



Conference Call Minutes

Aquatic Settlement Work Group

To: Aquatic SWG Parties

Date: November 10, 2021

From: John Ferguson, Chair, Anchor QEA, LLC

Re: Final Minutes of the October 13, 2021, Aquatic SWG Conference Call

The Aquatic Settlement Work Group (SWG) met by conference call on Wednesday, October 13, 2021, from 10:00 a.m. to 1:00 p.m. Attendees are listed in Attachment A of these conference call minutes.

I. Summary of Action Items

1. Aquatic SWG members will provide to Douglas PUD any new documents members wish to include in the juvenile and adult Pacific Lamprey literature reviews, and Douglas PUD will add these documents to the respective document libraries (Item VI-1).
2. The Yakama Nation (YN) will coordinate with Columbia River Inter-Tribal Fish Commission (CRITFC) and provide notification of any adjustments to the current 8% tribal allocation at Bonneville Dam for Pacific Lamprey translocation beginning as early as 2022 (Item VI-1).
3. Washington State Department of Ecology (Ecology) will inquire internally about the schedule for implementation of the Total Maximum Daily Load (TMDL) for temperature in the Columbia and Lower Snake rivers (initially published by the Environmental Protection Agency [EPA] on May 20, 2020, and issued as the final TMDL on August 13, 2021) and will provide an update to the Aquatic SWG when one is available (Item VI-2).
4. Douglas PUD will convene a technical subgroup to discuss Wells Fish Hatchery White Sturgeon stocking considerations for brood year (BY) 2022 for planting in 2023 and a White Sturgeon adult reproductive assessment and will bring recommendations back to the Aquatic SWG during the conference call on November 10, 2021 (Items VI-6 and VI-7). *(Note: this subgroup will convene on November 2, 2021, from 8:30 to 10:30 a.m., as discussed.)*
5. Douglas PUD will continue developing a draft 2022 Adult Pacific Lamprey Study Plan for further discussion during the Aquatic SWG conference call on November 10, 2021 (Item VI-9).
6. Douglas PUD will continue developing a draft Bull Trout Passive Integrated Transponder (PIT) Study Plan for further discussion during the Aquatic SWG conference call on November 10, 2021 (Item VI-11).

7. The Aquatic SWG meeting on November 10, 2021, will be held by conference call (Item VII-1).

II. Summary of Decisions

1. There were no decisions approved during today's conference call.

III. Agreements

1. There were no agreements discussed during today's conference call.

IV. Review Items

1. There are no items that are currently available for review.

V. Documents Finalized

1. There are no documents that have been recently finalized.

VI. Summary of Discussions

1. Welcome, Review Agenda, Meeting Minutes Approval, and Review of Action Items (John Ferguson):

John Ferguson welcomed the Aquatic SWG members (attendees listed in Attachment A). Ferguson asked for any additions or changes to the agenda. Steve Lewis asked if someone could provide information about Pacific Lamprey translocation or documented spawning in the Upper Similkameen River, above Enloe Dam. Ferguson suggested covering this after *Item VI-8: Douglas PUD Pacific Lamprey Translocation Update*.

The revised draft September 8, 2021, conference call minutes were reviewed. Kristi Geris said edits and comments received from members of the Aquatic SWG were incorporated into the revised minutes. Laura Heironimus said she has one additional edit under *Item VI-5: 2021 Wells Project White Sturgeon Monitoring and Evaluation Update*. Heironimus clarified that she has seen female White Sturgeon reach maturity at 1 meter (not 1 foot). This revision was made. Aquatic SWG members present approved the September 8, 2021, conference call minutes, as revised.

Action items from the Aquatic SWG conference call on September 8, 2021, are as follows (Note: the following italicized item numbers correspond to agenda items from the September 8, 2021, meeting):

- *Aquatic SWG members will provide to Douglas PUD any new documents members wish to include in the juvenile and adult Pacific Lamprey literature reviews, and Douglas PUD will add these documents to the respective document libraries (Item VI-1).*
This action item will be carried forward.
- *Anchor QEA, LLC, will review past meeting minutes to confirm what is entailed in the action item for Douglas PUD to obtain from Grant PUD catch rate data from Pacific Lamprey trapping efforts at Priest Rapids Dam to date, for distribution to the Aquatic SWG (Item VI-1).*
Grant PUD catch rate data from Pacific Lamprey trapping efforts at Priest Rapids Dam to date were distributed to the Aquatic SWG by Kristi Geris on September 24, 2021.
- *The YN will coordinate with CRITFC and provide notification of any adjustments to the current 8% tribal allocation at Bonneville Dam for Pacific Lamprey translocation beginning as early as 2022 (Item VI-1).*
Ralph Lampman said no decisions have been made yet. This action item will be carried forward.
- *The following topics will be added to the agenda for the Aquatic SWG conference call on October 13, 2021: 1) 2022 Adult Pacific Lamprey Study Plan; 2) 2022 Bull Trout PIT Tag Study; 3) Wells Fish Hatchery White Sturgeon Stocking Considerations; and 4) White Sturgeon Adult Reproductive Assessment (Item VI-7).*
Kristi Geris added these items to the agenda, as discussed.
- *Anchor QEA will add White Sturgeon Mortalities Related to High Water Temperatures and Regional Coordination to the agenda for the Aquatic SWG conference call on April 13, 2022 (Item VI-1).*
Kristi Geris added this item to the agenda, as discussed.
- *Douglas PUD will provide a summary of the proportion of catch for the two setline configurations used during 2021 Wells Project White Sturgeon monitoring and evaluation (M&E) via email and in future Wells Project White Sturgeon M&E Updates (Item VI-5).*
Andrew Gingerich provided this summary to Kristi Geris following the Aquatic SWG conference call on September 8, 2021, which Geris distributed to the Aquatic SWG that same day.
- *Anchor QEA will request from U.S. Fish and Wildlife Service (USFWS) a status update on the Bull Trout radio telemetry study letter to the Federal Energy Regulatory Commission (FERC) (Item VI-7).*
Steve Lewis provided a status update via email on September 9, 2021, as requested.

2. Temperature Total Maximum Daily Load (Breean Zimmerman):

Breean Zimmerman said she has a high-level update on the TMDL for temperature in the Columbia and Lower Snake rivers that was first published by EPA in May 2020 (the final TMDL was issued on August 13, 2021). Zimmerman recalled that this TMDL was issued because water temperatures in the Columbia and Lower Snake rivers were not meeting Washington State's water quality standards during the summer months. EPA identified climate change and dams as having the highest impacts. The allowable thermal loading capacity of the Columbia and Lower Snake rivers is 0.3°C, which is divided equally among point sources, nonpoint sources, and tributaries. EPA has tasked Ecology with implementing this TMDL; however, Ecology still has several questions and needs guidance from EPA before starting the implementation process. This process will include stakeholder and tribal engagement to receive input. Ecology is drafting an implementation plan that will be published for public comment. Ecology is reaching out to different interest groups, hydroelectric projects, and will provide presentations to engage the public. If anyone is interested in more background information on this TMDL, Kelly Ferron, Ecology Water Quality Specialist (headquarters office), is the lead.

John Ferguson asked if a schedule is available showing dates for public meetings and the final rollout of the TMDL. Zimmerman said there is likely a rough schedule somewhere. Currently, Ecology is in the very early stages of implementation, basically consisting of internal discussions. She will inquire about a schedule for implementation of the TMDL and will provide an update to the Aquatic SWG when one is available.

Andrew Gingerich thanked Zimmerman for updating the Aquatic SWG on this topic. Gingerich said there is a requirement in the *Water Quality Management Plan* under the *Aquatic Settlement Agreement (ASA)* to follow and implement the Water Temperature TMDL process, so there is a direct nexus with the ASA. If Aquatic SWG members are interested in more information on this TMDL, in EPA's conclusions, or how Ecology will implement the TMDL, Douglas PUD and Ecology can provide a presentation summarizing this information. Gingerich also encouraged Aquatic SWG members to review the TMDL. It is a technically dense document, but it contains a lot of good information. He noted that the relative project impact is different up and down the Snake and Columbia rivers. That is, the relative effect on water temperature from June to October from larger projects with more storage capacity, compared to smaller projects with less storage capacity, is not consistent. For Douglas PUD, this is an important piece of information.

Steve Lewis asked what this TMDL means for the Wells Project. He asked if there are proposed theoretical changes that need to be examined. Zimmerman said Ecology is still in

the early stages of these discussions but plans to start reaching out to the respective Projects, which she will be involved with.

3. Coronavirus Disease 2019 Updates (John Ferguson):

John Ferguson asked if Aquatic SWG members had any new updates to share regarding impacts of coronavirus disease 2019 (COVID-19) on Aquatic SWG-related M&E activities. The Aquatic SWG had no new COVID-19 updates to announce.

4. Brood Year 2021 White Sturgeon Rearing Update (Andrew Gingerich):

Andrew Gingerich shared on WebEx a BY 2021 White Sturgeon Rearing Update (Attachment B), which was distributed to the Aquatic SWG by Kristi Geris on October 14, 2021.

Gingerich recalled experiencing a challenging situation with mortalities at Wells Fish Hatchery approximately 1 month ago. Hatchery staff attributed this to moving fish into larger tanks too soon combined with a change in feed. Staff then moved fish back into shallow tanks and through this process there was high fish loss. Currently, there are approximately 1,730 fish on station. There has not yet been a hand count, but this estimate is close. A hand count will be conducted in the next couple of months. Mortalities have subsided, with only 1 or 0 mortalities occurring in the past few days. From October 1 to 13, 2021, there were only 6 mortalities in the facility. Fish are eating and body weight is increasing at a rate of 20% to 34% per week. However, these are not the results Douglas PUD wanted in terms of fish survival. Recall, the target is 325 fish for the Wells Program and 2,250 fish for the Chelan PUD program. Therefore, it is likely that BY 2021 White Sturgeon rearing will be under program target for Chelan PUD. He reviewed the summary table in Attachment B. Half of the tanks are shallow and the other half are deep. Deep tanks keep fish densities lower and help to facilitate cleaning. Some tanks are growing quickly and some more slowly. The Fish Culture Lead at Wells Fish Hatchery said that as of this morning, the largest fish on station are averaging 60 grams (g) per fish. The graph in Attachment B is a conservative projection of when fish will reach a weight of 200 g per fish, assuming 10% weekly growth through the balance of the rearing cycle. This conservative projection estimates that fish will reach a weight of 200 g on average starting in late January 2022. This projection also estimates that some of the smaller tanks might struggle to reach a 200-g average; however, because this is a conservative estimate, Gingerich thinks most fish will be at or above the 200-g size threshold. Rearing wild fish and not surplus fish results in diverse growth rates in the facility. Staff can reduce water temperature and feed for the fast growers to prevent fish from growing too large, if this is a concern. Likewise, the smaller fish can be placed on warmer water and given more feed to increase growth rate. In general, fish are doing much better

now compared to last month's report. The current mortality rate suggests rearing is getting close to the stage when there are no more fish losses.

Patrick Verhey asked about the rearing targets for the Chelan PUD program. Gingerich said the target is 2,250 fish at 2 fish per pound average. Ralph Lampman asked if Douglas PUD's obligation will be filled before the Chelan PUD program. Gingerich said the Interlocal Agreement between Chelan PUD and Douglas PUD prioritizes the Douglas PUD license obligation of 325 fish first. However, there is a unanimous approval process in both work groups and the terms of subsequent stocking obligations are subject to the unanimous consent processes in respective forums.

5. 2021 Wells Project White Sturgeon Monitoring and Evaluation Update

(John Rohrback):

John Rohrback (Douglas PUD) recalled that at the last meeting, Andrew Gingerich provided a mid-season report. Rohrback said an end-of-season report is provided in the 2021 Wells Project White Sturgeon M&E Update (Attachment C), which was distributed to the Aquatic SWG by Kristi Geris on October 12, 2021. A final report, including growth and survival rates, is forthcoming.

Rohrback reviewed the methodology used and results as bulleted on page 1 of Attachment C. Table 1 on page 2 of Attachment C shows there was good representation of BYs 2013, 2018, and 2019 (had the highest percent detected among release groups). Figure 1 on page 2 of Attachment C shows a tight length/weight relationship for the fish captured. Gingerich said the percent detected column in Table 1 is remarkable, notably that 17% of BY 2019 fish were handled when there were only 99 fish released. He is unsure about what this means, but it seems remarkable relative to the other detection columns. Rohrback said it will be interesting to see what the data indicate after the analysis has been completed. He noted that the percent detected for BY 2020 was low and added that fish in their first year in the Wells Pool do not recruit to gear very well. This has been observed in the past and remains consistent this year.

Jason McLellan asked if any wild fish were captured. Rohrback said there were three wild recaptures and one first time wild capture that had not yet been handled. This fish was PIT-tagged, (scute) marked, measured, and released. Biological data and fin clips were also collected on this fish. Ralph Lampman noted in Table 1, the high detection rate of the 5,044 BY 2013 fish released in 2014 and asked if there might be an explanation for this. Gingerich said there is no way of knowing for certain, but it could be because this was the first year of releasing a large number of White Sturgeon in the reservoir and perhaps natural predators were not used to encountering these fish. This might have resulted in a higher

survival that translated into a high detection rate. It could also be due to the average fish size at release. Among the first 4 years of the 5,000-fish releases, BY 2013 fish were the largest in size at release. Also, some years just have higher survival. He noted that these are just speculative guesses. McLellan added that it is not uncommon that the first year of a supplementation program has higher survival compared to subsequent years.

6. Wells Fish Hatchery White Sturgeon Stocking Considerations – Brood Year 2022 for Planting in 2023 (Andrew Gingerich):

Andrew Gingerich recalled in early spring 2021, Douglas PUD and the Aquatic SWG agreed to put this discussion on hold, recognizing the upcoming busy field season. Gingerich said yesterday, he and John Rohrback met with Donella Miller (YN), Ralph Lampman, Patrick Verhey, Laura Heironimus, and Jason McLellan to continue this discussion. The subgroup discussed the history of the Wells Project White Sturgeon Supplementation Program, including fish released to date and development of the current stocking criteria for Years 5 to 10 of the *White Sturgeon Management Plan*. These criteria were developed using a model that considered harvest, exploitation rates, and survival at release, among other assumptions. At the time, the Bonneville Pool was presumed to have a healthy White Sturgeon population that was close to carrying capacity. Therefore, the model applied this construct to the Wells Pool. Absent any other data, this seemed like the best approach. Based on these model results, an agreement was reached to target a population within the Wells Reservoir of approximately 1,000 to 1,100 adult White Sturgeon along with a stocking goal of approximately 325 juvenile fish annually at a minimum weight of 200 g each to reach the abundance target. This was memorialized in the current Statement of Agreement (SOA), *Wells Reservoir White Sturgeon Supplementation 2018-2022* (approved January 11, 2017). This SOA covers BYs 2017 to 2021 for release in 2018 to 2022. BY 2021 is currently on station and release of these fish in 2022 will complete the current SOA. The Aquatic SWG must now determine what type of modeling should be conducted and how many years should be modeled to inform subsequent releases starting with the collection of BY 2022 fish for release in 2023. Rohrback will work with LGL Limited to finalize this year's M&E data, which can potentially be incorporated into the modeling. Based on discussions to date, it seems there are two model choices: 1) the Beamesderfer-Hildebrand (Hildebrand) model that was developed for the Bonneville Pool and used for the current stocking target; or 2) the *Upper Columbia Sturgeon Simulation Model* developed by Blue Leaf Environmental and LGL Limited (Blue Leaf/LGL model).

McLellan said the Hildebrand model is a simplistic spreadsheet model that applies survival rates by age. All inputs are fixed with no variability. This model was developed in 2007, funded by the Upper Columbia White Sturgeon Recovery Initiative to help evaluate M&E

data and inform stocking rates. This model was then distributed by Larry Hildebrand (at that time, Senior Fisheries Scientist for Golder Associates Ltd.), who was contracted by the Rocky Reach Fish Forum (RRFF) and Priest Rapids Fish Forum to modify the model for their respective reservoirs. This model was applied during SOA discussions for those programs in 2015. McLellan said he and others provided a review of this model and further modification of the model for the Upper Columbia River Basin, and then applied the model during the stocking discussions for the Wells Project.

McLellan said in reviewing and modifying the Hildebrand model, several areas of improvement were identified. This model could not account for variability and did not allow for simulation. That is, it had no ability to run simulations to see which outcomes were most likely to occur across a range. Also, the model did not provide an easy way to capture, catalogue, and compare model runs when parameters were changed. In order to remove some uncertainties, Blue Leaf/LGL was contracted to develop a more robust population model. McLellan emailed a link to the *Upper Columbia Sturgeon Simulation Model* (Blue Leaf/LGL model) and report on model development¹ to the Aquatic SWG on October 13, 2021. He noted that the Blue Leaf/LGL model includes a “Shiny application”² that generates a user interface.

McLellan said, as discussed here today and within the subgroup yesterday, the next step in developing new stocking targets is to determine the approach. Two options discussed to date, include: 1) use the old Hildebrand model; or 2) update the Blue Leaf/LGL model to use in the Wells Reservoir. Chelan PUD has already updated the Blue Leaf/LGL model under the RRFF, and it does not seem that it will take much to modify the model for the Wells Program. The Aquatic SWG needs to decide how to go about evaluating the existing stock assessment data to determine a stocking recommendation for future years.

Ralph Lampman asked if there was consensus to use Bonneville Pool data as a model for the Wells population, and he noted the differences in habitat between the two pools. McLellan said while discussing stocking levels for the Priest Rapids and Rocky Reach reservoirs, which resulted in SOAs for both projects, policy-level staff were engaged and agreed in both forums that the Bonneville Pool was the best representation of a White Sturgeon population in the basin that was at or near carrying capacity, and using the density estimate from the Bonneville Pool was the best approach for the Priest Rapids and Rocky Reach reservoirs.

¹ Blue Leaf Environmental, 2021. *Upper Columbia Sturgeon Simulation Model – Final Report*. Prepared for Confederated Tribes of the Colville Reservation, Nespelem, WA; and FortisBC, Kelowna, BC. Available at: <http://www.uppercolumbiasturgeon.org/population-model/>.

² Chang, C., J. Cheng, J.J. Allaire, C. Sievert, B. Schloerke, Y. Xie, J. Allen, J. McPherson, A. Dipert, and B. Borges. 2021. Shiny: Web Application Framework for R. <https://CRAN.R-project.org/package=shiny>

From that point, the Wells discussion began, and most members agreed it was best to remain consistent with the approach taken for the Priest Rapids and Rocky Reach reservoirs. McLellan said this does not preclude the Aquatic SWG from discussing a different approach to estimating what an adult population target should be. However, for the Colville Confederated Tribes (CCT), there would need to be a sound, technical justification for changing the approach.

Lampman asked if the CCT still believe it is a good assumption that the Bonneville Pool is at carrying capacity. McLellan said he does not know if anyone truly knows whether the population in a reservoir is at carrying capacity because this is a difficult thing to measure. This decision was based on observations at the time related to density-dependent effects on growth in certain life stages. He is unsure whether this is still the case and agrees these are good questions to review and discuss.

Heironimus agreed with McLellan's comments. She was not involved with the previous stocking SOA discussions; however, in terms of carrying capacity in the Bonneville Pool, this varies as the population fluctuates. The Washington Department of Fish and Wildlife (WDFW) provides annual population data for inclusion in Bonneville Power Administration reports, and she suggested reviewing these data to determine if this estimate is still reasonable. Regarding whether the Bonneville Pool is representative of the Wells population, there might be other things to consider such as differences in habitat types, but she agrees there needs to be a technical reason to change the approach taken.

John Ferguson asked where the technical subgroup left this topic. Is there a recommendation for the Aquatic SWG? Does the subgroup plan to convene again? Does the Aquatic SWG need to choose one model or the other? Gingerich said McLellan described it well. The Aquatic SWG needs to decide which tool to use and then which inputs to consider. Gingerich said Lampman made good points, and he recalled discussing using Bonneville as a model for Wells and having concerns that carrying capacity in the Bonneville Pool could be different because there are a lot more marine nutrients in the Bonneville Pool compared to the Wells Pool. However, at that time there was no other data available. Additionally, 1,100 adults in the Wells Pool seems like a lot, but there was no better technical justification on how to do the math. He agrees that whatever is decided, it needs to be a technical approach. He suggested that the Aquatic SWG review each model and think about which tool is appropriate to use moving forward.

Ferguson said BY 2022 larval collection will be in June or July of next year, so a decision needs to be reached by then. Gingerich said the technical subgroup could meet again before the next monthly meeting, but if all members want to participate it might be best to save

these discussions for the monthly meetings. Ferguson said USFWS and Ecology are the only Aquatic SWG members not represented on this subgroup. Breean Zimmerman said Ecology will defer to WDFW on this topic. Steve Lewis said USFWS will defer to the subgroup, but he is also interested in the Bonneville comparison discussion. Ferguson said it seems this topic requires in-depth technical discussions that would be best addressed in a subgroup. Therefore, Douglas PUD will convene a technical subgroup to discuss Wells Fish Hatchery White Sturgeon stocking considerations for BY 2022 for planting in 2023 and will bring recommendations back to the Aquatic SWG during the conference call on November 10, 2021. *(Note: this subgroup will convene on November 2, 2021, from 8:30 to 10:30 a.m., as discussed.)*

McLellan suggested laying out steps and timelines. Once a decision is reached on an approach, decisions need to be made on model inputs and targets, and these discussions may take some time. He said the Aquatic SWG and technical subgroup need to be cognizant of all the steps and time it may take to reach each agreement. Gingerich agreed and said ideally, the Aquatic SWG can agree on an approach by the Aquatic SWG conference call on November 10, 2021.

Lewis asked if the Blue Leaf/LGL model developed for the Upper Columbia River would be used for the Wells Pool. McLellan said no, this model would need to be modified for the Wells Pool. For example, the Blue Leaf/LGL model for the Upper Columbia River has the ability to generate an estimate for above the U.S./Canada border versus below, and this is not needed for the Wells Pool. In fact, this would probably have negative effects on the results. He suggested reviewing how the model was developed and what the advantages and disadvantages are. Regardless of whether the Hildebrand model or Blue Leaf/LGL model is chosen, Wells-specific stock assessment data would be used, where available, and the Aquatic SWG will also need to agree on robustness. For any inputs where there are no available data for the Wells Pool, the Aquatic SWG will need to agree on which information or literature values to use, which is how this was addressed last time.

Lampman said it seems using the Bonneville Pool to estimate a Wells population is underestimating what could be in the Wells Reservoir, due to differences in water temperature, water depth, or other differences in habitat between the locations. Heironimus agreed this all should be considered, including differences in productivity between the two pools and differences in the surface area considered in the original model versus surface area today. She suggested that these topics be discussed within the technical subgroup. Ferguson agreed.

7. White Sturgeon Adult Reproductive Assessment (Andrew Gingerich):

Andrew Gingerich said this is another topic that was discussed in early spring 2021 but was put on hold due to the upcoming busy field season. Recall, Douglas PUD has an obligation under Section 2.4.3 of the *White Sturgeon Management Plan* to conduct five natural reproductive assessments throughout the FERC license period. Douglas PUD is proposing to develop a study plan in the coming months to hopefully conduct one of these studies during the reproductive period for White Sturgeon in 2022, which occurs in or around June. The *White Sturgeon Management Plan* stipulates this be accomplished using acoustic telemetry. There are acoustically tagged adult White Sturgeon in the Wells Reservoir that Douglas PUD is currently tracking. The use of egg mats and larval nets has also been discussed. Douglas PUD had planned a pilot effort during summer 2021; however, there were difficulties securing the gear and materials Douglas PUD felt were appropriate to conduct a pilot study.

John Ferguson asked if Aquatic SWG members are opposed to addressing this topic within the technical subgroup. No opposition was expressed. Douglas PUD will convene a technical subgroup to discuss a White Sturgeon adult reproductive assessment and will bring recommendations back to the Aquatic SWG during the conference call on November 10, 2021. *(Note: this subgroup will convene on November 2, 2021, from 8:30 to 10:30 a.m., as discussed.)*

8. Douglas PUD Pacific Lamprey Translocation Update (John Rohrback):

John Rohrback said the final season Douglas PUD Pacific Lamprey Translocation Update (Attachment D) was distributed to the Aquatic SWG by Kristi Geris on September 10, 2021. Rohrback said a total of 461 Pacific Lamprey were translocated above Wells Dam, including 345 fish at Starr Boat Launch and 116 fish in the Okanogan River Basin. A summary of Grant PUD catch rate data from Pacific Lamprey trapping efforts at Priest Rapids Dam to date (Attachment E) was distributed to the Aquatic SWG by Geris on September 24, 2021. In 2021, the 461 Pacific Lamprey translocated above Wells Dam equated to 17% of the total run at Priest Rapids Dam.

Rohrback said, regarding Steve Lewis's question about Pacific Lamprey translocation in the Upper Similkameen River, neither the CCT nor anyone he is aware of has translocated Pacific Lamprey upstream of Enloe Dam. There have been several releases of Pacific Lamprey into the Similkameen River, and he understands there has been spawning downstream of Enloe Dam. To his knowledge, every Pacific Lamprey translocated into the Similkameen River has not had a subsequent PIT detection. The release location in the Similkameen River is downstream of Coyote Falls, which is downstream of Enloe Dam at the terminus of anadromy for these fish. There have been Environmental DNA (eDNA) detections of Pacific Lamprey in

water samples collected after translocation near the WDFW summer acclimation pond on river-right of the Similkameen River at the town of Oroville, Washington. Rohrback received a message a couple years ago that larval Pacific Lamprey were observed in sediment pooled up in a settling pond when the CCT were conducting a fish salvage after draining the summer pond.

Ralph Lampman asked what time of year the eDNA samples were collected. Rohrback said samples were collected in late summer prior to translocation and in early spring to late winter after the overwintering period. He believes there were positive detections in 2019, 2020, and 2021 for both sampling events. Lampman said overwintering adults sometimes stick around for 1 year or longer, so those positive eDNA detections could be the adults. However, there could be larvae in the area if there have been observations. Rohrback agreed and said eDNA does not indicate life stage, and larvae have been observed albeit anecdotal observations. Lampman asked if there have been discussions or plans to discuss impacts on juvenile Pacific Lamprey migrating downstream from Enloe Dam. Rohrback said not that he is aware of. Lampman noted that he believes there has been one Pacific Lamprey released in the Similkameen River that was detected in the Okanogan River, which may have migrated downstream after spawning.

Lampman asked, regarding Douglas PUD Pacific Lamprey translocation, are the release locations in the Okanogan River Basin the same year-to-year? Rohrback said he believes so. Although, this year, the release location in Loup Loup Creek was farther downstream than in 2020. He said Matt Young, Fisheries Biologist for the CCT, is likely the best contact for information on Pacific Lamprey in the Okanogan River Basin.

Andrew Gingerich recalled that about this time of year, Douglas PUD updates the Pacific Lamprey Translocation PIT Tag Information System File and Detection Summary Tables ("Last Seen" tables). These should be available for review soon.

9. 2022 Adult Pacific Lamprey Study Plan (Andrew Gingerich):

Andrew Gingerich said the current Pacific Lamprey translocation SOA³ will be complete this year. As part of this SOA, the Aquatic SWG agreed to conduct a study at the end of the translocation period with the goal of trying to revisit studies conducted in the past that evaluated Pacific Lamprey interactions at Wells Dam and in the tailrace. Discussions to date have produced three approaches. First, acoustically tag some number of fish and conduct a similar study as in the past to produce an earnest comparison of approach behavior pre- and

³ Titled *To translocate adult Pacific Lamprey from Priest Rapids Dam to areas within or upstream of the Wells Project and postpone passage evaluations* (approved June 13, 2018).

post-translocation. Second, continue translocation for 1 or more years based on results from other programs that show 4 to 5 years of translocation might not be enough to produce results. Third, PIT-tag some number of fish and release the fish directly in the fishways, ideally in the lower ladder where study fish can interact with the areas where maintenance was completed on diffuser gratings to improve Pacific Lamprey passage. This is the starting point for a draft study plan, based on feedback from the Aquatic SWG. It is important to recognize that all of this depends on run strength, which in the case of this year allowed for just shy of 500 fish to be translocated. Also, there are different goals in this type of study plan (i.e., releasing fish in the ladder might take away from fish that might migrate to the Methow and Okanogan River basins).

John Ferguson asked where the PIT detectors are located within the Wells Dam fishways. Gingerich said the Wells Dam fish ladders have approximately 72 weirs, not including the first and lowest location where fish enter the fishway, called the collection gallery. The first point of PIT detection is Pool 19. Fish then ascend a series of weirs, pass the count window located above the fish trap, and enter Pools 67 and 68 where there are duplicate readers. These are the two locations with PIT detection at Wells Dam, in both the east and west ladders. Ferguson asked if these detection points will inform potential passage efficiency improvements associated with the grating maintenance. Gingerich said 90% of the grating maintenance was completed in the lower ladders (i.e., from the collection gallery to Pool 20). There is also one location around Pool 54 where auxiliary water is added to the ladder to increase attraction, and gaps were closed in the floor diffuser grating there.

Ralph Lampman asked if acoustic telemetry can be used within the fish ladder to collect more detailed information about passage through the ladder. Gingerich said acoustic telemetry has been used outside and inside of the collection gallery with some success. Acoustic telemetry does not perform as well in smaller confined spaces and is best applied in larger volumes of water. Radio telemetry might be better for this application. Lampman said the YN's recommendation is to focus on radio telemetry to collect more information on passage within the fish ladder and near the entrance. Douglas PUD and the Aquatic SWG have put in a best faith effort to get fish above Wells Dam. Within the Yakima River Basin, translocation effects in terms of adults and juveniles took around 5 to 6 years. The Columbia River Basin is much larger, and it might take 7 to 10 years to see an impact. However, he still thinks 5 years has made an impact and that it is time to examine ladder passage at Wells Dam, opposed to spending more time on trying to address a question no one is sure can ever be answered (approach to Wells Dam).

Gingerich said for Douglas PUD, there is concern that the data seem to discredit an original assumption that fish exit Rocky Reach Dam and either turn off to the Entiat River or ascend to Wells Dam. Douglas PUD believes that part of evaluating interactions with Wells Dam is the fundamental assumption that fish want to approach Wells Dam. Therefore, Douglas PUD wants to evaluate whether this changed after translocation. For Douglas PUD, this is an important piece of information that needs to be addressed. Is there a measurable change in the percent of fish interacting with the first mile in the Wells Dam tailrace compared to previous investigations? Lampman recalled that approximately 25% of study fish reached the Wells Dam tailrace. Douglas PUD may have expected more, but this is still 25% that should not be ignored. These fish need to be able to pass Wells Dam, too. No one knows what is normal or what it ought to be. He believes there is danger in not focusing on improvements that can be made for those fish that do reach the dam. Gingerich agreed and suggested finding a way to meet both objectives, such as using both PIT detection and acoustic telemetry. He said this might involve tag testing with acoustic telemetry receivers within the fish ladders to evaluate detection rates, but if fish are double tagged this will only increase detection.

Steve Lewis suggested that the study plan be a hybrid of all three components. Regarding translocation, he advocated that this be based on biological data for the run-at-large. That is, translocate Pacific Lamprey where these fish should go, rather than just put fish above a facility.

Jason McLellan said it needs to be clear what questions this study is trying to answer, and the methodology will sort itself out. Currently, there are multiple questions to answer.

Laura Heironimus said she is interested in all three options but has no comments right now. She also noted that McLellan made good points.

Patrick Verhey said he is concerned that historically, it has been difficult to get adults to interact with Wells Dam. He is supportive of more years of translocation. He is interested in how Pacific Lamprey might interact with the entrance of the Wells Dam fishway and collection gallery. The application of acoustic telemetry at the entrance makes sense. If Pacific Lamprey interact with Wells Dam, it would be wise to have a PIT tag study prepared to evaluate passage efficiency through the ladders.

RD Nelle (USFWS) said considering the questions, acoustic telemetry and PIT detection seem like the appropriate methodologies, and he asked about release locations. Gingerich said the last study included study fish that Grant PUD released in the Priest Rapids Pool that ascended into the Rocky Reach Pool, as well as fish that Douglas PUD released above Rocky Reach

Dam below the confluence of the Entiat and Columbia rivers. Both release locations were based on the assumption that fish approaching Wells Dam will first travel through the Rocky Reach Reservoir. The Douglas PUD releases were intentionally released at that location to try and represent the untagged population. To be clear, this study design was not intended to incriminate Chelan PUD; rather, it was to try and understand what fish are doing in the wild as fish exit Rocky Reach Dam and potentially have interest in interacting with the Wells Project. Gingerich said we ought to be careful expecting these fish to behave in a certain way. His pre-study bias was expecting these animals to behave like salmonids.

Ferguson asked about the sample size of acoustically tagged fish in the earlier study. Rohrback said Douglas PUD acoustically tagged 83 study fish, and Gingerich said an additional 40 to 50 acoustically tagged fish came from Grant PUD's study.

Ferguson summarized what he heard as the draft study plan will include all three components. Study fish will be double tagged with acoustic and PIT tags and released at the top of the Rocky Reach Dam fishways. A PIT detector in the Entiat River already exists, but Douglas PUD may consider installing an acoustic telemetry receiver in the Entiat River as well. Replicate the previous study and when fish reach the Wells Dam fishway, there will be PIT detection and some acoustic telemetry detection within the fish ladders. Then install some number of acoustic telemetry hydrophones in tributaries upstream of Wells Dam. Lastly, translocation continues for at least 1 more year.

McLellan said, regarding acoustic telemetry, if Douglas PUD plans to use a Venmo 69 kilohertz (kHz) frequency range, the CCT have experienced non-detects in various rocky locations. This might also occur in confined concrete spaces.

Lampman suggested that radio telemetry might be the best tool for detections in front of the fish ladder, if this is the only goal. McLellan said acoustic telemetry can be used in the tailrace. There may be some issues with detectability in certain locations due to noise associated with the facility and potential echoing. A benefit of acoustic telemetry is 2-dimensional (2D) positioning. If the arrays are set up appropriately, 3D positioning is also possible. He disagreed that acoustic telemetry is not as good as radio telemetry in the tailrace. Within the ladder, he suspects acoustic telemetry might be less efficient. Gingerich agreed with McLellan's comments. Douglas PUD has experienced echo issues with acoustic telemetry detections within the fish ladders. However, the detection distance for radio telemetry is only 30 to 50 feet maximum. Compared to a high-powered acoustic telemetry tag that can be detected as far out as 1,000 meters. There are pros and cons to both types of technologies. If the study area is larger, like a tailrace, there will be a better chance of detection with acoustic telemetry compared to radio telemetry. This can be problematic, too,

because if a fish is detected 1,000 meters out, does this fish want to interact with the dam? That said, Gingerich believes acoustic telemetry in the tailrace presents good opportunities.

McLellan said detections on a single receiver do not show where the fish is, versus setting up a 2D or 3D array that would show exactly where the fish is. This also provides a way to track movements of the fish. It is a lot more expensive and time-consuming, but it may be worth it depending on what the questions are. Lampman asked if setting up a 2D array in the Wells Dam tailrace might be an option. Gingerich said it sounds possible, but he personally does not have experience with this. McLellan said the CCT have set up a grid of receivers, but not in a tailrace. BC Hydro has done this, and it was successful; however, this was a different facility with different conditions. He said Gingerich knows the contact at BC Hydro.

Heironimus said when the CCT worked with Vemco they provided the analysis, correct? McLellan said this is true because the CCT were conducting beta testing for Vemco. Now Vemco charges, which he believes costs \$5,000 for two downloads. Vemco also has software for purchase to run the analysis with training.

McLellan said regarding translocation, the CCT are not opposed to the idea, but he is concerned about sample size and how this will affect a study. Additionally, how does one measure the success of translocation? His understanding behind long-term translocation is to produce enough pheromones in a system to motivate fish to ascend a project. At this point, he is unsure how to measure this. Lampman asked what McLellan's concern is with sample size. McLellan said if Douglas PUD conducts a complex tagging study, there needs to be adequate sample sizes to meet the desired statistical rigor. Conducting translocation may jeopardize meeting sample size requirements. Lampman agreed and said regarding McLellan's second comment, the acoustic telemetry component is what is measuring the effects of translocation. Additionally, eDNA can help inform if translocation is working.

Ferguson said McLellan makes a good point regarding sample size, and he suggested developing a tiered approach depending on what the run size is. That is, establish what the study plan involves depending on how many study fish are available. Lampman suggested making the research the priority in 2022, and extra fish can go towards translocation. Verhey agreed. Gingerich also agreed, noting the effort involved with getting equipment in place.

Ferguson asked about 1D versus 2D detection—how much detail does the Aquatic SWG want to go into regarding tailrace behavior? Lampman agreed installing hydrophones at the mouths of the tributaries is a good idea to provide more precision in addition to PIT detection. He strongly suggests a release group upstream of Wells Dam to compare to

releases above Rocky Reach Dam and ideally another release group just downstream of Wells Dam for comparison. Ferguson noted the sample size considerations with these suggestions.

Lewis asked if Douglas PUD has approached Chelan PUD about this study design, and he suggested discussing this study within the RRF, as well. Gingerich said he has not had a formal discussion about this study with Chelan PUD, but he can. He reiterated that this study is not intended to suggest there is a problem with Wells Dam or the Rocky Reach Reservoir; rather, Douglas PUD is just trying to address study assumptions. He said Lewis's comment to communicate the intent of this study with Chelan PUD is a good one. Ferguson said typically, he tries to keep Aquatic SWG deliberations within the Aquatic SWG, and only take discussions to the other forums, as needed. For this topic, there are three routes of communication: 1) District to District; 2) Chairman to Chairman; and 3) representatives that sit on both the Aquatic SWG and RRF. Ferguson suggested communicating via these routes, as needed; however, he would like to avoid a joint meeting at this time. Lewis said this makes sense and just wants to be sure everyone is on the same page.

Gingerich said Douglas PUD will continue developing a draft 2022 Adult Pacific Lamprey Study Plan for further discussion during the Aquatic SWG conference call on November 10, 2021.

10. Environmental DNA and Bile Acids Fall 2021 Sampling (Ralph Lampman):

Ralph Lampman said the YN and Douglas PUD coordinated on eDNA and bile acids fall 2021 sampling. The YN collected eDNA from one location and bile acids from two locations at Rocky Reach Dam on September 27, 2021. The YN also collected eDNA from one location at McNary and Bonneville dams and bile acids from two locations at Bonneville Dam on October 1, 2021. The YN sampled three sites in the Methow River Basin on September 30, 2021. Two of these sites were also sampled in 2018, and one additional site was sampled upstream below the Chewuch River confluence. Lampman said Matt Young indicated the CCT plans to sample the Okanogan River Basin in the first two weeks of October 2021. Those sites are mainly in the lower Okanogan River Basin at the tributary mouths and will include the same sites as in 2018, plus additional sites. Lampman said Chas Kyger indicated that Douglas PUD sampled at and upstream of Wells Dam the week of September 27, 2021, and finished by the week of October 4, 2021. These samples have already been shipped to the laboratory by Kyger. Lampman recalled that funding for analysis will not be available until spring 2022.

Laura Heironimus asked which laboratory is analyzing the eDNA samples. Lampman said in 2018, all samples were analyzed by Kellie Carim at the U.S. Forest Service Rocky Mountain Research Station. For this sample event, the CCT have been working with U.S. Geological Survey, but Douglas PUD and the YN are still working with the Rocky Mountain Research

Station. Based on a brief discussion with Young, it sounds like it might be best for the CCT to continue with U.S. Geological Survey, but this needs to be coordinated further.

11. Bull Trout Passive Integrated Transponder Study – U.S. Fish and Wildlife Service Letter to the Federal Energy Regulatory Commission and Study Objectives (Andrew Gingerich):

Andrew Gingerich said Steve Lewis and USFWS filed the Bull Trout radio telemetry study letter with FERC, edited per FERC's requests. The final letter was distributed to the Aquatic SWG by Kristi Geris on September 17, 2021. On October 12, 2021, FERC issued an order approving the variance, as distributed to the Aquatic SWG by Geris during today's Aquatic SWG conference call on October 13, 2021. FERC agreed to revisit this study at the next opportunity. Gingerich thanked the Aquatic SWG and USFWS for their work and support on this.

Gingerich said the next step is to get back to the concept of a PIT tag study. The study might not directly focus on passage and survival, but it might use PIT detections to measure other requirements. For example, the radio telemetry study was supposed to include genetic clips. In the letter to FERC, USFWS indicated that a similar number of fish will be used for a PIT study. One objective could be to collect genetic fin clips to meet that component and understand what populations are interacting with the project. Another objective could address the requirement under the *Bull Trout Management Plan* to support recovery and regional information exchange on Bull Trout. PIT-tagging fish at project facilities coupled with a 1- to 1.5-year investigation contributes to the understanding of life histories and distribution around the dam and weir. This is what Douglas PUD is thinking in terms of a study. Lewis had previously sent around a draft outline for a Chelan PUD investigation using PIT tags (distributed to the Aquatic SWG on June 25, 2021). Gingerich said Douglas PUD is not necessarily proposing the same thing, but a study might include similar framework.

John Ferguson said FERC-approval of the USFWS letter is good news. He said, in summary, the Chelan PUD study design was a PIT-based study. The study did not propose additional tagging at the mainstem dams; rather, tagging would take place at Tumwater and Dryden dams. The study proposed using the existing PIT tag database and previously tagged Bull Trout in the mainstem and conduct an analysis on those data, which include more than 1,000 PIT detections from more than 100 individuals. It is a PIT-based study design and the study proposal defined upstream and downstream passage success at dams.

Lewis said Gingerich and Ferguson provided a great summation. The discussion with FERC was a heavy lift, but Douglas PUD, the Aquatic SWG, and USFWS did a great job at explaining the situation and delivering the message. Lewis thinks the strategy moving forward is good

one in this context. This is not a passage study, but the PIT tag methodology can produce passage information within the confines of a different scale and interactions with facilities. This study will serve as a check-in to inform whether things are going as well as possible.

Ferguson asked about next steps for study plan development. Gingerich said Douglas PUD can start a draft study plan, but he has questions for the Aquatic SWG about tagging locations and sample size. The USFWS letter to FERC indicated a similar number of organisms will be used for a PIT study that was approved for the radio telemetry study, which is approximately 60 fish. Is the goal then, to tag 60 fish? If this is the goal, can the tagging locations be broadened? For the last study, tagging took place at Wells Dam during incidental collection during salmonid sampling and also at the Twisp Weir. Sometimes, steelhead collection takes place for broodstock purposes, often rod and reel, in the Lower Methow River. If interactions with adfluvial adult Bull Trout occur, can these fish also be used for the study to help reach the target sample size?

Lewis said he thinks it is okay to have some level of flexibility to obtain individuals that might interact with the facility. Ferguson recalled that counts at Wells Dam during the last study were low—maybe in the teens—and not near 60 fish at all. Gingerich said this is correct and added that the goal of the radio telemetry study was to tag as many fish at Wells Dam as possible, but then tag the balance at the Twisp Weir. For this study, he is thinking the PIT-tagging effort will be something similar, but he hopes to broaden the location approach to help meet the goal of 60 fish. No objections to this idea were expressed.

Douglas PUD will continue developing a draft Bull Trout PIT Study Plan for further discussion during the Aquatic SWG conference call on November 10, 2021.

VII. Administration

1. Upcoming Meetings (John Ferguson):

The Aquatic SWG meeting on November 10, 2021, will be held by conference call.

Other upcoming meetings include December 8, 2021, and January 12, 2022 (location to be determined).

List of Attachments

- Attachment A List of Attendees
- Attachment B BY 2021 White Sturgeon Rearing Update
- Attachment C 2021 Wells Project White Sturgeon M&E Update
- Attachment D Final Season Douglas PUD Pacific Lamprey Translocation Update
- Attachment E Summary of Grant PUD Catch Rate Data from Pacific Lamprey Trapping Efforts at Priest Rapids Dam to Date

Attachment A – Attendees

Name	Role	Organization
John Ferguson	Aquatic SWG Chairman	Anchor QEA, LLC
Kristi Geris	Administration/Technical Support	Anchor QEA, LLC
Andrew Gingerich	Aquatic SWG Technical Representative	Douglas PUD
John Rohrback	Aquatic SWG Technical Support	Douglas PUD
Steve Lewis*	Aquatic SWG Technical Representative	U.S. Fish and Wildlife Service
RD Nelle	Aquatic SWG Technical Support	U.S. Fish and Wildlife Service
Breean Zimmermant	Aquatic SWG Technical Representative	Washington State Department of Ecology
Patrick Verhey	Aquatic SWG Technical Representative	Washington Department of Fish and Wildlife
Laura Heironimus	Aquatic SWG Technical Alternate	Washington Department of Fish and Wildlife
Ralph Lampman	Aquatic SWG Technical Representative	Yakama Nation
Jason McLellan	Aquatic SWG Technical Representative	Colville Confederated Tribes

Notes:

- * Absent from meeting from Item VI-8. Douglas PUD Pacific Lamprey Translocation Update to partway through Item VI-9. 2022 Adult Pacific Lamprey Study Plan
- † Left meeting during Item VI-9. 2022 Adult Pacific Lamprey Study Plan