike Tonseth will obtain estimates of pre-spawn mortality from Andrew Murdoch to update the retrospective analysis for Wenatchee spring Chinook Salmon (Item I-A). (*Note: This item is ongoing; expected completion date to be determined.*)
- Members of the HCP-HCs and PRCC HSC will provide feedback to the Washington Department of Fish and Wildlife (WDFW)-revised version of questions on recalculation for Policy Committees (Item I-A). (*Note: This item is ongoing.*)
- Chelan PUD, Grant PUD, and WDFW will develop recommendations for reducing stress and mortality from disease for individual rearing groups at Eastbank Hatchery. (Item I-A). (*Note: This item is ongoing.*)

Near-Term (to be completed by next meeting)

Joint HCP-HCs and PRCC HSC

- Catherine Willard will research feasibility questions around planning for potential emergency Okanagan Sockeye Salmon broodstock collection, including the following (Item III-B) (*Note: This item is ongoing.*):
 - Flexibility around quarantine requirements for transporting adult fish into Canada.

- Minimum feasible program size under an emergency scenario.
- Rod O'Connor will share data on interannual variability in survival from the Priest Rapids Hatchery fall Chinook Salmon release timing evaluation (Item II-A).
- Tracy Hillman will make revisions to the 10-Year Comprehensive Report on PNI targets for spring Chinook Salmon, as discussed in today's meeting (Item III-A).
- PUD Authors of the 10-Year Comprehensive Report will generate steelhead program M&E outcomes tables (Item III-A).
- Brett Farman will review the NMFS Biological Opinion for the Wenatchee spring Chinook Salmon programs to support interpretation of language around PNI targets (Item III-A).
- Bill Gale will identify a representative from USFWS Ecological Services to coordinate on limits to Bull Trout encounters during the spring Chinook Salmon broodstock collection at the Chiwawa Wier in 2024 (Item III-D).
- Rod O'Connor will identify revisions to the 2024 Broodstock Collection Protocols needed for consistency on broodstock collection at Wells Hatchery Volunteer Channel (Item III-D).
- Tom Kahler will lead development of contingency language for broodstock collection at the Wells Dam East Ladder (Item III-D).

Decision Summary

- None

Agreements

- None

Review Items

- The 10-Year Comprehensive M&E Report chapters, compiled by species, were distributed on March 2, 2023.
- The version of the draft 10-Year Summary Report program-specific tables discussed in today's meeting was distributed on October 16, 2023.
- The Chelan PUD's Draft Hatchery Monitoring and Evaluation Implementation Plan for 2024 was sent on October 10, with comments due by Friday, November 10, 2023.
- The Grant PUD's Draft Hatchery Monitoring and Evaluation Implementation Plan for 2024 was also sent on October 10, with comments due by Friday, November 10, 2023.

Finalized Documents

- The Douglas PUD's "2022 Annual Report for the M&E of the Wells Hatchery and Methow Hatchery Programs" was finalized and distributed on October 23, 2023.

I. Welcome

A. Agenda, Approval of Past Minutes, Action Item Review

Tracy Hillman welcomed the HCP-HCs and PRCC HSC and reviewed the agenda.

Revised meeting minutes from September 20, 2023, were reviewed and approved by parties that attended that meeting. Kirk Truscott was absent from that meeting and abstained.

Action items from the HCP-HCs and PRCC HSC September 20 were reviewed. *(Note: Italicized text below corresponds to action items from the previous meeting.)*

- *Keely Murdoch and Mike Tonseth will obtain estimates of pre-spawn mortality from Andrew Murdoch to update the retrospective analysis for Wenatchee spring Chinook Salmon (Item I-A).*
This item is ongoing. Tonseth said he would be meeting with Mike Hughes (WDFW) soon to identify pre-spawn mortality information that could be available for updating the spring Chinook Salmon analyses. He will provide the data to Murdoch so she can update the spreadsheets.
- *Members of the HCP-HCs and PRCC HSC will provide feedback to the Washington Department of Fish and Wildlife (WDFW)-revised version of questions on recalculation for Policy Committees (Item I-A).*
This item is ongoing.
- *Chelan PUD, Grant PUD, and WDFW will develop recommendations for reducing stress and mortality from disease for individual rearing groups at Eastbank Hatchery. (Item I-A).*
This item is ongoing.
- *Catherine Willard will research feasibility questions around planning for potential emergency Okanagan Sockeye Salmon broodstock collection, including the following (Item II-B):*
 - *Capacity at Eastbank Hatchery and Rocky Reach Annex for holding and isolation of adult Sockeye Salmon and eyed eggs*
 - *Permit requirements for transporting gametes or eyed eggs within the State of Washington*
 - *Quarantine requirements for transporting adult fish into Canada*
 - *Potential locations for Okanagan Sockeye Salmon broodstock collection in Washington*This item will be discussed in today's meeting.
- *All Committee members will review spring Chinook Salmon 10-Year Summary Report program-specific tables and inform authors of key concerns. (Item III-A).*
This item will be discussed in today's meeting.
- *Authors of spring Chinook Salmon 10-Year Summary Report program-specific tables will make revisions discussed in the meeting and develop brief narratives to explain the program description and monitoring results by October 4. (Item III-A).*
This item will be discussed in today's meeting.

- Tom Kahler will confirm with Kirk Truscott whether he approves of a plan to cull eggs from Methow Spring Chinook Salmon females with high levels of bacterial kidney disease (BKD), and inform the HCP-HCs of that decision. (Item II-B).

Truscott approved on September 26, 2023. This item is complete.

II. PRCC HSC

A. Priest Rapids Hatchery Fall Chinook Salmon Release Timing

Rod O'Connor gave a presentation entitled, *Release Time Proposal of Smolts from Priest Rapids Hatchery*, updating the PRCC HSC on the survival results from the Priest Rapids Hatchery (PRH) Fall Chinook Salmon release timing study (Attachment B). He said the technical details of the study design have been presented to the PRCC HSC in past meetings and these have not changed. His presentation focused on survival to adulthood from two complete brood years. Data were gathered from Coded Wire Tag (CWT) recoveries at PRH. O'Connor highlighted differences in the river environment once juveniles reach Bonneville Dam. Four of 6 years of study the temperature was below the mean, in two years temperatures were above the mean, and in one of those years an extreme heat event occurred (the 2021 Heat Dome event). Matt Cooper asked whether outmigration survival was estimated. O'Connor said no, that has been difficult to estimate due to changes in spill since 2018, which lowered detection efficiency at downstream projects. Trends, averaged over study years, showed that generally, the earlier releases survived better to adulthood. Ponds C, D, and E had consistent and better survival than B and A. Kamphaus asked whether the trend applies to 2- and 3-year-olds. O'Connor said the consistency is observed as a difference between fish released before or after June 9.

Gale suggested inter-annual variability be reviewed to understand how environmental variability affects survival. The conclusion could favor a bet-hedging approach to release at different times to take advantage of certain environmental conditions. Kamphaus said he is also interested in viewing differences that otherwise become incorporated into a mean value.

Brian Lyons, PRH operations manager, presented his observations on fish culture. Lyons said the size at release target is 50 fish per pound (fpp), but there is no information on why that is the target. PRH went through a rebuild in 2012, which has been good for operations, but has created some unforeseen challenges with fish culture and meeting size targets that are dependent on the river temperature. In a cold year, fish growth is pushed as much as possible to achieve 50 fpp. Last year, fish health issues emerged due to turbidity, heavy feeding, and a need to keep up with cleaning. Lyon said he would prefer to establish a range for the size target from 50 to 60 fpp for greater flexibility in rearing, and to grow them more consistently. Lyons also suggested releasing fish based on a condition factor target for salmon in particular; however, this could be considered in the future.

Mat Maxey asked if there are alternative water sources at PRH. Lyons said there is well water used for broodstock collection but not enough available to supply or change the temperature of the ponds. Average water temperature is in the 40s in January and the fish don't feed well.

Cooper asked what size the fish in ponds A and B would have been by June 9. Lyons said they would have been in the upper 50's. Gale said at Spring Creek Hatchery, Tule Chinook Salmon used to be released as early as March; with reprogramming that was changed because April and May releases showed better production. Spring Creek Hatchery has moved toward releasing fish at two times as a bet hedging approach (for uncertain environmental conditions). Maxey asked what the release times are for fall Chinook Salmon programs adding that the June releases seem very late. O'Connor said the release date was shifted at Wells Hatchery after a similar study. Kahler said there used to be a June 10 release; release time was shifted 2 weeks earlier to May 25. O'Connor said PRH's first releases would be happening when Wells Hatchery is releasing their fish. Lyons said the Lyons Ferry Hatchery has been releasing their subyearlings before the end of May around 55 fpp, but it is not a perfect comparison because of differences in water temperature. Kahler said the Wells Hatchery summer Chinook Salmon are also released at 50 fpp and its unknown why that is the target. Tonseth said this size has been applied for a long time for fall Chinook Salmon and summer Chinook Salmon and may be grounded in the BAMP. It may be loosely based on a projected size that would be necessary to optimize survival to adulthood.

Gale said an evaluation at Spring Creek Hatchery was done to evaluate release dates in March, April, and May. One of the conclusions was that adult returns were highest from the May releases, but all three months overlapped. May and April were better, but more variable, trading consistency for variability. Pearsons hypothesized that one reason less variation may be observed in March may be less variation in temperature at that time of year. Gale agreed and stated that holding fish until May resulted in more disease and pathology issues. Gale said the Spring Creek Hatchery shifted to releasing in April to May also because of mass-marking schedules. Kamphaus said the Little White and Willard Hatchery fall Chinook Salmon would be a better comparison because they are up-river brights and may be releasing later in the year.

Gale noted there are no replicates to be able to discern pond-effects. O'Connor said release timing cannot be randomly assigned to the ponds because they must be released in sequence. Cooper asked if after the first ponds are released, the remaining fish spread out into the available rearing space to lower rearing densities. Lyons said the fish do spread into the lower ponds. The fish use the entire channel for their release but are not physically being moved from one pond to another.

Tonseth noted that age at return should be considered, whether the increase in survival was due to more younger fish returning. Todd Pearsons said the age groups are shown in the tables; it's possible that more precocious males might be created or more age-2 fish, but the early release strategy was creating more age 3, 4, and 5 fish. It could be related to the issue Lyons is raising, that pushing fish

so hard in winter may be causing fish to mature at earlier ages. Gonadosomatic index was not measured on these study fish, but there is condition factor data. Pearsons said the fish are not getting longer, but they are getting fatter, and the focus should be on producing condition factors (CF) for "good smolts". Gale said managing for CF would be a good idea but would require a new M&E goal.

Lyons said adjusting size at release targets to a range of 50 to 60 fpp for this upcoming brood year would be an appropriate step now, using condition factor targets will take more discussion. Lyons said an answer by the end of December would allow him to plan accordingly before ponding in January/February.

Hillman thanked Lyon for joining the meeting. He said this can be discussed and incorporated into the Broodstock Collection Protocols (BCPs).

Hillman asked whether changing the fish size would be a confounding factor knowing that the current study was conducted using fish grown to 50 fpp. Pearsons said these data can be updated as additional years become available. There are some data that can inform how to step through this for another couple of years.

Murdoch said an issue discussed in the Fall Chinook Working Group (FCWG), presented by Paul Hoffarth (WDFW) in May, was concern about interactions between earlier release groups and decreases in survival of wild fall Chinook Salmon rearing in the reach. It appears that the concept of earlier releases is achieving better survival of hatchery-origin smolts, but there is a need to make sure this is not at the expense of the wild fall Chinook Salmon, especially because residence time in the reach is longer for earlier-released fish. Hillman shared the final FCWG notes and Paul Hoffarth's presentation.

O'Connor reminded the group that the proposed shift to an earlier release would conflict with the time of year that Jeff Fryer (CRITFC) tags natural-origin fish in the reach, creating challenges for Fryer to capture the natural-origin fish. Grant PUD also needs to factor this into a decision.

Pearsons said it may be better to release fish by June 10 but allow for some flexibility to release fish earlier if conditions result in faster growth. This could be added to the BCP. A key question is whether size at release or time at release is more important for survival. Kamphaus said release time should be based on a combination of factors like growth and environmental conditions. O'Connor noted that even when the water was cold and turbid, fish were released early in 2023. Gale said he supports releasing a slightly smaller fish at the right time of the year.

Pearsons said the need now is to decide whether to continue with another year of study for release in 2024.

The discussion on PRH size targets and release timing will continue in the next meeting. Grant PUD will share data on interannual variability in the release timing study. Hillman will share the notes from Paul Hoffarth’s presentation to the FCWG.

B. Grant PUD’s Draft 2024 Hatchery Monitoring and Evaluation Implementation Plan

Hillman projected Grant PUD’s 2024 Draft Hatchery Monitoring and Evaluation Implementation Plan. O’Connor said 2023 dates have been updated to 2024, but there have been no other changes to the content. This item will be presented for a decision in the November meeting.

III. Joint HCP-HCs and PRCC HSC

A. 10-Year Comprehensive Review – Spring Chinook Salmon

Hillman and Willard prepared a more formal draft report that was distributed on Monday, October 16. Hillman reviewed the comments received.

Murdoch questioned the term NNI (No Net Impact) to “productivity” because for hatchery programs, the calculations and goals are to increase abundance without impacting productivity. Hillman suggested modifying the language within the specific program descriptions to use the term “abundance.”

Hillman showed how PNI was calculated on a brood-year basis. Hillman said for salmon, brood year is the same as return year. Steelhead, on the other hand, return in the year before they spawn; therefore, using return year is not appropriate. Murdoch said use of brood year is confusing in this context and Hillman suggested using spawn year when discussing the PNI sliding scale.

Proportionate Natural Influence

The following PNI targets based on a sliding scale are given in the Chiwawa spring Chinook Salmon program permit.

Sliding-scale PNI Targets:

Percentile	NOR Run Size				PNI
	Chiwawa	Nason	White	Wenatchee	
> 75%	> 375	> 350	> 87	> 910	≥ 0.80
50 – 75%	278 – 372	259 – 349	68 – 86	631 – 909	≥ 0.67
25 – 50%	208 – 277	176 – 258	41 – 67	525 – 630	≥ 0.50
10 – 25%	176 – 208	80 – 175	20 – 40	400 – 524	≥ 0.40
< 10%	< 175	< 80	< 20	< 400	Any PNI

Hillman summarized that based on 5-year means, PNI targets were not met for that program.

Chiwawa River Spring Chinook Salmon PNI Calculations

Annual PNI target of ≥ 0.67

BY	NOS	NOS 5-Yr Mean	Sliding Scale PNI Target	Lower 5% of PNI	PNI Calculated	Calculated PNI 5-Yr Mean	Met
2012	574				0.50		
2013	422				0.59		
2014	523				0.65		
2015	337				0.61		
2016	389	449	>0.80	0.76	0.68	0.61	No
2017	160	366	>0.67	0.64	0.55	0.62	No
2018	166	315	>0.67	0.64	0.34	0.57	No

Murdoch said the Wenatchee Basin PNI targets shown in the sliding scale are meant to apply to the total run size shown in the Wenatchee column. She said there are no separate PNI goals for the individual spawning aggregates, only a PNI goal for the entire Wenatchee population in hatchery program permits. The adult management plan goes into detail for how Tumwater Dam would be managed for this PNI target at the level of these spawning aggregates. The NOR Run Size columns were based on historical parsing of the total population among the aggregates. These aggregate PNI targets were meant to guide operations at Tumwater Dam for Chiwawa, Nason, and White River run sizes, not what the hatchery production should be managed for. PNI was used for each aggregate to model sizing of conservation and safety-net programs in her retrospective analysis of past data, but this was an exercise to balance maximizing PNI while minimizing use of safety-net fish, and not to set PNI targets for the spawning aggregates. Willard said the BiOp language does state the PNI target is for the entire Wenatchee spring Chinook Salmon population.

Kamphaus asked if there is a need to revise the spring Chinook Salmon adult management plan to reflect conclusions of the 10-Year review leading into renewal of HGMPs and Permits. Murdoch said that would be a next step after finalizing the report.

Murdoch said the retrospective analysis used data from before 2011. It did model out to a 0.67 average PNI for the population; however, it was recognized that in periods of low NOR runs, or high HOR runs, that average would not be met. John Rohrback said the sliding scale PNI targets for individual years could be met but that the calculated PNI 5-year mean target of 0.67 could fail to be met because of low abundance in the individual return years. Murdoch said there may be a need to revise this scale for higher PNI targets if the higher abundances are not being achieved. Tonseth agreed it should be updated with more recent data; it was finalized in 2010, meaning data from the late 1990s and early 2000s were being used. Brett Farman said he agrees that revisiting this is a good idea, and the target is for the basin-scale, but there is a need to consider where the management infrastructure is in certain places to control for PNI.

Hillman asked why PNI for the spawning aggregates is included as an objective. Murdoch said it should be considered how a specific program contributes to that overall PNI result. Mike Tonseth said once the spring Chinook Salmon adult management plan, biological opinion, and permits were implemented, achieving an aggregate-level PNI equivalent in a given year using the sliding scale would allow the population to achieve an average basin-scale PNI equal to or higher than the targets shown on the right.

Willard said the objective applies to conservation and safety-net stocks not just the overall population. Hillman said the annual report indicates whether PNI was met for each aggregate, not for the entire population. Murdoch said a PNI target of 0.67 is a shared goal between the Chiwawa and Nason programs. For the annual report, a population-scale PNI table could be duplicated in the two program-specific sections. The comprehensive report should show whether the basin-scale PNI targets are met. Willard suggested showing the aggregate PNI and basin-scale PNI and reporting whether PNI obligations were met for the basin.

Truscott said there is a disconnect between how the adults are managed by permit and how the objective is written and reported. In years of low abundance of NORs when the populations were managed to a lower PNI, it's no surprise that that PNI target was not met. If we evaluate the hatchery influence on a specific aggregate, meeting those PNI targets in the table in the management plan for aggregates based on a spawner abundance allows the program to meet the target for the basin. Murdoch said the Monitoring and Evaluation (M&E) Plan is written to monitor to the management target, which in this case is 0.67. Willard said question 4.1.1 in the M&E Plan applies to the conservation and safety-net stocks; and both have to be reported. Murdoch said the monitoring hypotheses are more specific than the objective as a result of two original documents merged into one.

Hillman agreed that the comprehensive report should show what the Wenatchee population PNI was based on the adult management sliding scale, and whether PNI was met for the basin. This should also be clarified when revising the M&E Plan.

Truscott noted that the comprehensive report summary table reports out on whether PNI is met on an individual year basis; however, the sliding scale targets are based on a 5-year mean. If management targets for PNI are met in individual years, a target of 0.67 will be achieved over 5 or 10 years.

Willard said the BiOp states the programs must use realized PNI to analyze the effectiveness of implementing the adult sliding scale, but the target is really 0.67.

Hillman clarified the following edits will be made:

- Revise annual reporting to show realized PNI for each spawn year for a specific program, the PNI target for the basin (which varies each year based on the sliding scale), and the basin-scale PNI, which is a 5-year rolling average.
- A comparison will be made for the basin-scale PNI between the 5-year rolling average and the target of 0.67.

Gale said he supports moving forward this way, but in the foundational literature the PNI metric was developed to be used with two populations in equilibrium unless we change to use the multi-population PNI. Gale said he is more comfortable using pHOS to answer these objectives. Farman agreed it is a good time to revisit how PNI is applied but would be reluctant to move toward a pHOS target because management of the broodstock does make a difference in how the population is trending. In other programs, the PNI target has been included as a long-term target but not necessarily as a criterion. Over time the programs should be trending toward that target. The language of how that is written can change the interpretation.

Gale said PNI is intended to help us understand the influence of a supplementation program on the supplemented population. Pearsons said he thinks of PNI as an index of domestication, so hatchery-origin fish from any program may have an impact on domestication, and asked if domestication effects would be underestimated if not accounting for all hatchery-origin fish. Gale and Farman said out-of-basin hatchery spawners should be managed as strays rather than in the PNI calculation. They can affect domestication, but they cannot be managed within the hatchery programs being evaluated.

Mike Tonseth said conversations about the Wenatchee Basin PNI target occurred long before the Methow multi-population PNI approach was developed. When developing the adult management plan, NOAA adopted use of a 5-year average because they were not comfortable using a 10-year average that would not have been available during the term of a traditional permit period. Within a 10-year period there would have been 5 to 6 years of rolling PNI averages.

Hillman asked whether the Wenatchee spring Chinook Salmon population PNI is applied only to the portion of the population upstream of Tumwater. All agreed that is the component of the population that the hatchery programs are trying to influence.

Spawner distribution

Mike Tonseth said spawner distribution is determined by acclimation and release location. The language around the relationship between spawning location and fitness does not belong in this location. Murdoch said she agreed; however, she said she added this language to respond to the preceding comment about use of reach-scale pHOS, which should not be applied as a reach-scale metric.

Hillman asked, if pHOS is high, whether that would affect or conflict with PNI goals. Murdoch said no, pHOS would not change and therefore would not affect PNI. Rather, it would change the distribution of HOS among reaches.

Hillman said in last month's meeting, Farman suggested reach-scale pHOS was useful information. Farman said it provides context to the whole, but he is open to how the other members want to go forward. Murdoch said the goal of the integrated program is for hatchery-origin fish to be distributed throughout the spawning distribution and reach-scale pHOS is not the goal of the programs. Rohrback said the programs will probably never meet the goal of complete integration of distributions because hatchery acclimation sites are not placed up and down the entire rivers, and hatchery-origin fish tend to return to the general vicinity of their acclimation and release site. Reach-specific pHOS adds the context for where the hatchery-origin fish are spawning; it's a tool for understanding the distribution of hatchery-origin fish throughout the river.

Kahler said, in the Twisp River, that context helps to know what areas are loaded with hatchery fish relative to others. It's a diagnostic tool, not a threat to the overall objectives. Murdoch said her concern is that it implies the objective wasn't met and why additional language was added to clarify that getting the fish into the right locations for high productivity would help to meet Objectives 1 and 2. Kahler said pHOS by reach tells you where the problems are. Murdoch said the table should stick to what we agreed to analyze, these statements can be brought into the discussion where they can be explained more fully. Tonseth agreed the comments in these tables need to be specific to the objectives; going to the reach scale is moving more into the management discussion. Tonseth, Willard, Kahler, and Gale agreed that these notes on reach-scale pHOS may be moved to the management recommendation sections to identify where problems were observed and the tools for adjusting and monitoring them. Gale said an additional M&E objective may be needed to maximize spawner overlap and monitor whether that's happening.

Hillman and Rohrback will maintain a list of topics for M&E Plan updates and permit renewal issues.

Hillman will revise PNI targets in the annual report framework and language in the 10-year Comprehensive Review. Population-scale 5-year average PNI values will be compared to the PNI target of 0.67.

Farman will review the biological opinion for the Wenatchee spring Chinook Salmon programs to consider whether the language treats PNI as a criterion or a long-term target that the program should trend toward.

B. Feasibility of Alternate Collection of Okanagan Sockeye Salmon Brood/Gametes

This discussion is a continuation from the August 16 meeting to address a condition of the *Statement of Agreement Regarding Chelan PUD's Okanagan Sockeye Salmon Obligation Through Release Year 2041* (dated January 18, 2023) that the RI/RR HCP-HC and PRCC HSC will consider the feasibility of

collecting broodstock and/or gametes to support ONA Sockeye Salmon hatchery production when river conditions are likely to cause high mortality. Willard presented a table summarizing major considerations discussed in the August 16 meeting and asked what other considerations should be discussed. Hillman revised the table during the meeting. All ideas were included, even if ideas were determined not to be feasible, as a record of the options that were considered (Attachment C).

Murdoch noted the capacity may dictate the minimum program size in emergency years. Ryan Benson (ONA) has not indicated what a minimum viable program size could be. Willard said the Rocky Reach Annex would require pond upgrades, so Chelan PUD is also interested to know ONA's minimum program size. Dave Duvall said for conservation purposes, ONA has a plan in place to avoid collection of broodstock for the hatchery if the count at Wells Dam is below 10,000 fish.

Kamphaus asked for clarification whether emergency collection would occur only in extremely low survival years, or in years when a temperature barrier prevents passage into the Okanogan River? Murdoch clarified that the 2015 mortality event caused this discussion to be moved forward, and the SOA requires that the Committees work on an implementation plan; however, the scenarios under which the plan would be implemented have not been well-defined. Kamphaus said the temperature barrier has been persisting longer in recent years. Kirk Truscott said the temperature barrier has set up earlier, but typically breaks down the last week of August every year. Gale asked what environmental variables are associated with the Okanogan thermal barrier setting up. Kahler and Rohrback said the threshold used by the HCP-CC is water a temperature at the mouth of the Okanogan of 22°C for 12 to 24 hours. Tonseth said the PIT-tag records would help refine this as well. Gale said whether the thermal barrier is setting up might not be known at the time fish are passing PRD. Kahler said the thermal barrier in the Okanogan River usually sets up the first to second week of July, at which time the peak of the Sockeye Salmon run has typically already passed Priest Rapids Dam (PRD). Truscott said, based on a NOAA report on the 2015 event, most of the mortality occurred before fish reached PRD.

Adult Collection

- Collecting adults using the PRD Off-Ladder Adult Fish Trap (OLAFT): adults could be transferred to a hatchery to hold for broodstock and genetic testing used to differentiate Okanogan fish from Wenatchee fish. This may allow for collecting fish from the full duration of the upper Columbia Basin run in better condition. The run at PRD is one large pulse and the two stocks are not easily differentiated by run timing. Genetic analysis would be labor intensive and expensive; a large number of fish would need to be tested to exclude the Wenatchee stock, and it's unlikely there would be capacity at the genetic labs and holding facilities to accomplish this in-season. Stocks may be able to be differentiated by scale growth patterns. There was more certainty around this for Osoyoos Lake fish, which mostly migrate as 1-year-olds and Wenatchee fish as 2-

year-olds, but that is uncertain for Okanogan Lake and Skaha Lake fish. Scale analysis would be less expensive and faster, but genetics would be definitive.

- Collecting in the Wells pool with the CTCR purse seine would be a higher stress method for the fish but would allow greater assurance of collecting Okanogan fish. They make up approximately two-thirds of the Sockeye Salmon run in the lower Columbia. In 2015, many Wenatchee-origin Sockeye Salmon overshot Wells Dam and fell back. Inclusion of a few strays is not likely to affect the ONA program, but the ONA should have a say in that. In 2015, the number of strays above Wells Dam was approximately 0.5%, which seems like a very low risk.
- In years with challenging conditions, few fish might make it to the area of the CTCR purse seine. Fish collected at Wells Dam would be in better condition.
- Collection at the Okanogan Weir was discussed; however, the Okanogan Weir pickets are spaced to allow Sockeye Salmon to pass.
- Collection using a fishing derby was considered, similar to the Alternative Broodstock Collection fishery for fall Chinook Salmon on the Hanford Reach. The CTCR have considered this for summer Chinook Salmon broodstock collection but had major concerns about fish being collected and held on recreational boats in very warm surface water. Canadian managers have also observed high mortality rates among Sockeye Salmon in fishery events.

Adult Holding and Transport

- Willard said, at the ONA hatchery, currently only females are held but only for a relatively short period of time.
- The Chiwawa Acclimation Ponds could be used as an adult holding facility, but it is a surface water facility so there would be fish health conflicts for holding out-of-basin fish. The water right would need to be evaluated.
- The Rocky Reach Annex is separate from other facilities and uses surface water from the Columbia River. Carlton Acclimation facilities could be an option, and whether the ponds are filled early in low water years (in drought conditions). There is a consumptive fill right early in the season, but then the rest of the summer there is a non-consumptive use right. The water right might not meet the need for Sockeye Salmon at that time of year.
- Similar water right conflicts exist for YN acclimation ponds in the Methow Basin.
- Okanogan Basin acclimation sites would not be appropriate due to high water temperatures.
- Regarding the idea of transporting fish into the South Basin of Lake Osoyoos, fish would need to be held for a long time to avoid high water temperatures.
- Murdoch suggested reserving the option to hold fish in US facilities only if spawning in US facilities is not feasible.

Permitting

Willard said there is need to clarify if permit conditions require fish to be quarantined at the border, or if quarantine can happen at a US facility downstream of the border. Murdoch agreed there is a

need to better define what quarantine is. Truscott said if the import requirements for pathogens are not achievable, then it's not worth considering. Gale said there is also a need to identify if there are export requirements to move fish out of the US. Willard said ONA will be inquiring whether an exemption to the import requirements could apply for Okanagan Sockeye Salmon.

Females Only

Hillman asked for thoughts about collecting females only and using cryopreserved milt. Murdoch said she has concerns about the viability of the approach. Willard said the ONA have a viable method for using cryopreserved milt that they maintain but relocating that work to a US hatchery may involve a major learning curve and may not be as successful. Murdoch suggested that that if gametes are transported, both male and female gametes should be taken, but if transporting adults, space could be prioritized for females to fertilize with cryopreserved milt.

Next Steps

Willard will confer with ONA to better define minimum program limits and transfer permit flexibility.

C. Coho Salmon Broodstock Collection Update

Cory Kamphaus provided an update on the YN Coho Salmon program broodstock collection.

For the Wenatchee Basin, 85% of broodstock has been collected with 470 out of the target of 550 females collected, and pre-spawn mortality after collection is lower than usual at approximately 2%. The majority of fish were collected at Dryden Dam and some (predominately males) at Tumwater Dam. The first spawning occurred yesterday with 41 females spawned at Leavenworth National Fish Hatchery (LNFH). The Peshastin incubation facility is no longer used; the full program is spawned and incubated at LNFH. Maxey asked whether USFWS fish health staff have been checking on any early mortality in the broodstock. Kamphaus said he presumes that is being done.

For the Methow Basin, a total of 375 fish of which 200 are females have been collected. Approximately 150 fish have been collected at the temporary adult weir at Spring Creek and Methow Hatchery. Approximately 200 fish have been collected at Wells Dam. Restrictions to access on the Wells Dam east ladder have constrained the YN staff's ability to collect fish. They are not likely to meet program goals at this time, and they are preparing for a contingency of collecting additional fish in the Wenatchee Basin to backfill the Methow program, which has been done in the past.

Kamphaus requested better definition around access to collect broodstock from the Wells Dam east ladder. Kahler said access was restricted at the east ladder because of a FERC dam safety investigation. There is no control or involvement of Douglas PUD hatchery staff with decisions about when operations shift to accommodate FERC dam safety inspections. Kahler said one challenge for Douglas PUD is that we did not know when the seismic investigation was going to happen, which is dictated by the board of consultants. Kahler said if this investigation leads to a need to rehabilitate

the east embankment, the restrictions could be prolonged. Truscott asked what is preventing use of the east ladder trap. Kahler said drilling along the road to the fishway is taking up roadway space. A contractor is also repairing leaf gates on unit 6 and blocking access across the deck. Kahler was not certain how frequently or when this work will occur. Gale asked if there is a contingency route that can be opened up around the rig activity. Kahler noted that once the drilling apparatus is set up, they typically cannot be moved until they finish.

Kahler said, per discussions in the Wells HCP-CC, the operations have been adjusted to reduce head differential on the east side and encourage more fish toward the west side. Douglas PUD has seen a shift in numbers of fish, but it has been variable. This also seems to be a function of which turbines are operating. Kahler said after this broodstock collection period, he will develop an analysis to determine whether this approach can be used successfully to increase numbers in the west ladder in the future.

Murdoch agreed that some elements of the discussion are matters for the HCP-CC; however, the broodstock collection protocols (BCPs) are approved by the HCP-HC, including Appendix D for site specific trapping operations. That activity was approved for Coho Salmon through November 15 with no mention that that option would not be available for this year. If there is knowledge of a deviation from the BCPs, it should be brought to this committee so contingency planning than occur. Murdoch requested better communication and clarity in the next BCPs about contingencies because of the possibility that this activity may go on into next year.

Kahler said a change Douglas PUD will need to make is to obtain and share pertinent, timely information so that the information can be passed down to all staff levels. Kamphaus noted there has been good communication between Brandon Kilmer (Douglas PUD) and Rick Alford (YN).

Kahler suggested preparing for unavailability of Wells Dam east ladder for broodstock collection in 2024 and agreed to describe contingencies in the 2024 BCPs for multiple species that typically are collected at that site.

D. 2024 Broodstock Collection Protocols Revisions

The following components of the 2024 BCPs will require coordination and revisions:

- Wenatchee steelhead release plan
- Coho Salmon collection plan
- Chiwawa weir trapping plan. Gale will identify a USFWS Ecological Services representative for coordination of that plan.
- Site specific trapping plans. Kahler will develop contingency concepts for collection restrictions at the Wells East Ladder. O'Connor will make edits for consistency around collection at the Wells Hatchery Volunteer Channel.
- Priest Rapids Fall Chinook Salmon release time and size.

- Culling for bacterial kidney disease: clarify scenarios when the HCP-HC and PRCC should be informed to ensure there is concurrence with fish health staff recommendations.

E. Thiamine Testing Results

Gale said among several salmon and steelhead stocks along the West coast of the lower 48 states there have been documented cases of low thiamine in returning females, leading to mortality of developing eggs and fry. The USFWS collected samples from spring Chinook Salmon eggs at LNFH and WNFH (10 grams of eggs from 30 females). Results are being prepared in a summary memo. Both hatcheries had similar levels. Few fish were categorized as “deficient,” which leads to high mortality in the offspring, and approximately 60% to 70% were categorized as “at risk of low thiamine.” There could be sublethal effects for fish in that category, and this condition may also be occurring in returns to other hatcheries in the area. The USFWS has not noticed any overt signs of thiamine deficiency. Samples will be collected year-over-year to observe interannual variation.

Murdoch asked if eggs are low in thiamine, are the effects observed during hatchery rearing or later after release, which could affect some assumptions about long-term survival. Gale said thiamine deficiency would cause overt mortality in the hatchery; it’s possible there are other neurological effects that are not being observed.

Gale said the USFWS is considering thiamine treatment of broodstock. The best method is a thiamine injection in the females. The second best treatment is a thiamine bath at egg hardening or later egg development stages. Murdoch asked, given there are ways to remedy this in the hatchery, should ESA-listed natural-origin fish be treated as a precaution. Gale said there is a lot of ongoing investigation to determine the degree of the problem and whether treatment in hatcheries has a larger effect on one component of the population over another. Steelhead females were injected this year because there were some suggestive observations that there may have been higher-than-normal early development mortality among the steelhead offspring. Those issues persisted this year, so discussions continue about whether to treat steelhead again. Steelhead have different thresholds for effects of thiamine deficiency; Chinook Salmon are more resistant to lower thiamine levels.

IV. RI/RR HCP-HCs

F. 2024 Draft Chelan PUD Hatchery Monitoring and Evaluation Implementation Plan

Willard said only the dates have been changed for Chelan PUD’s 2024 Draft Hatchery Monitoring and Evaluation Implementation Plan. The plan will include placeholder language for the steelhead release plan. This item will be presented for a decision in the November meeting.

V. Administration

A. USFWS Representation

Mat Maxey will become one of two Leavenworth National Fish Hatchery deputy complex managers. He will transition into the representative position for the HCP-HCs and PRCC HSC over the next several months. The HCP-HCs and PRCC HSC approved his addition to the primary email distribution list (the Wells HCP-Coordinating Committee later approved in their October 24 meeting).

B. Next Meetings

The next meeting of the HCP-HCs and PRCC HSC will be held on November 15, 2023 on Webex only. Meetings will be held virtually until March.

VI. Attachments

Attachment A List of Attendees

Attachment B Release Time Proposal of Smolts from Priest Rapids Hatchery

Attachment C Feasibility of Alternate Collection of Okanagan Sockeye Salmon Brood/Gametes

**Attachment A
List of Attendees**

Name	Organization
Larissa Rohrbach	Anchor QEA, LLC
Tracy Hillman	BioAnalysts, Inc.
Scott Hopkins*	Chelan PUD
Catherine Willard*	Chelan PUD
Kirk Truscott*‡°	Confederated Tribes of the Colville Reservation
Tom Kahler*	Douglas PUD
Brandon Kilmer	Douglas PUD
John Rohrbach	Douglas PUD
Rod O'Connor‡	Grant PUD
Todd Pearsons‡	Grant PUD
Tim Taylor°	Grant PUD
Brett Farman*‡°	National Marine Fisheries Service
Brian Lyon	Washington Department of Fish and Wildlife
Alf Haukenes	Washington Department of Fish and Wildlife
Katy Shelby	Washington Department of Fish and Wildlife
Mike Tonseth*‡°	Washington Department of Fish and Wildlife
Bill Gale*‡	U.S. Fish and Wildlife Service
Matt Cooper*‡	U.S. Fish and Wildlife Service
Mat Maxey	U.S. Fish and Wildlife Service
Keely Murdoch*‡	Yakama Nation
Cory Kamphaus*‡	Yakama Nation

Notes:

* Denotes HCP-HCs member or alternate

‡ Denotes PRCC HSC member or alternate

° Joined remotely

Update on release timing evaluation at Priest Rapids Hatchery

PRCC HSC October 18, 2023

- Survival advantages will be an interaction between release time and water temperature and discharge
- Early release timing will increase survival in warm, low flow years
- Early release timing may not be beneficial in cold, high flow years





Historic vs recent release dates

Year of Release	E	D	C	B	A
2012-2016 Median	6/12	6/15	6/18	6/22	6/25
2017-2022 Median	5/23	5/25	6/9	6/14	6/19

Juvenile size at release (fpp)

Year of Release	E	D	C	B	A
2017	51	55	45	49	46
2018	44	56	54	49	46
2019	55	56	47	44	54
2020	48	46	45	49	49
2021	41	47	46	48	48
2022	47	55	54	48	46
Mean	48	53	49	48	48

Juvenile travel time to Bonneville Dam in days, (SE)

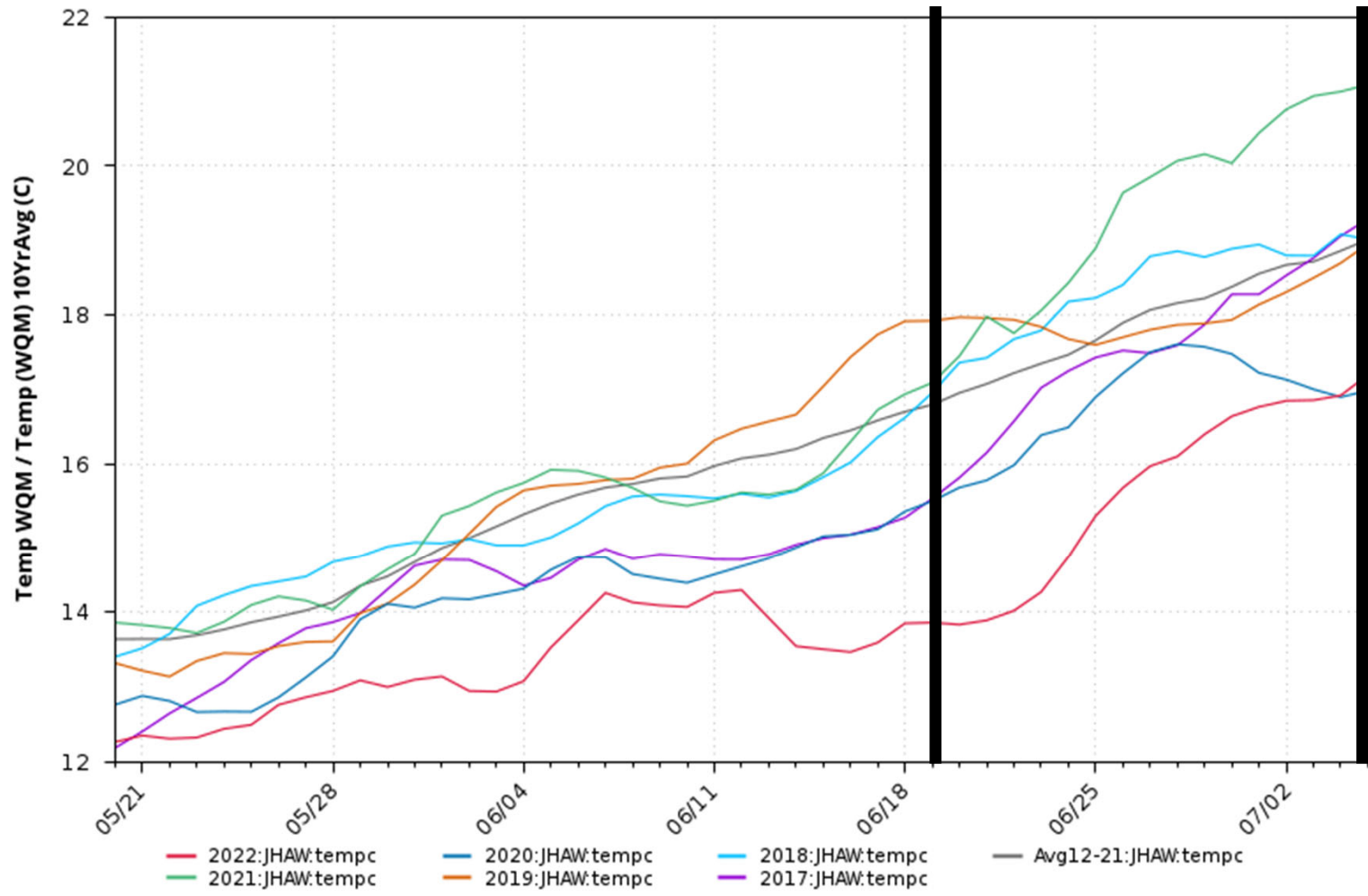
Year of Release	E	D	C	B	A
2017	22.6 (0.38)	25.65 (0.36)	20.72 (0.22)	19.63 (0.15)	16.07 (0.10)
2018	23.95 (0.44)	29.98 (0.50)	24.49 (0.41)	23.14 (0.40)	19.39 (0.31)
2019	33.84 (0.30)	33.63 (0.33)	20.24 (0.27)	18.52 (0.23)	19.58 (0.35)
2020	No PIT tagging due to COVID-19 safety protocols				
2021	28.46 (0.40)	26.51 (0.36)	19.3 (0.30)	16.51 (0.23)	15.33 (0.17)
2022	32.39 (0.95)	38.07 (0.78)	30.84 (0.52)	27.31 (0.41)	21.70 (0.42)
Mean	28.25	30.77	23.12	21.02	18.41

Juvenile arrival date to Bonneville Dam (release + mean travel time)

Year of Release	E	D	C	B	A
2017	14-Jun	19-Jun	29-Jun	1-Jul	5-Jul
2018	15-Jun	23-Jun	5-Jul	7-Jul	9-Jul
2019	24-Jun	26-Jun	30-Jun	1-Jul	6-Jul
2020	No PIT tagging due to COVID-19 safety protocols				
2021	21-Jun	22-Jun	28-Jun	30-Jun	2-Jul
2022	24-Jun	3-Jul	8-Jul	13-Jul	12-Jul
Mean	19-Jun	24-Jun	2-Jul	4-Jul	6-Jul

River Environment

Temperature WQM, Temperature (WQM) 10YrAvg



Age 2 (Release Years 2016 - 2020)	Pond E	Pond D	Pond C	Pond B	Pond A
Mean Release Date	22-May	25-May	9-Jun	14-Jun	19-Jun
Total CWT Fish Poned	1,199,113	1,205,692	1,202,971	1,202,658	1,204,541
Adult CWT Recoveries at Priest Rapids Hatchery	467	456	311	290	167
Release-to-Trap Survival	0.04%	0.04%	0.03%	0.02%	0.01%

Age 3 (Release Years 2016 - 2019)	Pond E	Pond D	Pond C	Pond B	Pond A
Mean Release Date	22-May	25-May	9-Jun	14-Jun	19-Jun
Total CWT Fish Poned	959,191	960,026	963,681	963,072	964,659
Adult CWT Recoveries at Priest Rapids Hatchery	2,388	2,211	1,831	1,344	862
Release-to-Trap Survival	0.25%	0.23%	0.19%	0.14%	0.09%

Age 4 (Release Years 2016 - 2018)	Pond E	Pond D	Pond C	Pond B	Pond A
Mean Release Date	22-May	25-May	9-Jun	14-Jun	19-Jun
Total CWT Fish Poned	717,388	718,602	723,213	722,452	723,865
Adult CWT Recoveries at Priest Rapids Hatchery	1,047	1,052	1,215	945	635
Release-to-Trap Survival	0.15%	0.15%	0.17%	0.13%	0.09%

Age 5 (Release Years 2016 - 2017)	Pond E	Pond D	Pond C	Pond B	Pond A
Mean Release Date	22-May	25-May	9-Jun	14-Jun	19-Jun
Total CWT Fish Poned	478,592	481,911	483,145	481,504	484,049
Adult CWT Recoveries at Priest Rapids Hatchery	809	791	999	756	537
Release-to-Trap Survival	0.17%	0.16%	0.21%	0.16%	0.11%

Ages 3, 4, 5 combined (Rel. Yrs. 2016-2020)	Pond E	Pond D	Pond C	Pond B	Pond A
Mean Release Date	22-May	25-May	9-Jun	14-Jun	19-Jun
Total CWT fish Poned	2,155,171	2,160,539	2,170,039	2,167,028	2,172,573
Adult CWT Recoveries at Priest Rapids Hatchery	4,244	4,054	4,045	3,045	2,034
Release to Trap Survival	0.20%	0.19%	0.19%	0.14%	0.09%

Summary

- Combined adult returns favor the early release strategy
- Releases in May pose logistics challenges to the PRH staff
- Preferred changes going forward:
 - Provide flexibility in FPP targets (range 50-60)
 - Release all fish by June 10

Historic release dates

(daylight, scheduled to avoid Hanford Reach tagging)

Year of Release	E	D	C	B	A
2012	6/14	6/15	6/16	6/20	N/A
2013	6/12	6/13	6/14	6/15	N/A
2014	6/12	6/16	6/18	6/23	6/25
2015	6/12	6/15	6/18	6/22	6/25
2016	6/16	6/18	6/20	6/22	6/24
Mean	6/13	6/16	6/19	6/22	6/25
Median	6/12	6/15	6/18	6/22	6/25

Release Dates

(all dark releases)

Year of Release	E	D	C	B	A
2017	23-May	25-May	9-Jun	12-Jun	19-Jun
2018	23-May	25-May	11-Jun	14-Jun	20-Jun
2019	22-May	24-May	10-Jun	13-Jun	17-Jun
2020	22-May	27-May	9-Jun	18-Jun	23-Jun
2021	24-May	27-May	9-Jun	14-Jun	17-Jun
2022	23-May	26-May	9-Jun	16-Jun	21-Jun
Mean	22-May	25-May	9-Jun	14-Jun	19-Jun
Median	23-May	25-May	9-Jun	14-Jun	19-Jun

		Considerations
Collection	CCT purse seine	Metrics to determine if collection is needed; how many (is there a minimum program size, facility limitations)?; collect only females (maybe more reasonable for trucking broodstock) and use cryo-milt if spawning (is sockeye milt viable)? Thermal barrier sets up when temps reach 22C for 12-24 hours. More stress and handling with using the purse seine.
	Wells	Metrics to determine if collection is needed; compatible with other programs?; contingent upon DPUD approval; fish could not be held at Wells; how many?; collect only females and use cryo-milt if spawning?
	OLAFT	Collect at PRD and use genetics to separate OK from Wen fish (labor intensive and expensive...Can labs do the analyses). May be a run timing difference.
	ABC Fishery	Not feasible because of high water temperatures.
	Okanogan Weir	Not feasible at this time because of picket spacing (weir is designed to allow sockeye passage).
Adult Holding (if needed)	Eastbank	Water temperature; disease concerns; how many brood?
	Rocky Reach Annex	Water temperature; how many brood?; discharge or other permits needed?
	Penticton Hatchery	Requires 3-week quarantine at border (check location of quarantine); lack of holding space.
	Carlton Acclimation Facility	Maybe serve as a quarantine and/or spawning facility (may have a water right use issue).
	Chiwawa Acclimation Ponds	Maybe serve as a quarantine and/or spawning facility (uses surface water)? Likely not feasible.
Release Adults (if needed)	South basin Osoyoos	Not likely feasible because of temperature and O2 issues; PIT-tag. Does not directly result in broodstock.
	In B.C.	Requires 3-week quarantine at border; permitting (both US and Can permits). Does not directly result in broodstock.
Spawn Adults (if needed)	Eastbank, Rocky Reach Annex, Carlton, and/or Chiwawa	Spawn timing/maturation; incubation space; transfer of eyed-egg no permitting issues.