

Memorandum

To: Wells, Rocky Reach, and Rock Island HCP
Coordinating Committees

Date: April 16, 2018

From: John Ferguson, HCP Coordinating Committees Chairman

cc: Kristi Geris

Re: Revised Minutes of the March 27, 2018 HCP Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan (HCP) Coordinating Committees met at the Grant PUD Office in Wenatchee, Washington, on Tuesday, March 27, 2018, from 10:00 a.m. to 12:00 p.m. Attendees are listed in Attachment A to these meeting minutes.

Action Item Summary

- Kristi Geris will distribute a notification to the HCP Coordinating Committees to contact Tracy Hillman (HCP Hatchery Committees Chairman) or Sarah Montgomery (HCP Hatchery Committees support staff) if members are interested in attending a tour of the new Wells Fish Hatchery facility on April 18, 2018 (Item I-C). (*Note: Geris distributed this notification on March 29, 2018.*)
- Douglas PUD will further review run-timing data for wild and hatchery yearling Chinook salmon with regard to Wells Dam bypass operation dates and will report back to the HCP Coordinating Committees (Item I-C).
- Andrew Gingerich (Douglas PUD) will distribute the report by Drs. John Skalski and Richard Townsend (Columbia Basin Research), which calculates sample size ranges needed to achieve precision standards for various study species and designs, as discussed by the HCP Coordinating Committees for the upcoming Wells Project 2020 Survival Verification Study (Item III-A). (*Note: Tom Kahler provided this report to Kristi Geris on April 13, 2018, which Geris distributed to the HCP Coordinating Committees that same day.*)
- Douglas PUD will provide results from the most recent spring and summer Chinook salmon smolt-to-smolt comparative studies conducted by Douglas PUD to Kristi Geris for distribution to the HCP Coordinating Committees (Item III-A).
- Scott Carlon will discuss internally with the National Marine Fisheries Service (NMFS), with regard to the Wells Project 2020 Survival Verification Study: 1) permitting requirements for using spring Chinook salmon, including modifications to Douglas PUD's HCP Incidental Take permit to allow for handling and tagging over 100,000 spring Chinook salmon smolts; 2) modifications to hatchery permits to allow for the collection of additional broodstock and for straying and percentage of hatchery origin spawners (pHOS) issues associated with releasing spring Chinook salmon raised at the Wells Fish Hatchery at the mouth of the Methow and

Okanogan rivers; and 3) concerns with releasing coho salmon at the mouth of the Okanogan River given that the Yakama Nation (YN) program currently does not have coverage for releasing fish at that site (Item III-A).

- Kristi Geris will redistribute the Draft 2018 Broodstock Collection Protocols (originally distributed March 12, 2018) along with a voting deadline for the Wells HCP Coordinating Committee, to be submitted via email to Mike Tonseth (Washington Department of Fish and Wildlife [WDFW]) and Geris by close-of-business (COB) on Friday, April 6, 2018 (Item V-A). *(Note: Geris redistributed the protocols, as discussed, following the meeting on March 27, 2018.)*
- John Ferguson, in coordination with Tracy Hillman and Chelan and Douglas PUDs, will draft a letter to Grant PUD expressing thanks for the use of the Grant PUD office in Wenatchee, Washington, for convening monthly HCP Committees meetings (Item VI-B). *(Note: this letter was sent to Grant PUD on March 29, 2018, and was distributed by Kristi Geris to the HCP Coordinating Committees, Hillman, and Denny Rohr on April 2, 2018.)*
- The HCP Coordinating Committees meeting on April 24, 2018, will be held **in-person** at the Grant PUD Wenatchee Office in Wenatchee, Washington (Item VI-C). *(Note: the meeting on April 24, 2018, was changed to a conference call to accommodate the Lake Roosevelt Forum meeting.)*

Decision Summary

- The Rock Island and Rocky Reach HCP Coordinating Committees representatives present approved the 2018 Rock Island and Rocky Reach Fish Spill Plan, as revised (Item IV-A).
- The 2017 Rock Island and Rocky Reach HCP Annual Reports were approved by the Rock Island and Rocky Reach HCP Coordinating Committees after no disapprovals were received following the 30-day review period, which ended on March 15, 2018.

Agreements

- There were no HCP Agreements discussed during today's meeting.

Review Items

- The Draft 2018 Broodstock Collection Protocols were distributed to the Wells HCP Coordinating Committee for review by Kristi Geris on March 12, 2018. Wells HCP Coordinating Committee vote via email is due to Mike Tonseth and Geris by COB Friday, April 6, 2018 (Item V-A).

Finalized Documents

- The 2017 Rock Island and Rocky Reach HCP Annual Reports were distributed to the HCP Coordinating Committees by Kristi Geris on April 2, 2018.

I. Welcome

A. Review Agenda (John Ferguson)

John Ferguson welcomed the HCP Coordinating Committees and reviewed the agenda. Ferguson asked for any additions or changes to the agenda. No changes were requested by HCP Coordinating Committees representatives; however, Ferguson added under the administrative updates: 1) an upcoming pinniped presentation by Michelle Rub (National Oceanic and Atmospheric Administration [NOAA]); and 2) a thank you letter to Grant PUD.

B. Meeting Minutes Approval (John Ferguson)

The HCP Coordinating Committees reviewed the revised draft February 27, 2018 meeting minutes. Kristi Geris said John Ferguson identified a typo under Douglas PUD's Wells Project 2020 Survival Verification Study agenda item regarding the location of the passive integrated transponder (PIT) tag trawl system, which is located in the lower (not upper) Columbia River Estuary below Bonneville Dam, near river kilometer 75. Geris said all other comments and revisions received from members of the Committees were incorporated into the revised minutes and there are no outstanding items remaining to be discussed. HCP Coordinating Committees members present approved the February 27, 2018 meeting minutes, as revised.

C. Last Meeting Action Items (John Ferguson)

Action items from the HCP Coordinating Committees conference call on February 27, 2018, and follow-up discussions, were as follows. (*Note: italicized text corresponds to agenda items from the meeting on February 27, 2018:*)

- *Kristi Geris will coordinate with Tracy Hillman and will notify the HCP Coordinating Committees of the date the HCP Hatchery Committees plan to tour the new Wells Fish Hatchery (tentatively scheduled for spring 2018; Item I-C).*

Hillman said the HCP Hatchery Committees meeting on April 18, 2018, will be held in-person at Wells Dam and will include a tour of the new Wells Fish Hatchery facility. Geris will distribute a notification to the HCP Coordinating Committees to contact Hillman or Sarah Montgomery if members are interested in attending the tour (note: Geris distributed this notification on March 29, 2018).

- *Douglas PUD will further review run-timing data for wild and hatchery yearling Chinook salmon with regard to Wells Dam bypass operation dates and will report back to the HCP Coordinating Committees (Item I-C).*
This action item will be carried forward.
- *Douglas PUD and the Wells HCP Coordinating Committee will complete the following action items associated with the Douglas PUD 2020 Verification Survival Study (Items I-C and III-C):*
 - *Keely Murdoch will provide smolt-to-adult return (SAR) data, based on coded wire tags (CWTs), for coho salmon released and recaptured at Wells Dam.*
Murdoch provided these data during the meeting on February 27, 2018, which Kristi Geris distributed to the HCP Coordinating Committees that same day.
 - *Tom Kahler will ask John Skalski (Columbia Basin Research) to calculate sample size ranges needed, based on SARs, to achieve precision standards for Wells summer Chinook salmon, Winthrop spring Chinook salmon, and Methow coho salmon; and Kahler will determine if these ranges result in capacity issues at Wells Fish Hatchery.*
This will be discussed during today's meeting.
 - *Tom Kahler will determine whether there are permitting issues for rearing study fish at Wells Fish Hatchery.*
This will be discussed during today's meeting.
 - *Tom Kahler will ask John Skalski about the feasibility of implementing a study design using both passive integrated transponder (PIT)-tagged summer Chinook salmon and acoustic-tagged spring Chinook salmon.*
This will be discussed during today's meeting.
- *Lance Keller will provide an email detailing the Tumwater Dam fishway outage scheduled for February 28, 2018, and the HCP Coordinating Committees will contact Keller with comments, if any, no later than end of day February 27, 2018 (Item IV-A).*
Keller provided this email following the meeting on February 27, 2018, which Kristi Geris distributed to the HCP Coordinating Committees that same day.
- *Lance Keller will incorporate language into the Draft 2018 Rock Island and Rocky Reach Fish Spill Plan, documenting the conversion of notched spill gates 18 and 26 back to full gate operation during spring 2018 (Item IV-I).*
Keller provided an updated spill plan following the meeting on February 27, 2018, which Kristi Geris distributed to the HCP Coordinating Committees that same day.

II. HCP Tributary and Hatchery Committees Update

A. HCP Tributary and Hatchery Committees Update (Tracy Hillman)

Tracy Hillman updated the HCP Coordinating Committees on the following actions and discussions that occurred during the HCP Tributary Committees meeting on March 6, 2018:

- *Larsen Creek Enhancement Project*: The HCP Tributary Committees received this Small Project proposal from Chelan County Natural Resource Department. The purpose of this project is to increase channel length in lower Larsen Creek, which is an intermittent tributary to Peshastin Creek. This will be accomplished by constructing a 450-foot new channel across the floodplain thereby improving fish passage, off-channel habitat, and habitat complexity for juvenile steelhead. The total cost of the project is \$59,100. The sponsor requested \$44,200 from HCP Plan Species Account Funds. The HCP Tributary Committees declined the opportunity to fund the project, due to concern about spreading a channel with intermittent flow across an alluvial fan causing even more limited stream flow and possibly resulting in higher occurrences of fish stranding and entrapment.
- *Provide Supplemental Effectiveness Monitoring in the Grey and Stormy Reaches of the Entiat River*: The HCP Tributary Committees received this Monitoring proposal from Chelan-Douglas Land Trust (CDLT). The U.S. Bureau of Reclamation and their partners will fund the implementation of a variety of treatments aimed at increasing habitat complexity, quality, and availability in the Grey and Stormy Reaches between river miles 16.1 and 21.1 on the Entiat River. Improvements include installation of large wood, excavation of new side channels and/or improving access to existing side channels, levee removal, and riparian vegetation plantings. CDLT would like to monitor the effects of these actions on wood dynamics, floodplain connectivity, and channel bed change. The total cost of the project over the 11-year monitoring period is \$386,523. The sponsor requested the entire amount from the Assessment Funds. The HCP Tributary Committees declined the opportunity to fund the project, because Assessment Funds can only be used to evaluate enhancement actions funded by the HCP Tributary Committees. Additionally, the HCP Tributary Committees are more interested in understanding fish responses (opposed to geomorphic and riparian responses). The HCP Tributary Committees have also been informed that the Integrated Status and Effectiveness Monitoring Program and Columbia Habitat Monitoring Program (ISEMP/CHaMP) in the Entiat River Basin may not proceed because the Bonneville Power Administration cut funding for the Intensively Monitored Watershed (IMW) component. Therefore, it is unlikely the monitoring work will have a cost share. John Ferguson asked about the IMW report on the Entiat River Basin. Hillman said he understands the final report may not be finished.

- *M2 Mid-Sugar Appraisal*: Chris Johnson (Methow Salmon Recovery Foundation) asked the Wells HCP Tributary Committee to review the M2 Mid-Sugar Appraisal conducted by Larry Rees (Cascade Chelan Appraisal Company). After reviewing the appraisal, the Wells HCP Tributary Committee identified several questions to discuss with Rees. Rees attended the HCP Tributary Committees meeting on March 6, 2018, to answer these questions. Following these discussions, the Wells HCP Tributary Committee approved the appraisal.
- *Plan Species Account Deposits*: At the end of January 2018: 1) Chelan PUD had deposited \$759,967 into the Rock Island Account and \$359,935 into the Rocky Reach Account; and 2) Douglas PUD had deposited \$275,968 into the Wells Account. As of March 2018, the unallocated balances within each account were \$6,501,189 in the Rock Island Account, \$2,854,244 in the Rocky Reach Account, and \$1,765,256 in the Wells Account. Among the three accounts, there is about \$11,120,689 available for funding projects. Ferguson asked if these funds expire, and Hillman said no, the funds are good for the entire life of the HCP.
- *Salmon Recovery Funding Board/HCP Tributary Committees Proposed Schedule*: Each year the HCP Tributary Committees coordinate with the Salmon Recovery Funding Board process. This year, draft proposals are due on Friday, April 13, 2018. Project tours will be on May 9 (Wenatchee), May 10 (Entiat), May 15 (Methow), and May 16, 2018 (Okanogan). The HCP Tributary Committees will evaluate the draft proposals on Friday, May 11, 2018 (note: this date was later changed to May 23, 2018), and decide which projects should be submitted as final proposals. Sponsors will give presentations on Wednesday, June 13, 2018. Final proposals are due on Friday, June 29, 2018. The HCP Tributary Committees will evaluate final proposals and make funding decisions on Thursday, July 12, 2018.
- *Next meeting*: The next meeting of the HCP Tributary Committees will be on April 12, 2018. Hillman said currently there are not a lot of agenda items and this meeting may be canceled.

Hillman updated the HCP Coordinating Committees on the following actions and discussions that occurred during the HCP Hatchery Committees meeting on March 12, 2018:

- *Draft 2018-2020 Steelhead Release Plan*: The HCP Hatchery Committees reviewed Chelan PUD's draft 2018-2020 Steelhead Release Plan. The purpose of the plan is to evaluate steelhead survival to McNary Dam based on size at release and rearing vessel (raceway versus reuse circulars). The goal is to inform best hatchery management practices that optimize homing fidelity, minimize residualism, maximize out-migration survival, and minimize negative ecological interactions. The plan is to use a two-factor ANOVA design with three replicates (years). The Rock Island and Rocky Reach HCP Hatchery Committees approved the release plan, which will be implemented this year.
- *Methodology for Establishing Baseline Conditions in the Wenatchee Steelhead Program*: The new steelhead permit calls for maximizing the number of steelhead that migrate downstream

and reducing the number that residualize. Chelan PUD proposed possible methods for evaluating steelhead residualism in the Wenatchee Basin. Possible methods include PIT-tag evaluations, post-release sampling, and electrofishing/angling surveys. The HCP Hatchery Committees discussed possible sampling designs and sampling methods. Chelan PUD will convene the Hatchery Evaluation Technical Team to help identify appropriate methods for estimating residualism rates. Hillman said he believes the HCP Hatchery Committees will be discussing this item for a while. He said NMFS is deferring to the HCP Hatchery Committees to develop a method, which is a large effort.

- *Fish Health and Production at Wells and Methow Hatcheries:* Dr. Betsy Bamberger (Douglas PUD Fish Health Specialist) shared a presentation titled, "Columnaris Disease at Wells Hatchery – A Case Review." Bamberger described Columnaris disease, its significance, and its presence at Wells Fish Hatchery and elsewhere. She outlined treatment and management strategies including the use of Diquat to treat the disease, which she found to be very effective in treating summer steelhead. Ferguson asked if Columnaris is a fungal infection, and Hillman said it is a bacterial infection.
- *Sinkhole at Wells Fish Hatchery:* Douglas PUD described what appears to be a leak in the pond liner for dirt pond 3 at Wells Fish Hatchery. At one point, the pond was losing about 1,000 gallons per minute. It is apparent from detailed inspections that the old liner simply failed due to age. Heavy equipment contractor KRCI sealed the pond with an engineered fill including sand, gravel and bentonite clay, which appears to have sealed the leak for the time being. The pond is currently rearing the Columbia River safety-net steelhead program. It does not appear any steelhead have disappeared into the sinkhole. After the fish are released in mid-April, Douglas PUD will develop a plan to reline the dirt ponds at Wells Fish Hatchery.
- *Advancements in Estimating Steelhead Escapement Methodology:* Andrew Murdoch (WDFW) shared a presentation titled, "Estimating Steelhead Escapement in the Upper Columbia DPS" (*note: DPS means "distinct population segment"*). Andrew Murdoch described a Bayesian hierarchical patch occupancy model, which uses PIT tag detections to estimate run escapements into the Okanogan, Methow, Entiat, and Wenatchee river subbasins. Adult steelhead are PIT tagged at Priest Rapids Dam and subsequently redetected at arrays scattered throughout the subbasins. Estimated run escapements were generally precise (with coefficients of variation less than 15%) for both hatchery and wild fish. Andrew Murdoch then described a method for estimating spawning escapements using both PIT-tag detections (in tributaries) and redd counts (in subbasin mainstems). Redd counts were converted to spawning escapements using a Gaussian Area Under the Curve method and observer error models. This approach provided generally precise spawning escapement estimates. Hillman said the more fish marked and redetected the more precise the model. Ferguson asked what these models were compared to, and Hillman said the models were compared to redd counts.

Ferguson asked about the purpose of discontinuing using redd counts to obtain these data. Hillman clarified that redd counts still have to be used in the mainstem. He also noted that this patch occupancy method was originally developed in the Snake River and was adapted to the Columbia River.

- *2018 Broodstock Collection Protocols*: The HCP Hatchery Committees are currently reviewing the Draft 2018 Broodstock Collection Protocols. Comments are due to WDFW by the end of March 2018. The final protocols are due to NMFS by April 15, 2018.
- *National Marine Fisheries Service Consultation Update*: NMFS indicated that the National Environmental Policy Act process is moving forward with Chuck Peven (Peven Consulting) writing the Environmental Assessment for Methow steelhead and the unlisted programs (summer/fall Chinook salmon for Wells, Methow, Chelan Falls, Dryden, and Priest Rapids).
- *Next meeting*: The next meeting of the HCP Hatchery Committees will be on April 18, 2018, at Wells Dam.

III. Douglas PUD

A. Wells Project 2020 Survival Verification Study – Study Species (Andrew Gingerich)

John Ferguson said the HCP Coordinating Committees have been discussing this topic for the last 3 months. He recalled last month, there was a focused discussion regarding using either coho or summer Chinook salmon and not using steelhead. He said Keely Murdoch indicated the YN would support making coho salmon available from their production groups if the Wells HCP Coordinating Committee chose to study this species. Ferguson said spring Chinook salmon as a study species is pending the results of John Skalski's and Richard Townsend's analyses on sample sizes, which will be further discussed during today's meeting. Ferguson said the other species under discussion is summer Chinook salmon. He said the goal of today is to continue discussing regarding using either spring Chinook or coho salmon for the study and reach a point where Douglas PUD can draft a Statement of Agreement.

Andrew Gingerich said presentation slides titled, "Wells Dam Survival Verification 2020 – Species and Methodology Considerations," were distributed to the HCP Coordinating Committees by Kristi Geris on March 26, 2018. Gingerich recalled that Tom Kahler left the last meeting with a few action items under this agenda item, which these slides intend to address. *(Note: Gingerich provided final slides, which included corrected data [Attachment B], to Geris on March 28, 2018, which Geris distributed to the HCP Coordinating Committees that same day.)*

Slide 2 of Attachment B

Gingerich said this slide explains why PIT tags are currently the only tool available to achieve the study goals contained within the Wells HCP. He said PIT tags provide easy comparisons to past

studies, and PIT tags also provide accurate measurements of direct, indirect, and any potential delayed mortality (as required by the Wells HCP). He said the issue of tag burden also needs to be considered, and he noted studies conducted by Battelle in 2009 (Brown et al.), and 2012 (Carlson et al.), which evaluated tag burden using simulated turbine passage; showing that fish with the current generation of acoustic tags had higher mortality than PIT-tagged fish. This was particularly evident when Chinook salmon with higher tag burden exposed to pressure changes had increased mortal injury compared to lower tag burdened Chinook salmon.

Slide 3 of Attachment B

Gingerich said this slide contains a direct quote from Richard Brown's 2009 paper and summarized if acoustic tagged fish pass a dam via the turbine route, the fish are more susceptible to mortal injury compared to PIT or untagged conspecifics. He said this is one measure to evaluate fish mortality, and he noted that the figures on this slide show examples of the pressure profile to which fish are exposed when passing through a turbine.

Slide 4 of Attachment B

Gingerich said the punchline of this Carlson et al. 2012 study is that tag burden from relatively larger acoustic tags and the ratio of pressure change were the two biggest factors in predicting mortal injury to tagged fish when passing through turbines. Gingerich said the table on this slide shows tag burdens that were tested in the study and therefore support this conclusion. He said different types of tags (e.g., double- and single-battery acoustic tags, and PIT tags) were included in this study.

Slide 5 of Attachment B

Gingerich said Skalski's team built a series of logistic regressions for fish with various types of tags, including no tag, that were exposed to different ratios of pressure change, which show a dramatic change in the probability of mortality associated with tag type. He said for these treatment fish the only difference was the tag burden. He said in his opinion, this is fairly important in terms of the survival challenges associated with using acoustic tags for survival studies. Ferguson recalled working for NOAA and evaluating tag effects using the juvenile salmon acoustic telemetry (JSAT) system. Ferguson said it seemed the survival of JSAT- and PIT-tagged fish was comparable for a distance of one dam and reservoir, around at a distance of two dams and two reservoirs the results started diverging dramatically; and at three dams and three reservoirs there was a definite question about using JSATs for survival studies. He said at that time, tag burden was not only about turbine passage; it also included accumulative effects. Gingerich said, further, acoustic arrays are not located everywhere; therefore, the infrastructure component gets larger. Tag burden, active tag battery failure issues, post-release detections of dead fish, infections at suture sites 20 days after release, and surgical effects (anesthetic and large incisions) were all discussed in relation to why PIT-tags are a more accurate tool for estimating hydro survival.

Slides 6 and 7 of Attachment B

Gingerich said regarding the YN's inquiry about conducting a smaller-scale side-by-side study, Skalski's team developed a hypothetical situation that demonstrates the release of acoustic-tagged fish would also require the release of a control group below Wells Dam. Gingerich said the data would not be adequate to only have an acoustic group next to a PIT group; therefore, to conduct a smaller-scale, side-by-side study, there would really need to be two separate studies.

Slide 8 of Attachment B

Gingerich said Skalski and Townsend estimated that 90,000 study fish (45,000 treatment and 45,000 control), regardless of species, will be needed for the Wells Project 2020 Survival Verification Study. Gingerich said this number assumes that detection probability at the Rocky Reach Juvenile Fish Bypass System (RRJFBS) is in the 0.2 to 0.4 range, similar to most years; and given a standard error requirement of ≤ 0.025 . Gingerich said he will distribute the report by Skalski and Townsend, which calculates the sample size ranges needed to achieve precision standards for various study species and designs. *(Note: Tom Kahler provided this report to Geris on April 13, 2018, which Geris distributed to the HCP Coordinating Committees that same day.)*

Slide 9 of Attachment B

Gingerich said the series of lines on this slide are logistic regressions. He said the P_{RR} is the likely detection probability at the RRJFBS. He said for coho salmon, to achieve a standard error ≤ 0.025 (y-axis) would require approximately 45,000 treatment and 45,000 control fish (x-axis).

Slide 10 of Attachment B

Gingerich said these are the exact same plots as show on slide 9 of Attachment B, only the data evaluate spring Chinook salmon (springers) on top and summer Chinook salmon (summers) on bottom. He said again, a release size of about 90,000 fish meets precision targets for both species.

Slide 11 of Attachment B

Gingerich said less fish (32,000) per release site are needed to meet HCP precision and accuracy standards for either of the three species when McNary detection probability is 0.10 to 0.25 (the typical range).

Slide 12 of Attachment B

Gingerich said estimating delayed mortality can be difficult. He said the Wells HCP does not specify what the standard error should be around delayed mortality estimates. He said Skalski developed a similar plot to the previous slides, which evaluates adult returns using SARs. Gingerich said, to achieve a standard error of 0.025 with reasonable SARs, release size can increase quickly. He said more fish in the release group results in tighter survival estimates. Shane Bickford (Douglas PUD HCP

Policy Staff) added that this exercise is estimating something that is very small or not significant (i.e., delayed mortality), which means a lot of fish are required to achieve a meaningful level of precision around the estimate.

Slide 13 of Attachment B

Gingerich said in conclusion: 1) using PIT tags will provide a clean comparison to results of previous verification studies and conforms to the survival requirements of the Wells HCP; 2) Douglas PUD will need about 90,000 fish for the study, which is a little more than what was used in the 2010 verification study; 3) higher SARs will help in terms of tightening up the precision around the estimates; and 4) challenges with using springers include Endangered Species Act concerns and permitting. Gingerich said Kahler called Brett Farman (NMFS) two times and was unable to reach him. Gingerich said Douglas PUD is unsure about what is realistic in terms of meeting permitting requirements in time to collect springers this year. He noted that using yearling summer Chinook salmon released in the spring, to serve as a surrogate for springers in the 2010 study, was approved by the Wells HCP Coordinating Committee at that time. Jim Craig asked which species have been studied in past years, and Bickford clarified that yearling Chinook salmon were studied in 1998 and yearling steelhead were studied 1999 and 2000. The 2010 survival verification study used yearling summer Chinook salmon raised at the Wells Fish Hatchery.

Bickford noted that because of the leaking liner in dirt pond 3, Douglas PUD's hatchery capacity is currently degraded and if Douglas needs to raise an additional 100,000 fish for this study (spring Chinook or coho salmon) the study would need to be postponed one year (or until 2021). Conversely, if the study used summer Chinook salmon, already required for mitigation at Wells Fish Hatchery, then no new fish would need to be raised and the study could take place in 2020, as originally scheduled.

Discussion

Murdoch asked if Chelan PUD observed tag burden issues when conducting survival studies using acoustic tags. Lance Keller said Chelan PUD was aware of Battelle's tag burden investigation, but without turbine specific measurements conducted with sensor-fish, site-specific tag burden effects cannot be factored into survival results. He said Chelan PUD had been using acoustic tags for a while when the Battelle data about tag burden were published. Keller said Chelan PUD visited Battelle and observed tag burden and decompression studies, but no results were incorporated into Chelan PUD studies. He said with this in mind, Chelan PUD had confidence that the survival estimates were conservative. He said for the next survival study, Chelan PUD was considering double-tagging; however, based on the most recent data this may be reconsidered. He said it is understood there is an effect; however, it is still unclear what is affected and to what extent dam specific, turbine-specific

modeling. Ferguson noted that Rock Island Dam also has lower head and bulk turbines, which are more fish friendly in terms of pressure.

Bickford said Douglas PUD tags study fish 4 to 5 months prior to the study to give the fish time to heal and allow them to behave normally when released. He noted that handling and anesthetizing fish during tagging puts a tremendous amount of stress on the fish, impacting normal behavior and physiological processes as documented in Douglas PUD's prior four years of survival-related physiological studies. He said in 1998 and 1999, study fish were tagged directly before release. He said it takes 15 days for fish to overcome just the stress of tagging much less transportation and release.

Kirk Truscott said that some Wells HCP Coordinating Committee members have expressed interest in studying springers. He said one goal of these survival studies is to verify surrogacy through a comparison of ratios. He noted that if the control and study groups are both double-tagged, both will have equal tag burden. He said part of the reasoning behind using springers and acoustic tags is attempting to avoid needing 90,000 study fish.

Bickford said if there is a desire to evaluate whether or not spring and summer Chinook salmon have similar survival, then there is a simple way to do this. He noted that in prior evaluations that spring and summer Chinook salmon yearlings have displayed similar smolt-to-smolt survival. However, it should be noted that there are differences between steelhead and Chinook salmon, but very small differences between coho and Chinook salmon and coho salmon and steelhead. He said steelhead have lower survival in the Columbia and Snake rivers. He said sockeye salmon have high survival, and coho salmon have intermediate survival which is why the Wells HCP Coordinating Committee was comfortable with having summer Chinook salmon yearlings to serve as a surrogate species in the past. He said with Chinook salmon, there is really no inter-dam survival differences. He said Douglas PUD would not be opposed to using springers as a study species; however, there is a lot more preparation and permitting to achieve what Douglas PUD considers to be a valid verification study.

Truscott asked about the transport component. Bickford cautioned that at some point, fish performance can be affected by transport. He recalled a study conducted by NOAA in 1998, when there was inadequate oxygen provided during transport from Eastbank Fish Hatchery to the Wells Dam tailrace when compared to fish transported to the Rocky Reach Dam tailrace for release. He said the difference in transport was only 10 minutes longer in the study, but this difference manifested in a 2% difference in survival of fish migrating through Rocky Reach Dam according to NOAA. Bickford said little differences during these studies can manifest into significant impacts to the precision and accuracy of the survival studies.

Bickford said regarding surrogacy, it would be beneficial to review the smolt-to-smolt comparison data for summers and springers to determine if these species behave similarly throughout the hydrosystem. If there are no statistically significant differences between the two Chinook salmon stocks, then it would make sense to use the one that can be done without another ESA consultation and that can be done on schedule (2020).

Ferguson said a decision on species is needed with regard to broodstock and facility capacity. Truscott asked if there is also a capacity issue if coho salmon are used, and Bickford said yes. Bickford added that Douglas PUD is not averse to using coho salmon. The study would simply need to be moved to 2021. Murdoch recalled that the YN's permit allows for a 10% overage. She said even if the YN's full broodstock is met, the study fish for Douglas PUD would still be within the 10% allowance.

Ferguson recalled discussing that there is no coho salmon program in the Okanogan River and a possible issue with straying. Murdoch said the YN's permit does not have the Okanogan River as a release site. She said she does not believe this is an issue; however, approval from NOAA should be obtained just in case.

Truscott noted that summers are beneficial in the event there is a bad ocean year, compared to springers. Murdoch said coho salmon SARs can vary significantly (either really good or really bad) depending on the ocean year. Truscott suggested using whichever species has the best chance at achieving survival standards considering all scenarios.

Murdoch agreed it will be beneficial to review the results from the most recent spring and summer Chinook salmon smolt-to-smolt comparative studies conducted by Douglas PUD. Bickford said Douglas PUD can provide these data to Geris for distribution to the HCP Coordinating Committees. Bickford noted that using springers would also require Douglas PUD to modify the HCP incidental take statement. Scott Carlon said he will discuss internally with NMFS, with regard to the Wells Project 2020 Survival Verification Study: 1) permitting requirements for using spring Chinook salmon, including modifications to Douglas PUD's HCP Incidental Take permit; 2) concerns with collecting additional broodstock and straying and pHOS issues associated with releasing spring Chinook salmon raised at the Wells Fish Hatchery at the mouth of the Okanogan and Methow rivers and below Wells Dam; and 3) concerns with releasing coho salmon at the mouth of the Okanogan River given that release site is not currently covered under the YN's coho permit.

Truscott asked about broodstock needed. Gingerich said for 90,000 fish, Tom Kahler was estimating needing 60 males and 60 females in excess of other programs. Truscott noted that springers have low SARs and more brood may be needed if this species is used for the study.

IV. Chelan PUD

A. DECISION: Draft 2018 Rock Island and Rocky Reach Fish Spill Plan (Lance Keller)

An updated Draft 2018 Rock Island and Rocky Reach Fish Spill Plan was distributed to the Rock Island and Rocky Reach HCP Coordinating Committees by Kristi Geris on February 27, 2018 (originally distributed on February 1, 2018). The draft document was available for a 30-day review period, with edits and comments due to Lance Keller by March 2, 2018. Keller recalled last month discussing converting notch gates 18 and 26 to full capacity. He said once river flows decrease, these gates will be converted back to a notch gate configuration. He said these changes were incorporated into the fish spill plan and no comments were received from Rock Island and Rocky Reach HCP Coordinating Committees members. Keller reminded the HCP Coordinating Committees that these changes to the spill gates were in response to losing the use of a few automated spill gates. He said the changes increase dam safety through additional full gate capacity.

The Rock Island and Rocky Reach HCP Coordinating Committees representatives present approved the 2018 Rock Island and Rocky Reach Fish Spill Plan, as revised.

B. Rocky Reach Dam Turbine Unit C1 Maintenance Update (Lance Keller)

Lance Keller recalled last month, discussing with the HCP Coordinating Committees the condition of Turbine Unit C1 and the possibility that the unit may not be available in time for the start of the spill season on April 1, 2018. Keller said it has been confirmed this is the case. He said Chelan PUD is currently moving forward on two parallel paths to return this unit back into service. He said Chelan PUD is working with a company that specializes in trunnion seals to fix the leak. He said the replacement seals will be on site at Rocky Reach Dam next week for installation, and the target operational date is currently in early May 2018. Keller said secondly, Chelan PUD is considering hydraulically locking the turbine blades in a fixed position. He said this is different than what was implemented on the large units during servo rod repairs. He said to hydraulically lock the blades, the blades are set at the desired angle, and then the oil is removed from the hub. This does not allow the servo motor to adjust the blades (i.e., the blades are locked in position). He said, however, there is concern when trunnion seals are leaking that water will get into the hub and cause issues. He said Chelan PUD is leaning towards the seal fix but is also continuing to research the hydraulically locking fix. He said the hydraulically locking option may result in the unit coming back into service 2 weeks behind the seal fix; however, regardless of the fix, the unit is expected back online by early-to mid-May 2018 at this current time.

Keller said a marked fish release was recently conducted in the RRJFBS and intake screen system deployed in Turbine Unit C2. He said the release was conducted under the altered operations, as discussed by the Rocky Reach HCP Coordinating Committee last month. Keller recalled these

operations included using three additional RRJFBS surface collector pumps to increase attraction flow to 3,330 cubic feet per second on each side of the RRJFBS surface collector entrances. He said 100 and 130 fish were released in the north and south entrances, respectively; and 96 and 129 fish were recovered, respectively. He said a second Turbine Unit C2 release was conducted at a higher velocity and 100 of 100 fish were recovered. He said no signs of descaling or injury were observed during each test.

Keely Murdoch asked regarding the first test, if Chelan PUD expected to recover all test fish? She also asked if the five unrecovered fish were mortalities. Keller said the fish were not mortalities; rather, the fish were just unaccounted for. He said it is common during these tests for a few fish to swim upstream and out of the RRJFBS. He further explained that the test was conducted as high (upstream) in the system as possible, which increases the chance that a fish may swim out. He said the test fish were destined for Dryden, so there was a large range of fish sizes. He said the test could be conducted by releasing fish lower in the system, but then a portion of the system would not be captured in the evaluation. He said additionally, the test is ideally conducted at the same location each year.

V. WDFW

A. Draft 2018 Broodstock Collection Protocols (Mike Tonseth)

Mike Tonseth said the Draft 2018 Broodstock Collection Protocols were distributed to the Wells HCP Coordinating Committee for review by Kristi Geris on March 12, 2018. Tonseth recalled there is a Wells HCP requirement for Wells HCP Coordinating Committee approval of the annual Broodstock Collection Protocols. Tonseth said the most notable difference from last year is a broadening trapping window for spring Chinook salmon at Wells Dam from 5 to 7 days per week (which is allowed under the Wells Biological Opinion), up to 16 hours per day. Tonseth said this protocol still allows for nighttime passage, but also allows operators to meet weekly and programmatic targets. He recalled in 2017, although there were sufficient numbers of fish, there were issues reaching targets because of trapping hour constraints. He said the adult return forecast for 2018 is similar to 2017.

Tonseth said the HCP Hatchery Committees have a comment deadline of COB Friday, March 30, 2018, and the Federal Energy Regulatory Commission (FERC) submission deadline is April 15, 2018. Tonseth asked that the Wells HCP Coordinating Committees submit a vote via email before the FERC deadline. Geris will redistribute the Draft 2018 Broodstock Collection Protocols (originally distributed March 12, 2018) along with a voting deadline for the Wells HCP Coordinating Committee, to be submitted via email to Tonseth and Geris by COB Friday, April 6, 2018. *(Note: Geris redistributed the protocols, as discussed, following the meeting on March 27, 2018.)*

VI. HCP Administration

A. Pinniped Presentation by Michelle Rub (John Ferguson)

John Ferguson said he contacted Michelle Rub (NMFS) about possibly presenting an update on her pinniped research to the HCP Coordinating Committees (*note: Rub last presented her research to the HCP Coordinating Committees on June 23, 2015*). Ferguson said Rub indicated she may be available to present at the HCP Coordinating Committees meeting on June 26, 2018. Ferguson noted that Rub has most recently been conducting genetics-based work.

B. Thank You Letter to Grant PUD (John Ferguson)

John Ferguson suggested drafting a letter to Grant PUD from the HCP Committees thanking Grant PUD for the use of the Grant PUD office in Wenatchee, Washington. The HCP Coordinating Committees agreed this is a good idea. Ferguson, in coordination with Tracy Hillman and Chelan and Douglas PUDs, will draft a letter to Grant PUD expressing thanks for the use of the Grant PUD office in Wenatchee, Washington, for convening monthly HCP Committees meetings. (*Note: this letter was sent to Grant PUD on March 29, 2018, and was distributed by Kristi Geris to the HCP Coordinating Committees, Hillman, and Denny Rohr on April 2, 2018.*)

C. Next Meetings (John Ferguson)

The next scheduled HCP Coordinating Committees meeting is on April 24, 2017, to be held in-person at the Grant PUD Wenatchee Office in Wenatchee, Washington. (*Note: the meeting on April 24, 2018, was changed to a conference call to accommodate the Lake Roosevelt Forum meeting.*)

The May 22 and June 26, 2018 meetings will be held by conference call or in-person at the Grant PUD Wenatchee Office in Wenatchee, Washington, as is yet to be determined.

VII. List of Attachments

Attachment A List of Attendees

Attachment B Wells Dam Survival Verification 2020 – Species and Methodology Considerations

Attachment A
List of Attendees

Name	Organization
John Ferguson	Anchor QEA, LLC
Kristi Geris	Anchor QEA, LLC
Tracy Hillman	BioAnalysts
Lance Keller*	Chelan PUD
Alene Underwood†	Chelan PUD
Shane Bickford*	Douglas PUD
Andrew Gingerich	Douglas PUD
Scott Carlon*	National Marine Fisheries Service
Jim Craig*	U.S. Fish and Wildlife Service
Chad Jackson*	Washington Department of Fish and Wildlife
Mike Tonseth	Washington Department of Fish and Wildlife
Kirk Truscott*	Colville Confederated Tribes
Keely Murdoch*	Yakama Nation

Notes:

- * Denotes HCP Coordinating Committees member or alternate
- † Joined by phone