

FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island
HCPs Hatchery Committees

Date: April 21, 2016

From: Tracy Hillman, HCP Hatchery Committees Chairman

Cc: Sarah Montgomery, Anchor QEA, LLC

Re: Final Minutes of the March 16, 2016, HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees meeting was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, March 16, 2016, from 9:30 a.m. to 11:30 a.m. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- McLain Johnson (Washington Department of Fish and Wildlife [WDFW]) will develop a timeline for conducting genetic sampling for HCP program species (Item I-A). *(Note: this item is ongoing. Johnson sent an email update to the Hatchery Committees on April 5, 2016, stating that their workgroup is drafting an updated timeline and they plan to have a draft for review by May 1, 2016.)*
 - Keely Murdoch will develop her draft, “Techniques to Improve Homing Fidelity for Chewuch and Twisp River Releases of Spring Chinook Salmon,” into a study plan, and will coordinate with Chelan, Douglas, and Grant PUDs regarding feasibility (Item II-A). *(Note: this item is ongoing. Murdoch sent the Draft Chewuch Homing Study Proposal to the Hatchery Committees on April 11, 2016.)*
 - Catherine Willard will draft a summary of the 5-Year Hatchery Monitoring and Evaluation (M&E) Review process (Item II-A). *(Note: this item is ongoing.)*
 - Hatchery Evaluation Technical Team (HETT) members will update Draft Hatchery M&E Plan Appendices 2 through 6 and send revised versions to Sarah Montgomery by Thursday, February 4, 2016, which she will forward to the Hatchery Committees for review (Item II-E). *(Note: this item is ongoing.)*
 - Sarah Montgomery will send Draft Hatchery M&E Plan Appendices 2, 4, 5 and 6 to the Hatchery Committees for review (Item II-E). *(Note: Montgomery sent the*
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Appendices to the Hatchery Committees on March 18, 2016.)

- Tracy Hillman will distribute the paper, “Olfactory navigation during spawning migrations: a review and introduction of the Hierarchical Navigation Hypothesis,” to the Hatchery Committees (Item I-A). *(Note: Hillman sent the paper to Sarah Montgomery on March 16, 2016, which she forwarded to the Hatchery Committees that same day.)*
 - Sarah Montgomery will forward information received from Todd Pearsons regarding Grant PUD’s website, which publically hosts M&E documents (Item I-A). *(Note: Montgomery forwarded Pearsons’ emails to the Hatchery Committees on March 16, 2016.)*
 - A portion of the Hatchery Committees representatives will convene as a workgroup to discuss the logistics of a draft study plan for addressing imprinting and homing in the Methow basin (Item II-A). *(Note: The workgroup met on March 23, 2016.)*
 - Sarah Montgomery will send a Doodle poll to the Hatchery Committees to convene a workgroup to discuss the logistics of a draft study plan for addressing imprinting and homing in the Methow basin (Item II-A). *(Note: Montgomery sent the Doodle poll to the Hatchery Committees on March 17, 2016.)*
 - Tracy Hillman will call Kirk Truscott to discuss the imprinting and homing workgroup (Item II-A). *(Note: Hillman and Truscott discussed the workgroup on March 21, 2016.)*
 - The Hatchery Committees will provide comments on WDFW’s Draft (Version 2) Broodstock Collection Protocols to Mike Tonseth by March 25, 2016 (Item II-D).
 - Mike Tonseth will send the final draft Broodstock Collection Protocols to the Hatchery Committees for approval via email on or before April 12, 2016 (Item II-D). *(Note: Tonseth sent the final draft Broodstock Collection Protocols to the Hatchery Committees on April 8, 2016, requesting an email vote by April 13, 2016.)*
 - Tracy Hillman will calculate carrying capacity for Chiwawa River spring Chinook salmon for discussion at the May 18, 2016, Hatchery Committees meeting (Item II-E).
 - Catherine Willard will provide an update on Blackbird Pond Acclimation passive integrated transponder (PIT)-tag data results at the April 20, 2016, Hatchery Committees meeting (Item III-A).
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DECISION SUMMARY

- There were no decisions approved during today's meeting.

AGREEMENTS

- The Rocky Reach and Rock Island Hatchery Committees approved the WDFW Request for Juvenile Hatchery Steelhead for Conducting Efficiency Trials at Lower Wenatchee River Smolt Trap (Attachment C) via email from March 29 to 30, 2016. Montgomery distributed the document to the Hatchery Committees on March 29, 2016.

REVIEW ITEMS

- Sarah Montgomery sent an email to the Hatchery Committees on March 18, 2016, reminding them the Draft Hatchery M&E Plan Appendices 2, 4, 5, and 6 are available for review before the Hatchery Committees April 20, 2016 meeting (Item II-E).

FINALIZED DOCUMENTS

- Sarah Montgomery sent an email to the Hatchery Committees on March 20, 2016, notifying them the National Marine Fisheries Service (NMFS) final Gene Flow Management Standards are available for download from the Hatchery Committees Extranet site.
 - Sarah Montgomery sent an email to the Hatchery Committees on March 20, 2016, notifying them the NMFS final Methow spring Chinook Gene Flow Analysis is available for download from the Hatchery Committees Extranet site.
 - Sarah Montgomery sent an email to the Hatchery Committees on March 30, 2016 notifying them that the Final 2015 Wells HCP Annual Report is available for download from the Hatchery Committees Extranet site.
 - Sarah Montgomery sent an email to the Hatchery Committees on April 8, 2016 notifying them that the Final 2015 Rocky Reach and Rock Island HCP Annual Reports are available for download from the Hatchery Committees Extranet site.
 - Sarah Montgomery sent an email to the Hatchery Committees on April 14, 2016 notifying them that the Final 2016 Broodstock Collection Protocols are available for download from the Hatchery Committees Extranet site.
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I. Welcome

A. *Review Agenda, Review Last Meeting Action Items, and Approve the February 17, 2016, Meeting Minutes (Tracy Hillman)*

Tracy Hillman welcomed the Hatchery Committees and asked for any additions or changes to the agenda. The following revisions were requested:

- Catherine Willard requested removing the size target recommendation for brood year (BY) 2016 Wenatchee and Chelan Falls summer Chinook salmon agenda item because it will be discussed during the Broodstock Collection Protocols discussion.
- Willard also requested removing Objective 1 from the Five-Year Hatchery M&E Review planning discussion, because discussion was completed at the February 17, 2016, Hatchery Committees meeting.

The Hatchery Committees reviewed the revised draft February 17, 2016, meeting minutes. Sarah Montgomery said there are several outstanding comments to be discussed. The Hatchery Committees discussed the outstanding comments and made revisions.

Hatchery Committees members present approved the draft February 17, 2016, meeting minutes, as revised.

Action items from the Hatchery Committees meeting on February 17, 2016, and conference call on March 3, 2016, and follow-up discussions, were addressed (*note: italicized text below corresponds to agenda items from the meeting on February 17, 2016 or March 3, 2016*):

- *McLain Johnson (Washington Department of Fish and Wildlife [WDFW]) will develop a timeline for conducting genetic sampling for HCP program species (Item I-A).*

This item is ongoing. Mike Tonseth said WDFW is working with a genetics lab to identify gaps in genetic sampling.

- *Mike Tonseth and Andrew Murdoch (WDFW) will keep the Hatchery Committees updated on the WDFW moratorium on hexacoater use (Item I-A).*

This item is complete. Tonseth said the moratorium on hexacoater use is currently being worked through the legislature, and he will update the Hatchery Committees

when there is a change.

- *HETT members will update the Draft Hatchery Monitoring and Evaluation (M&E) Plan Appendices 2 to 6 and send revised versions to Sarah Montgomery by Thursday, February 4, 2016, which she will forward to the Hatchery Committees for review (Item II-D).*

This item is ongoing. Montgomery forwarded Appendices 5 and 6 to the Hatchery Committees on February 5, 2016, Appendix 4 on February 9, 2016, and Appendix 2 on March 2, 2016. Keely Murdoch said Appendix 3 can be completed after proportionate natural influence standards for the Methow basin are determined.

- *Keely Murdoch will discuss internally the status of facility improvements at Chewuch AF (Item IV-B).*

This item is complete.

- *Bill Gale and Todd Pearsons will circulate information received from Ann Gannam (U.S. Fish and Wildlife Service [USFWS]) regarding the results of a phosphorus study she presented at the American Fisheries Society 2015 conference (Item I-A).*

This item is complete. Gale said, when he receives the information from Gannam, he will send it to the Hatchery Committees.

- *Sarah Montgomery will distribute Andrew Dittman's presentation, "Effects of Hatchery Rearing and Release Practices on Olfactory Imprinting and Homing," to the Hatchery Committees and Priest Rapids Coordinating Committee Hatchery Sub-Committee (PRCC HSC; Item II-A).*

This item is complete. Montgomery distributed the presentation to the Hatchery Committees and PRCC HSC on February 18, 2016. Tracy Hillman said he recently read an interesting paper regarding homing, olfaction, and hierarchical imprinting, and said he would send the paper to the Hatchery Committees.

- *Charlene Hurst (National Marine Fisheries Service [NMFS]) will send the revised gene flow sliding scale spreadsheet to the Hatchery Committees (Item II-B).*

This item is complete and was discussed during the Hatchery Committees March 3, 2016, conference call. Hurst sent the revised spreadsheet to Sarah Montgomery on February 19, 2016, which Montgomery distributed to the Hatchery Committees that same day.

- *Charlene Hurst will send an email to the Hatchery Committees describing the gene*
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flow standards that NMFS proposes for Methow spring Chinook salmon, which will be a decision item during the Hatchery Committees conference call in early March 2016 (date to be determined; Item II-B).

This item is complete and was discussed during the Hatchery Committees March 3, 2016, conference call. Hurst sent a document describing the gene flow standards to Sarah Montgomery on February 19, 2016, which Montgomery distributed to the Hatchery Committees for review that same day.

- *Keely Murdoch will develop her draft, "Techniques to Improve Homing Fidelity for Chewuch and Twisp River Releases of Spring Chinook Salmon," into a study plan and coordinate with Chelan, Douglas, and Grant PUDs regarding feasibility (Item II-C).*

This item is ongoing and will be discussed today.

- *The Hatchery Committees will discuss Keely Murdoch's study plan at the March 16, 2016, Hatchery Committees meeting (Item II-C).*

This item will be discussed today.

- *Sarah Montgomery and Tracy Hillman will revise the Grant PUD Target Hatchery Replacement Rate (HRR) Proposal to reflect discussions and agreements during the Hatchery Committees February 17, 2016, meeting and distribute it to the Hatchery Committees (Item II-C).*

This item is complete. Montgomery and Hillman revised the Target HRR Agreement on February 19, 2016, and Montgomery distributed it to the Hatchery Committees that same day.

- *Sarah Montgomery will compile all Hatchery Committees discussions regarding the 5-Year Hatchery M&E Review process into one document, organized by objective, and send it to Catherine Willard (Item II-C).*

This item is complete. Montgomery sent a draft of the summary document to Willard on March 10, 2016.

- *Catherine Willard will draft a summary of the 5-Year Hatchery M&E Review process (Item II-C).*

This item is ongoing. Willard said she will send a draft to the Hatchery Committees for review prior to the April 20, 2016, meeting.

- *Catherine Willard will send Chelan PUD's Draft 2016 Steelhead Release Plan and Preliminary Results from the 2015 Wenatchee Steelhead Release to*
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Sarah Montgomery, which she will distribute to the Hatchery Committees (Item III-D).

Willard sent the documents to Montgomery on February 18, 2016, which Montgomery distributed to the Hatchery Committees for review that same day.

- *Todd Pearsons will inquire internally about posting annual reports and 5-year reports on the Grant PUD website (Item IV-A).*

This item is complete. Pearsons said Grant PUD can house reports on their external website. He said they will host the two most-recent annual reports and the most-recent 5-year report. Sarah Montgomery said she will forward Pearsons' email regarding the website to the Hatchery Committees.

- *Sarah Montgomery will send a Doodle poll to the Hatchery Committees in order to convene a conference call to discuss two decision items: 1) gene flow standards for Methow spring Chinook salmon; and 2) Chelan PUD's Draft Steelhead Release Plan (Item IV-B).*

This item is complete. Montgomery sent a Doodle poll on February 18, 2016, and a meeting invitation for a March 3, 2016, conference call on February 24, 2016.

- *Charlene Hurst (National Marine Fisheries Service [NMFS]) will send the revised (version 2) gene flow analysis spreadsheet to the Hatchery Committees (Item II-A).*

This item is complete. Craig Busack sent the revised spreadsheet to the Hatchery Committees on March 9, 2016, which Sarah Montgomery forwarded on March 16, 2016.

- *Charlene Hurst will revise the Gene Flow Management Standards and send it to the Hatchery Committees (Item II-A).*

This item is complete. Craig Busack sent the revised standards to the Hatchery Committees on March 9, 2016, which Sarah Montgomery forwarded on March 16, 2016.

- *Bill Gale, Craig Busack, and Charlene Hurst will discuss gene flow standards and provide an update to the Hatchery Committees regarding the U.S. Fish and Wildlife Service's position on the standards prior to the Hatchery Committees' March 16, 2016, meeting (Item II-A).*

This item is complete. Gale said because there are a lot of unknowns in the implementation of these programs, flexible language should be included in the

permits to reflect discussions in the February 17, 2016, and March 3, 2016, Hatchery Committees meeting and conference call, respectively. He said his concerns for the gene flow standards have largely been met in the current proposed version. Murdoch said she will review the standards and provide a Yakama Nation (YN) vote on them soon.

- *Bill Gale will calculate necessary adult removal rates at different smolt-to-adult return levels under the recommended gene flow standards for Methow spring Chinook salmon (Item II-A).*

This item is complete. Gale said he calculated the removal rates, which are included in the revised gene flow standards that were distributed on March 16, 2016.

II. Joint HCP-HC/PRCC HSC

A. 5-Year Hatchery M&E Review Planning – Objective 5 (All)

Objective 5

Keely Murdoch said she is still working on the study plan draft and will try to have something for the Hatchery Committees to review at the April 20, 2016, meeting. She said the embryonic imprinting section is largely blank. Tom Kahler said he and Murdoch may want to discuss the draft with Andrew Dittman (NMFS), and that they should consider designing pilot studies, since some techniques contemplated for application in the proposed study are theoretical or have not been previously implemented at the production scale. He said the Hatchery Committees should convene a workgroup including Murdoch, Jayson Wahls (WDFW), Mike Tonseth, representatives from the PUDs, and other participants to discuss the logistical and fish-health aspects of designing a study plan for imprinting and homing in the Methow basin.

Tonseth asked if any part of the draft study plan could affect the 2016 Broodstock Collection Protocols. Murdoch said she does not think so, because if a pilot study were implemented in 2016, the eggs would be spawned at the same location as described in the protocols. Tonseth said the study may require an amendment to the protocols, but that can be determined once the study plan is further developed. Catherine Willard asked if hatchery-by-hatchery fish would be used for the pilot study. Kahler said the workgroup will discuss these aspects of the potential study plan. Murdoch said, as long as fish health is maintained throughout the

process of bringing water into the hatchery, she does not see a risk to using hatchery-by-wild or wild-by-wild fish. Kahler said, if there were a risk for fish health, the Hatchery Committees would have to decide how much of a risk the study fish pose to loss in production. He said it may not make sense to use conservation fish for testing a new method in a pilot study. Wahls said Trista Welsh-Becker (WDFW) should be invited to the workgroup meeting. Bill Gale suggested that someone call Kirk Truscott to inform him of the workgroup, and Tracy Hillman said he would call Truscott to discuss the purpose of the workgroup. Kahler said the workgroup can meet at Douglas PUD, and asked Sarah Montgomery to schedule a 2-hour meeting between March 21 and April 1, 2016. Montgomery said she will send a Doodle poll to the Hatchery Committees to convene a workgroup to discuss the logistics of a draft study plan for addressing imprinting and homing in the Methow basin.

B. USFWS Consultation Update (Bill Gale)

Bill Gale said he received an update on U.S. Fish and Wildlife Service (USFWS) consultations from Karl Halupka (USFWS). Gale said USFWS has a target completion date of April 2016 for the Wenatchee River Steelhead Biological Opinion (BiOp). He said Halupka is discussing revisions with reviewers this week. Gale said, for the Methow spring Chinook salmon consultation, the USFWS is moving forward with a strategy that relies on the 2012 Wells Relicensing Bull Trout BiOp for coverage. He said Halupka is working on a memorandum to internally document this strategy and analysis, but its completion is second in priority to completing the Wenatchee River Steelhead BiOp. Gale said USFWS has approved the approach of extending the Section 10 permit for the Okanogan consultation, but he does not know the current status of the permit revision. Gale said he received a draft BiOp for Winthrop National Fish Hatchery (WNFH) operations, which is currently being reviewed and has a target completion date of April 2016.

C. NMFS Consultation Update (Justin Yeager)

Justin Yeager said he spoke with Craig Busack, who stated the Wenatchee River Steelhead BiOp is under general council review. He said, for the Methow spring Chinook salmon BiOp, gene flow standards are still being decided by the Hatchery Committees. He said NMFS is working on the permits and BiOp with a target completion date of May 2016. Amilee Wilson said NMFS has a target completion date of March 2016 for the

Wenatchee River steelhead Section 7 consultation, and NMFS is waiting for USFWS to complete their consultation.

D. Broodstock Collection Protocols (Mike Tonseth)

Mike Tonseth shared a document titled, “Draft (Version 2) Upper Columbia River Broodstock Collection Protocols,” which Sarah Montgomery distributed to the Hatchery Committees on March 11, 2016 (Attachment B). Tonseth said he also distributed a version of the draft Broodstock Collection Protocols with all changes tracked so Hatchery Committees members could see all of the changes and responses to comments, of which a few remain to be discussed.

Todd Pearsons asked if backup steelhead adults could be collected at the Wells Fish Hatchery (FH) volunteer channel in the spring rather than in the fall (page 8). Jayson Wahls said they were able to collect enough fish this year, and they may have more adults starting next spring due to increased amounts of water. Tonseth asked the Hatchery Committees if they would rather collect fish in the fall or in the spring. Pearsons said fewer fish are being used for backup now, and last year, spring collection was used as a backup to fall collection because some fish died. He said just collecting fish in the spring might be a better choice. Wahls said most of those fish were collected at Ringhold FH and then trucked to Wells FH. Tonseth said it might make the most sense to target fall collection of fish, and then operate the volunteer trap in the spring to see if they can meet fall collection. Wahls said they performed test trials from 2007 to 2010, and in some years, they collected 200 to 300 fish, and, in other years, only around 50 fish were collected. He said they would expect to be able to collect at least 30 fish. Tonseth said this affects the Colville Confederated Tribe’s Okanogan Program, and he should get feedback from Kirk Truscott. Wahls said it would be easiest for the facility if fish were collected in the fall.

Tonseth said he is still receiving information to respond to some of the comments from Grant PUD. He said the second draft is available for review, and the Wells Coordinating Committee will discuss it during their next meeting.

Tom Kahler said he added a few new comments to the draft Broodstock Collection Protocols. He said the YN uses an extended trapping schedule in the fall when they are collecting coho salmon. He said Douglas PUD is seeking a modification to the trapping schedule this spring, because the west ladder trap will likely not be available until June. He said Douglas PUD is also going to perform a bull trout study, and may need a longer trapping period each week in order to get a large enough sample size for the study. Tonseth said he would incorporate Kahler's comments into the newest draft. He said the Broodstock Collection Protocols are due to the National Oceanic and Atmospheric Administration (NOAA) on April 15, 2016, and he requested that the Hatchery Committees provide comments on the draft before March 25, 2016. He said he would send a revised (final) draft version of the protocols for a Hatchery Committees email vote on or before April 12, 2016.

Gale said if 30 backup surplus hatchery steelhead are collected in the fall at Methow FH and WNFH, it may have complications for the WNFH spawning channel study. He said WNFH is looking for known WNFH-origin returns to be directed towards the WNFH spawning channel. He said, in the past, they have tried to direct known PIT-tagged returning fish to the spawning channel. Gale said he would want known hatchery fish caught during backup collection to be prioritized for spawning channel work. Tonseth said that is a small and workable change. Gale said he would add a comment about it in the document, and said this is the last year of the spawning channel work anyway.

Gale said he has spoken with Jim Craig (USFWS) and Steve Lewis (USFWS), and the USFWS has a concern to discuss with the Hatchery Committees. He said the USFWS is in a difficult position by continuing to approve Broodstock Collection Protocols and adult management at Tumwater Dam. He said the USFWS needs to know what the plan moving forward will be for assessment of lamprey distribution in the Wenatchee basin. He said he does not want this to affect a timely approval of Broodstock Collection Protocols, and it would be helpful for USFWS if a plan was developed to assess lamprey passage through the fishway at Tumwater Dam.

Alene Underwood said she appreciates that Gale brought up this concern. She said there is an upcoming meeting to discuss lamprey, and the Rocky Reach Fish Forum has also discussed

this topic extensively, even though lamprey at Tumwater Dam are not under the purview of the Rocky Reach Fish Forum. She said Chelan PUD intends to have open dialogue with USFWS so that expectations are clear and discussions are consistent, and is meeting with Jessica Gonzales (USFWS) and Steve Lewis soon. She said Chelan PUD has agreed to develop a plan to address lamprey at Tumwater Dam. Keely Murdoch asked if Bob Rose (YN) and Ralph Lampman (YN) have also been involved in these discussions. Underwood replied yes and said the notes from the Rocky Reach Fish Forum are publically available for anyone to review.

Gale asked why the Rocky Reach Fish Forum is not an appropriate forum for discussing lamprey at Tumwater Dam. Underwood said the Tumwater Dam fishway was constructed for salmon and steelhead passage, and moving forward, feasibility about lamprey passage in the fishway or any operational conditions will be openly discussed outside of the Rocky Reach Fish Forum. If any changes are made to the fishway to improve lamprey passage, it would be approved by the Coordinating Committees to ensure salmon and steelhead passage remains adequate. Gale asked if the Rocky Reach Fish Forum representatives also thought that lamprey passage at Tumwater Dam is not under the purview of the Forum. Underwood said it was not discussed as any type of agreement, but Chelan PUD believes that lamprey plans, as part of the Rocky Reach Federal Energy Regulatory Commission license, only apply to lamprey at the Rocky Reach Hydroelectric Project and not at Tumwater Dam. She said a few Rocky Reach Fish Forum representatives had questions and comments about designing lamprey plans for Tumwater Dam, and it was stated that anyone could participate with Chelan PUD in plan design, though not under the purview of the Forum. Gale said his concern is that USFWS would like to see progress made within the next year, and he does not want lamprey at the Tumwater Dam fishway to affect Hatchery Committees approval of the Broodstock Collection Protocols. Underwood said the Hatchery Committees representatives and alternates have a responsibility to implement the hatchery programs. She said there is a collision of priorities that should be recognized when talking about Endangered Species Act (ESA)-listed species at Tumwater Dam. Gale said it is certainly recognizable that Hatchery Committees members have agency directives, and for the USFWS, lamprey are important.

As a final discussion item under Broodstock Collection Protocols, Catherine Willard said, regarding size-at-release targets for Wenatchee summer Chinook salmon brood year 2015 and future brood years, the size at release target will be smaller at 18 fish-per-pound (FPP) in preparation to meet the total maximum daily load requirements for the Wenatchee River. She said warm water temperatures at Eastbank FH present a challenge to reaching a small size-at-release target and the new chilled partial reuse system should improve the water temperature challenge. Willard said, regarding size-at-release targets for Chelan Falls summer Chinook salmon, with a 13 fish-per-pound target, the minijack rate has been very low and juvenile outmigration survival high at Chelan Falls. She said 10 to 13 fish-per-pound will be set as the target for Chelan Falls for BY2015 and BY2016. She said lethal precocious maturation sampling will be performed in 2016, and Chelan PUD will revise the size targets once they have full performance information from the adult fish. Tonseth said he would put the size targets for BY2016 in Appendix B of the Broodstock Collection Protocols, and for BY2015, the size targets are captured in Hatchery Committees meeting minutes.

Tracy Hillman recalled that in 2015, more steelhead and Chinook salmon juveniles were available than needed, and the Hatchery Committees had to decide what to do with the excess fish. He asked if the protocols this year address overages in juveniles. Tonseth said overages are expected in the steelhead programs upstream of Wells Dam, which are addressed on page 12 of the protocols. He said any other overages would be dealt with on a case-by-case basis. He said an overage is expected for BY 2016; however, fall collection has been decreased so the overage should be lesser than previous years.

Tonseth said the Final Broodstock Collection Protocols are due to NOAA on April 15, 2016. He said previously, when the Hatchery Committees approved the protocols, NMFS and USFWS abstained from voting because of their regulatory obligations, and their concurrences came after the submission deadline. He said now, NMFS and USFWS do vote on the protocols, and their approval is considered ESA-concurrent. Kahler said this also applies to the Wells Coordinating Committee.

E. HETT Update (Sarah Montgomery)

Sarah Montgomery provided an update on the Draft Hatchery M&E Plan Appendices:

- McLain Johnson (WDFW) completed Appendix 2, which Montgomery distributed to the Hatchery Committees for review on March 2, 2016.
- Keely Murdoch is working on Appendix 3.
- Peter Graf completed Appendix 4, which Montgomery distributed to the Hatchery Committees for review on February 9, 2016.
- Catherine Willard completed Appendix 5, which Montgomery distributed to the Hatchery Committees for review on February 5, 2016.
- Matt Cooper completed Appendix 6, which Montgomery distributed to the Hatchery Committees for review on February 5, 2016.
- Appendix 1 does not currently have a deadline, and Tracy Hillman said Appendix 1 is not a critical part of the M&E documentation.

Hillman asked the Hatchery Committees to provide guidance on what types of carrying capacity estimates he should calculate for Appendix 1. He said juvenile salmon data provide the best carrying capacity estimates, but most of the Chinook salmon and steelhead programs do not have juvenile data. He asked whether spring Chinook salmon carrying capacity should be estimated only in places with smolt traps and whether the Hatchery Committees should also request summer Chinook salmon estimates. He said there is potentially a lot of work involved in finishing Appendix 1, and he wants to be efficient.

Hillman said carrying capacity changes with variations in the quality and quantity of habitat, and it should be kept in mind that the Tributary Committees, Salmon Recovery Funding Board, Bonneville Power Administration, and others are funding projects to improve habitat, which can add error or variance to average carrying capacity calculations. He said the HETT has previously discussed the two types of carrying capacity that he could calculate. Population equilibrium carrying capacity is the average capacity based on stock-recruitment models. Habitat capacity is the maximum number of fish that the habitat can sustain. He said managers often use equilibrium population capacity to manage programs. However, to understand how many fish an area of habitat

can support, one would need to estimate habitat capacity using habitat models or quantile regression. He said the HETT asked him to calculate both types of carrying capacities.

Willard asked how the appendices and the carrying capacity estimates will be used. Tom Kahler said in the M&E Plan, spawning escapement, and carrying capacity are derived variables. Carrying capacity estimates are also used to normalize escapement and natural-origin recruits. This allows for comparison of supplemented populations with reference populations. Willard said the Hatchery Committees should focus on using carrying capacity estimates to inform hatchery programs. Alene Underwood said carrying capacity estimates could help inform the composition of the programs during the next recalculation in order to ground-truth that the 7 percent mitigation is being allocated in an efficient manner (between conservation and safety net groups). Gale agreed, and said many sources of information are available, and they should be discussed during recalculation, whether or not they are considered by decision-makers.

Hillman said he will calculate carrying capacity estimates for Chiwawa River spring Chinook salmon for discussion during the May 18, 2016, Hatchery Committees meeting. Hillman said, in the past, it is possible that carrying capacity has been overestimated for streams such as the Chiwawa River. He said some fish leave the system during summer and fall, and those fish may contribute to smolt and adult production. He said looking at the condition of the Chiwawa River basin, one would think that it should support more fish than it does. He said in years with lower escapements, juvenile survival is higher and fish are larger, while years with higher escapements, juvenile survival is lower and fish are smaller. This clearly demonstrates density-dependence. This is consistent with the findings of the Independent Scientific Advisory Board. Murdoch said capacity estimates should be labeled as current to clarify that historical or potential capacity may be higher. Hillman agreed and said the current analyses include data from 1991 to present and, therefore, do represent recent conditions. He said there are a number of activities that have affected habitat conditions in the Chiwawa River basin, including mining, logging, roads, and recreation. Nevertheless, habitat within the Chiwawa basin is in relatively good condition. He said the Hatchery Committees need to define recruits, because capacity estimates will differ if recruits are modeled as recruits produced within the

Chiwawa River basin or those produced within and outside the Chiwawa River basin.

III. Chelan PUD

A. Blackbird Pond Acclimation PIT tag data results (Catherine Willard)

Catherine Willard said she presented the PIT-tag data results to the Icicle Chapter of Trout Unlimited, and Kirk Truscott requested she share the presentation with the Hatchery Committees. Because Truscott is not in attendance at today's meeting, Willard said she would present the materials at the April 20, 2016, Hatchery Committees meeting.

IV. HCP Administration

A. Chairman Feedback

Tracy Hillman said he has been chairing and supporting the Hatchery Committees for approximately 1 year, and asked if representatives present had any feedback or suggestions for him or for Sarah Montgomery, who has been supporting the Hatchery Committees for approximately 9 months. The representatives present thanked Hillman and Montgomery for their support, and said Hillman's expertise and chairing style have been very helpful to the Hatchery Committees.

B. Next Meetings

The next Hatchery Committees meetings are on April 20, 2016 (Chelan PUD Auditorium), May 18, 2016 (Douglas PUD), and June 15, 2016 (Chelan PUD).

V. List of Attachments

Attachment A	List of Attendees
Attachment B	Draft (Version 2) Upper Columbia River Broodstock Collection Protocols
Attachment C	Request for Juvenile Hatchery Steelhead for Conducting Efficiency Trials at Lower Wenatchee River Smolt Trap

Attachment A
List of Attendees

Name	Organization
Tracy Hillman	BioAnalysts, Inc.
Sarah Montgomery	Anchor QEA, LLC
Alene Underwood*	Chelan PUD
Catherine Willard*	Chelan PUD
Tom Kahler*	Douglas PUD
Todd Pearson†	Grant PUD
Deanne Pavlik-Kunkel†	Grant PUD
Justin Yeager*	National Marine Fisheries Service
Amilee Wilson†	National Marine Fisheries Service
Bill Gale*	U.S. Fish and Wildlife Service
Matt Cooper*	U.S. Fish and Wildlife Service
Mike Tonseth*	Washington Department of Fish and Wildlife
Brian Lyon	Washington Department of Fish and Wildlife
Jayson Wahls	Washington Department of Fish and Wildlife
Chris Moran†	Washington Department of Fish and Wildlife
Keely Murdoch*	Yakama Nation

Notes:

* Denotes Hatchery Committees member or alternate

† Joined by phone
