



Meeting Minutes

Aquatic Settlement Work Group

To: Aquatic SWG Parties

Date: July 12, 2017

From: John Ferguson, Chair (Anchor QEA, LLC)

Re: Final Minutes of the June 12, 2017, Aquatic SWG Meeting

The Aquatic Settlement Work Group (SWG) met in-person at Douglas PUD Headquarters in East Wenatchee, Washington, on Monday, June 12, 2017, from 9:00 a.m. to 1:00 p.m. Attendees are listed in Attachment A of these meeting minutes.

I. Summary of Action Items

1. Douglas PUD will coordinate with the Colville Confederated Tribes (CCT) regarding ongoing efforts to remove Northern Pike from Lake Roosevelt and sampling methods that might support monitoring of Northern Pike range extension in the Wells reservoir, and will report those discussions back to the Aquatic SWG (Item VI-1).
2. Douglas PUD will provide a Revised 2016 White Sturgeon Monitoring and Evaluation (M&E) Report ("Evaluations of White Sturgeon Supplementation and Management in the Wells Reservoir, 2016"), for approval during the Aquatic SWG conference call on July 12, 2017, to Kristi Geris for distribution to the Aquatic SWG (Item VI-2). *(Note: Andrew Gingerich provided the revised report to Geris following the meeting on June 12, 2017, which Geris distributed to the Aquatic SWG on June 13, 2017.)*
3. Douglas PUD will upload to the Passive Integrated Transponder (PIT) Tag Information System (PTAGIS) PIT tag data collected from bird colonies located on Washburn Island (Item VI-2).
4. Douglas PUD will provide a revised summary report documenting Aquatic Nuisance Species Management Plan (ANSMP) Northern Pike sampling efforts conducted in the Wells reservoir in 2017, to Kristi Geris for distribution to the Aquatic SWG (Item VI-4). *(Note: Chas Kyger provided the revised report to Geris following the meeting on June 12, 2017, which Geris distributed to the Aquatic SWG on June 13, 2017.)*
5. Kristi Geris will contact Julene McGregor (Douglas PUD Information System Staff) to request visitor access to the Aquatic SWG Extranet site for Sean Goudy (Yakama Nation [YN] Pacific Lamprey Technical Support), as agreed by the Aquatic SWG, and will add Goudy to the requested Aquatic SWG email distribution lists (Item VI-6). *(Note: Geris contacted McGregor about Extranet access and added Goudy to the email distribution lists on June 13, 2017.)*

6. **The Aquatic SWG meeting on July 12, 2017, will be held by conference call (Item VII-1).**

II. Summary of Decisions

1. There were no decision items approved during today's meeting.

III. Agreements

1. Aquatic SWG members present agreed to add Sean Goudy to the Aquatic SWG email distribution list, including Technical Representatives-only emails, as well as provide Goudy with access to the Aquatic SWG Extranet site (Item VI-6).

IV. Review Items

1. The Revised 2016 White Sturgeon M&E Report ("Evaluations of White Sturgeon Supplementation and Management in the Wells Reservoir, 2016") provided for approval during the Aquatic SWG conference call on July 12, 2017, was distributed to the Aquatic SWG by Kristi Geris on June 13, 2017 (Item VI-2).

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 are listed in Attachment A) and reviewed the agenda. Ferguson asked for any additions or other changes to the agenda. The following revisions were requested:

- Chas Kyger added an update on the ANSMP Northern Pike Summary Report.
- Andrew Gingerich added an update on the 2016 White Sturgeon M&E Report, which he will address under the current White Sturgeon agenda item.
- Ralph Lampman (YN) added a request to add Sean Goudy to the Aquatic SWG email distribution lists and provide Goudy with Aquatic SWG Extranet site access.

The revised draft May 10, 2017, conference call minutes were reviewed. Kristi Geris said all comments and revisions received from members of the Aquatic SWG were incorporated into the revised minutes and there are no outstanding edits or questions to discuss. Geris also noted distribution of the summary report documenting ANSMP Northern Pike sampling

efforts, per Douglas PUD's action item. Aquatic SWG members present approved the May 10, 2017, conference call minutes, as revised.

Action items from the last Aquatic SWG meeting on May 10, 2017, are as follows (note: the following italicized item numbers correspond to agenda items from the May 10, 2017, meeting):

- *Douglas PUD will provide a summary report documenting ANSMP Northern Pike sampling efforts conducted in the Wells reservoir in 2017, to Kristi Geris for distribution to the Aquatic SWG (Item VI-7).*

Chas Kyger provided this summary to Geris on June 7, 2017, which Geris distributed to the Aquatic SWG that same day.

- *Douglas PUD will coordinate with the CCT regarding ongoing efforts to remove Northern Pike from Lake Roosevelt and sampling methods that might support monitoring of Northern Pike range extension in the Wells reservoir and will report those discussions back to the Aquatic SWG (Item VI-7).*

Chas Kyger said Douglas PUD plans to coordinate with the CCT after the final summary report is distributed. This action item will be carried forward.

- *Douglas PUD and Anchor QEA will compile draft Pacific Lamprey topics for discussion during the next Aquatic SWG in-person meeting on June 12, 2017, and will provide the draft topics to the Aquatic SWG in advance of the meeting for comments (Item VI-8).*

A draft agenda for review was distributed to the Aquatic SWG by Kristi Geris on May 31, 2017.

2. White Sturgeon (Andrew Gingerich):

2016 White Sturgeon M&E Report

Andrew Gingerich recalled that the CCT provided substantial edits and comments on the Draft 2016 White Sturgeon M&E Report ("Evaluations of White Sturgeon Supplementation and Management in the Wells Reservoir, 2016"). Gingerich said Douglas PUD, in coordination with LGL Limited, addressed those edits and comments and uploaded a response document and revised redline version to the Aquatic SWG Extranet site for the CCT's review. Gingerich said the CCT reviewed and approved these revisions and Douglas PUD will provide a final Revised 2016 White Sturgeon M&E Report for approval during the Aquatic SWG conference call on July 12, 2017, to Kristi Geris for distribution to the Aquatic SWG. (Note: Gingerich provided the revised report to Geris following the meeting on June 12, 2017, which Geris distributed to the Aquatic SWG on June 13, 2017.)

Gingerich recalled that this report was previously available for a 60-day review period in April 2017, and has been pending final approval following approval and submittal of more time-sensitive reports.

Brood Year 2016 Wells Fish Hatchery White Sturgeon Rearing Update

Gingerich said on May 30, 31, and June 1, 2017, Douglas PUD, in coordination with the Washington Department of Fish and Wildlife (WDFW), completed PIT tagging and scute marking of 5,138 brood year 2016 Wells Fish Hatchery White Sturgeon. Gingerich said on average, the fish measured approximately 10 inches in length at release. He recalled that a White Sturgeon outreach and release email was distributed to Aquatic SWG Technical Representatives by Geris on June 8, 2017.

Gingerich said on June 2, 2017, the balance of brood year 2016 Wells Fish Hatchery White Sturgeon were released at the new boat launch, Conklin Landing, in Bridgeport, Washington. He said this release location is upstream of the location used in past years.

Gingerich said tagging went well and the same procedures were implemented as in past years. He said there were no mortalities observed during or immediately after tagging or at release. He said this year's release was the final release of Phase I stocking of 5,000 fish each year in the Wells reservoir (totaling 20,000 fish). He said the Wells Fish Hatchery is now open and ready for the next batch of White Sturgeon, which is expected to arrive in the next couple of weeks. He also noted, moving forward, there will be less fish being reared in the hatchery compared to the past 4 years due to lower stocking rates required starting in 2018.

Kirk Truscott (CCT Technical Support) asked about this year's release site. Gingerich clarified that Conklin Landing is located approximately 5 miles upstream of Washburn Island, where the release site has been in past years. He said there was concern about releasing fish at Washburn Island because of possible bird predation, where recently a total of 329 unique PIT tags were collected from a bird colony located there. He said the thought was to release fish near deeper, faster water. He noted that Cormorants are divers and feed in the upper 25 feet of the water column.

Truscott asked if Douglas PUD plans to continue collecting PIT tags on Washburn Island. Gingerich said he believes so, and that typically Douglas PUD conducts this effort each spring. He also noted this sampling is a fairly crude effort, and the birds are not only feeding on White Sturgeon; more than 2,200 unique PIT tags from various species and tagging operations have been collected. He said he is also uncertain about Cormorant ecology (i.e., not sure if Cormorants always bring fish back to the colony). He also noted there are other piscivorous birds in the area. Truscott asked if Douglas PUD has uploaded these data to

PITAGIS. Gingerich said he has not, but Douglas PUD will upload to PTAGIS PIT tag data collected from bird colonies located on Washburn Island.

3. 2017 Water Quality and Water Year Update (Andrew Gingerich):

Andrew Gingerich said in a typical year, the Wells Project experiences a moderate spring flow, with river flow increasing in April as temperatures increase. He said river flow then peaks in June or July, and tapers off by August when the bypass shuts off. He said an increase in river flow at the project during November is typically attributed to higher precipitation and increased demand for power. He said for freshet year 2017, on average, river flow has been almost two times greater than the 10-year average at Wells Dam. He noted that the 7-day, 10-year-frequency (7Q10) flow for Wells Dam is 246,000 cubic feet per second (246 kcfs), and the most recent flow data exceeded the 7Q10 flow. He added, in which case, the Washington State Department of Ecology allows flexibility in meeting water quality standards because human health and managing the river to prevent flooding become the main priority.

John Ferguson asked if the peak river flow in the upper Columbia River basin has already occurred in 2017. Gingerich said forecasts are projecting higher river flow still to come. He said the data also indicate increases in total dissolved gas (TDG) with increased river flow. He said the current Wells Dam powerhouse (with some turbine units offline for maintenance) has a roughly 180 kcfs generation capacity. He noted that gas bubble trauma (GBT) has not been an issue when hourly exceedances are around 125% in the Wells Dam tailrace; however, this year, before the Memorial Day weekend when there were 128 to 129% hourly exceedances, there were measurable GBT observations, mostly in Coho Salmon. He noted that staff monitor the eyes and caudal, dorsal, and anal fins for signs of GBT.

Bob Rose asked about degassing from Wells Dam to Rocky Reach Dam, and Gingerich said not much degassing occurs throughout the Rocky Reach reservoir—about 1 to 2%. Rose asked how long forced spill will occur at Wells Dam. Gingerich said when river flow is greater than 200 kcfs, forced spill will continue. Ferguson asked about bypass spill, and Gingerich said there is not much—about 10 kcfs.

Patrick Verhey asked if there is a significant difference in the amount of gas produced from generating power versus spilling. Gingerich said at Wells Dam, Douglas PUD tries generating power as much as possible to reduce gas supersaturation, especially when river flow is high. He said even if Wells Dam spills 10 kcfs, about 1 to 2% TDG is added to what is coming into the forebay. He said per the Wells Dam Spill Playbook, the goal is to spill over loaded units, because the spill gates at Wells Dam are located on top of the turbine units, which forces spill to stay on the surface of the water. He said conversely, Chief Joseph Dam does not spill over loaded units; rather, spill is conveyed over a concrete ogee and passes over a flip lip that

keeps spill flow from plunging and entraining air. He said further, TDG data are slightly skewed due to the placement of the TDG sensor at Chief Joseph Dam, which results in the sensor not sampling turbine and spill flow (bulk flow) below the dam that has fully mixed.

Gingerich said the 120-day forecast in the upper Columbia River basin projects high river flow for the next 120 days (e.g., Okanogan River at 160%, Methow River at 124%, and Grand Coulee Dam at 100%).

4. ANSMP Northern Pike Summary Report (Chas Kyger):

Chas Kyger said a summary report documenting ANSMP Northern Pike sampling efforts conducted in the Wells reservoir in 2017, was distributed to the Aquatic SWG by Kristi Geris on June 7, 2017. Kyger said he realized some language in the report was ambiguous regarding bycatch from gillnetting, which may suggest Endangered Species Act-listed wild Spring Chinook Salmon were captured as bycatch. He said Douglas PUD will provide a revised summary report to Geris for distribution to the Aquatic SWG. *(Note: Kyger provided the revised report to Geris following the meeting on June 12, 2017, which Geris distributed to the Aquatic SWG on June 13, 2017.)*

5. Pacific Lamprey (All):

Objectives

John Ferguson summarized that discussions from previous meetings and a workshop were left with the proposed Pacific Lamprey passage hypotheses binned into three categories: 1) actions at Wells Dam; 2) actions in the Rocky Reach and Wells reservoirs; and 3) translocation. Ferguson said for each of the three bins, the Aquatic SWG now needs to discuss key the objectives, including: potential study designs; assumptions; potential methodologies; expected outcomes; and how to interpret these data and expected outcomes. Ferguson opened the floor for discussion.

2005-2006 Rocky Reach and Wells Projects Spill Operations Data

Steve Lewis said the Priest Rapids and Rocky Reach fish forums have discussed the drop in conversion rates between Rocky Reach and Wells dam that occurred between 2005 and 2006. Lewis suggested the Aquatic SWG also discuss spill operations and any changes made to the Wells Dam Spill Playbook during this timeframe.

Ferguson said his recollection is that Douglas PUD already reviewed the Wells Dam Spill Playbook. Chas Kyger agreed this was completed and he said no changes in spill operations were identified during this timeframe. Andrew Gingerich also noted that these fish are largely interacting with Wells Dam before or after bypass flows are operating.

Kirk Truscott questioned if there might be an issue or impact of spill volume or configuration on Pacific Lamprey which prevents them from reaching the count window. He asked when Pacific Lamprey are counted at Rocky Reach Dam and Wells Dam. Gingerich said he believes there is a slight delay. He said counts peak at slightly different times at lower river projects; however, peaks are fairly aligned and only offset slightly in time. He also noted that during this timeframe (2005 to 2006), count and conversion rate data are slightly conservative, because it is known that fish were bypassing the count window. Truscott agreed and added that fish bypassing the count window make a big difference when the overall numbers are so small.

Bob Rose suggested reviewing the Habitat Conservation Plan (HCP) annual reports. Kyger said this has been done and has also been discussed with Tom Kahler (Douglas PUD HCP Coordinating Committees Representative).

Ferguson suggested that Douglas PUD review the 2005-2006 Rocky Reach and Wells projects spill operations data coupled with Pacific Lamprey passage data, synthesize this information, and bring it back to the Aquatic SWG. He said at some point, additional review of the earlier data may be warranted.

2018 Douglas PUD Pacific Lamprey Study

Rose recommended addressing the objectives for each hypothesis (as outlined in the meeting agenda), while also evaluating fish behavior. He suggested, for example, a study design where fish obtained from the lower Columbia River and Priest Rapids Dam are released at four locations: R1) greater than 1 mile downstream of Wells Dam; R2) around 0.5 to 1 mile downstream of Wells Dam; R3) directly in the Wells Dam fish ladders; and R4) in the Wells Dam forebay. He said each release group will be tagged and approach behavior and entrance behavior can be monitored and evaluated. He added that multiple objectives can be addressed by releasing fish in a number of locations. Ferguson asked about the exact locations of the R1 and R2 releases. Rose said the two locations will be somewhere in the Rocky Reach reservoir and suggested the two locations be separated by at least 2 to 3 arrays. Rose drew this proposed study design, along with a decision matrix, on the whiteboard (Attachment B), which Kristi Geris photographed and distributed to the Aquatic SWG on June 13, 2017.

Rose said other key questions related to this proposed study design include how many study fish are needed for a valid study and what should be the fish source. He said the YN might be able to help collect fish at the YN's cost and expense. He said the YN prefer to focus on fish collected from Priest Rapids Dam, but are also interested in using fish collected farther downstream.

Gingerich said philosophically, a proposed study design such as this one is where Douglas PUD wants to be. He said next, we need to determine possible outcomes of said study and what are the steps. He asked, what is acceptable passage, approach, and conversion and is the Aquatic SWG ready to conclude something about Wells Dam fishway performance based on these results? Rose suggested using the decision matrix depicted in Attachment B and rating each release site by high, medium, or low success. Gingerich agreed this could be a possible methodology and said this will need to be detailed in a study plan. Ferguson agreed and added, for example, it needs to be clearly outlined what can be concluded if fish are detected at R1 and R2, or what can be concluded by a high, medium, or low rating, and so on. Gingerich agreed and reiterated that the Aquatic SWG needs to be ready to accept the data and what it means.

Truscott said Douglas PUD may need to conduct a study to obtain more information to conduct another study. He asked, what are the confounding issues with conducting a passage study at Wells Dam. He asked if fish have a desire to pass Wells Dam, or maybe they run out of steam. He said the latter has been observed with reestablishing Coho Salmon. He said he agrees with Rose's proposed study design (i.e., paired releases, farther downstream and upstream, and at different release locations). He said if the fish move or do not, the data can be used to start piecing together a story to inform another study (e.g., to address energy reserves or pheromone cues).

Gingerich said he understands what Rose and Truscott are saying. However, Gingerich asked, for example, if two releases in the Rocky Reach reservoir (R1 and R2) perform the same as the release in the Wells Dam fishway (R3), how does the Aquatic SWG use those data? Rose said this is a good question; however, it cannot yet be answered. He said first, the permutations must be evaluated. He said then, there may be an interim punt or a need to complete additional steps including collection and review of regional data. He said he believes at least 2 years are needed to get at interpreting these data.

Ralph Lampman said it seems the goal and objectives are to improve Pacific Lamprey passage at Wells Dam. He said based on studies conducted to date at Wells Dam, it seems the general conclusion is that entrance rates are fairly low; specifically, there are passage issues in the lower fish ladder rather than the upper fish ladder. He said rather than conducting more and more studies, which will likely point to the same conclusion, he suggested focusing on a solution. He asked, what can be done to address passage issues in the lower fish ladder? He suggested implementing changes to reach possible solutions, and in the meantime, conduct translocation to build up pheromones, and then conduct a more in-depth study to evaluate whether the changes increased passage. He expressed concern

about conducting more and more studies without implementing solutions, which ultimately may only result in more questions. He said he supports conducting a study in the Wells Dam forebay because it has not yet been done; however, as for the other proposed study components, he believes time is better spent on solutions.

Rose asked Lampman to better define what solutions he is referring to besides translocation. Lampman said one possible solution is implementing the reduced head differential in the adult fish ladders ("lamprey operations"), which was implemented in past studies. He said based on those studies, a low head differential in the fish ladders is better than a medium head differential, and both are better than a high head differential. He said he is unsure why the lamprey operations stopped at midnight, and suggested implementing the modified operations during other hours (evaluate timing more). He said another possible solution is to install a "lamprey passage structure" (LPS) at the fish ladder entrance. He further suggested drilling a hole through the lower orifice so as to not affect salmonids. Rose said to do this, more studies are needed to show where fish prefer to migrate. Lampman said he believes studies conducted to date provide adequate data to justify his suggested actions. He recalled during earlier studies, for example, among study fish released in the same locations in the Wells Dam tailrace, roughly 60% were detected approaching the dam. Kyger agreed, and added that roughly 40% never approached (referring to the 2013 Douglas PUD Pacific Lamprey Study). Truscott also noted that these were small sample sizes. Lampman said, regardless, the majority (60%) were attempting to approach. He said whether low or high pheromone levels exist, the issue is still the same.

Lewis asked if the lamprey operations are still being implemented. Kyger said, during the past 3 years, the fishway entrances have been operated in a normal configuration. He recalled in the past, the Aquatic SWG would request from the Wells HCP Coordinating Committee approval to reduce the Wells Dam collection gallery head-differentials from the normal operating level of 1.5 feet, to a reduced operating level of 1.0 feet, from 17:00 to 00:59 daily during the Pacific Lamprey migration (lamprey operations). Kyger said, however, based on the data, there was no reason to continue implementing the lamprey operations. He added that if the Aquatic SWG chose to implement these modified operations again, the Wells HCP Coordinating Committee has always approved the request. Rose recalled concern about Steelhead in the fishway being the reasoning behind increasing flow at 01:00.

Rose asked Lampman about the sequence of his suggested actions (i.e., start these actions in 2018 or after so many years of translocation). Lampman suggested starting as soon as possible and added that there is no point in waiting.

Rose asked Douglas PUD if there are sufficient data to use as a baseline to begin a translocation program and implementing actions, such as those suggested by Lampman. Kyger said Douglas PUD initially started down a path similar to what Lampman is suggesting. Kyger recalled installing various LPS components and modifying infrastructure and operations to aid Pacific Lamprey passage, and evaluating these modifications in a stepwise approach. He said, however, based on the study results (particularly low sample sizes) it was difficult to evaluate what worked and what further modifications could be justified. He said then in 2016, acoustic data demonstrated that fish were not even approaching Wells Dam. He said the Aquatic Settlement Agreement Pacific Lamprey Management Plan (ASA PLMP) stipulates that Douglas PUD will address passage at the concrete; however, adequate data do not currently exist to justify further modifications.

Truscott said a bottleneck has been identified in the lower fish ladder. He said at some point, the goal is to have more fish interacting with Wells Dam. He said eventually, the bottleneck in the lower fish ladder will need to be addressed anyway.

Patrick Verhey suggested conducting more studies with more study fish to obtain more comprehensive data. He said this step seems to be needed so that Douglas PUD and the Aquatic SWG can confidently say the data justify the modifications. Lewis asked which modifications would be implemented first, and Verhey said this is his point. He said there needs to be more data to understand this.

Ferguson asked about behavior near the Wells Dam fishway entrance. Kyger said the 2013 study focused on evaluating entrance efficiency into the collection gallery; however, not much could be concluded from the study due to low sample size. He said because of the few detections obtained, the 2015 study focused on installing additional radio-telemetry (RT) antennas in the collection gallery, lower fishways, and the auxiliary water supply (AWS) system to increase data resolution in those areas. Gingerich reiterated that at same time, in 2016, Grant PUD conducted an acoustic study and by evaluating detection of those fish, Douglas PUD found that fish are not even approaching Wells Dam. He asked if Douglas PUD can effectively evaluate fish ladder passage if there is not good conversion though the Rocky Reach reservoir?

Rose said it seems if 50% of R1 and R2 do not approach, but 50% do cross a line of demarcation, this should be adequate data for a study. Gingerich asked if 50 fish are released and 10 fish are detected in the tailrace, but maintain the same behavior as the first 40 fish, are these data interpreted as being the same? Rose said these data would then be evaluated against the R3 and R4 releases. Gingerich said if the Wells Dam forebay is biologically different than the Rocky Reach reservoir, it may be difficult to accurately compare the two

data sets. Rose said there will always be questions, but there will not be answers unless something is done. Gingerich said part of designing an empirical-based study is to put all the questions on the table. He said he is just discussing possible results and what they may mean. He said once the possible results are laid out, then he suggested discussing how to get at those results. Gingerich briefly reviewed different scenarios using the proposed 2018 Douglas PUD Pacific Lamprey Study design and matrix (Attachment B), and suggested further fleshing these out.

Ferguson said it seems discussions and data are not yet at a place where Douglas PUD feels they can ask the Commissioners and the Wells HCP Coordinating Committee to make modifications to the Wells Dam fish ladders. Kyger said from a policy perspective, Douglas PUD and the Aquatic SWG need to justify with data the purpose for conducting further studies or modifications, and it needs to have clear links to the ASA PLMP and produce meaningful results. Kyger said currently, he does not have confidence in making this claim.

Lampman expressed the importance of achieving as high of fish passage success as possible in all parts of the fish ladder. He said studies and efforts in the lower Columbia River have already shown what improves Pacific Lamprey passage at the concrete, and he suggested making management decisions and start implementing as soon as possible. Verhey said he appreciates what Lampman is saying; however, noted that Douglas PUD is saying, currently, there is no compelling evidence to put forward to request approval for further studies or modifications. Gingerich said another reason why Douglas PUD is hesitant to modify the fish ladders is because under very similar fishway conditions Pacific Lamprey passage was much better at one point (see the Pacific Lamprey Conversion Rate Figure [Attachment C], which was distributed to the Aquatic SWG by Geris on June 13, 2017). Rose suggested, however, continuing discussions about possible modifications to the fish ladders, because he believes this will need to be addressed at some point anyway. Truscott said all kinds of improvements can be done in the fish ladders; however, what if fish do not make it there (referring to the Pacific Lamprey Conversion Rate Figure [Attachment C]).

Rose said Chelan PUD has study receivers installed throughout the Rocky Reach reservoir, and asked if these are compelling enough infrastructure to conduct a study. He said he thinks more antennas may be needed at the Wells Dam fishway entrance; however, he is uncertain whether there are adequate data to inform where to install more antennas. Kyger said he does not believe acoustic antennas are appropriate for the entrance and suggested installing RT antennas. Rose said he was referring to installing more antennas outside the collection gallery, specifically antennas with three-dimensional (3D) capabilities. Gingerich

said to be careful with assuming all Pacific Lamprey will behave the same. He recalled, for example, when the aluminum ramps and plating were installed at the Wells Dam count windows to improve enumeration, based on the data, Pacific Lamprey passed the area in very different ways and very few used the ramps and plating.

Rose suggested capturing a few major themes using the proposed 2018 Douglas PUD Pacific Lamprey Study design and matrix (Attachment B). He also suggested making it clear how the different release groups (R1, R2, R3, and R4) relate to each other. Truscott said based on past studies, it also seems a lot of study fish will be needed to get a large enough sample size interacting with the project to conduct a statistically valid test. He also suggested instead achieving a weight of evidence conclusion because a statistically valid test will require so many fish. He added that the ASA PLMP is centric on concrete passage, so enough study fish will still be needed to ensure a large number of study subjects reach the dam.

Rose asked what Douglas PUD considers to be the threshold for a statistically valid test. Kyger said the study does not necessarily need to be statistically valid. He suggested at a minimum, laying out a clear case where results can be expected. Gingerich said the proposed 2018 Douglas PUD Pacific Lamprey Study design (Attachment B) suggests four release groups, which already spreads out the study fish available. Truscott said he does not see the source population as a limiting factor; rather, cost constraint may be the limiting factor. Rose suggested obtaining as many study fish as possible from Priest Rapids Dam, and the same for Bonneville Dam. Rose said the YN have higher quotas this year, but he needs to confirm numbers internally. He also proposed a sample size of at least 50 study fish per release location, and suggested comparing R1 and R2 to R3 to evaluate attrition. Verhey said with a limited amount of fish available, it seems passage at the concrete should be the priority. He said R1 and R2 are located in the Rocky Reach reservoir, and he asked if this should really be the responsibility of Chelan PUD. Lewis agreed. Rose said he plans to meet with Chelan PUD soon and he believes this topic will be raised. He said at the very least, Chelan PUD study fish will contribute to Douglas PUD's interest.

Verhey asked if these scenarios should be discussed with Dr. John Skalski (Columbia Basin Research) regarding statistic validity. Gingerich and Ferguson did not believe involving Skalski is necessary at this time.

Gingerich said the proposed 2018 Douglas PUD Pacific Lamprey Study design (Attachment B) seems like a much fairer and holistic approach compared to the piecemeal translocation approach. Ferguson asked if this proposed study design is enough to proceed with a policy discussion. Kyger said Douglas PUD can introduce the concept of this study to their policy representative; however, there is still the approach issue. He said if fish do not approach

Wells Dam, conducting the other components of the proposed study will not help achieve the ultimate goal.

Ferguson summarized that Douglas PUD will: 1) populate the proposed 2018 Douglas PUD Pacific Lamprey Study design matrix; 2) consider proposed fish sources and release numbers and locations; 3) consider how to adequately monitor fish in the immediate tailrace of Wells Dam; 4) determine decision thresholds (interpreting the data); and 5) introduce the proposed 2018 Douglas PUD Pacific Lamprey Study concepts to Douglas PUD policy staff.

2017 Douglas PUD Pacific Lamprey Study

Lampman suggested starting translocation and evaluating R4 in 2017, while planning for the 2018 study. Ferguson said his sense is that Douglas PUD is not ready to conduct translocation until the study design details are fleshed out.

Truscott said in 2017, Chelan PUD will already have PIT-tagged fish in the Rocky Reach reservoir, and adding an R4 release will produce data for above and below Wells Dam. Gingerich reiterated the difficulties with comparing Chelan PUD fish with R4 fish. He said the interpretation of data would not go very far. Ferguson said if 200 fish are sourced for R4, and there are already acoustic receivers throughout the Wells reservoir, the cost to Douglas PUD will be 200 acoustic tags. He said those data can then be compared to the 2016 tailrace release data. Truscott said if 200 fish were available for a 2017 study, he suggested releasing 100 fish at R3 and 100 fish at R4. He said if R4 fish move upstream and R3 fish do not, there likely is no pheromone issue. He said it also would not be a bioenergetics issue; rather, it would have something to do with the immediate tailrace or fish ladder. Gingerich said these designs still would not address the fact that run-at-large, untagged fish are not approaching Wells Dam. Kyger agreed and added that these designs are only applicable to fish released in the tailrace and fish ladder.

Ferguson asked if study fish are supplied, is Douglas PUD willing to pay for 200 acoustic tags in 2017. Gingerich asked what if R4 releases do the same thing as in the 2016 study (i.e., some detected in the Methow and Okanogan rivers, and some stayed in the Wells reservoir). He asked how to interpret these data. Ferguson said this would mean there is a behavioral issue. Kyger suggested that PIT tags may answer these same questions, rather than using acoustic tags. Truscott said the benefit of acoustic tags is if the fish hold in the reservoir this can be observed. He said PIT tags will not show if fish move immediately. Kyger agreed and said he was thinking larger-scale. Lampman recommended double-tagging study fish to obtain as much information as possible. He added that without within-reservoir data, this just limits the data set. Ferguson said he understands what Lampman is saying; however, PIT tags would be the least expensive option for 2017.

Kyger said study designs need to first address the approach issue. He said he does not believe Douglas PUD will be supportive of parsing out the 2018 study components until the main assumption of approach is addressed. Truscott asked if Douglas PUD is saying there is no purpose for translocation if there is no interest in approaching. Gingerich said this is true with regard to complying with the ASA PLMP. Verhey suggested there may be flexibility in the interpretation of the ASA PLMP about translocation.

Lewis said he still does not understand why Douglas PUD cannot release fish at R4 in 2017. He said the Aquatic SWG is not suggesting Douglas PUD do this every year; rather, it is something to do in 2017 while future studies are still under discussion. Verhey said he thought the purpose of the R4 location is to seed habitat above Wells Dam and approach the pheromone question. Kyger said releasing fish at R4 still does not address the approach issue, which is needed to obtain support from policy staff. Verhey asked if it would be helpful if the Aquatic SWG met with Douglas PUD policy staff. Gingerich said he and Kyger relay all technical information to policy staff for consideration. Lewis suggested that releasing fish at R4 in 2017 be an Aquatic SWG decision item. He also asked if this needs to be elevated to the policy level for decision. Lampman agreed with Lewis, and Lewis added that U. S. Fish and Wildlife Service would like due process about action in 2017, instead of deferring. Ferguson said at this point, it seems Douglas PUD is not supportive of this action; therefore, unanimous concurrence will not be obtained. Truscott said for some Aquatic SWG members, releasing fish at R4 in 2017 may contribute to the overall goal of increasing the Pacific Lamprey population above Wells Dam. Gingerich said if this is not a full-fledged study, does this make Douglas PUD vulnerable for doing bad science that fisheries managers cling to. He said for the sake of argument, what happens if Douglas PUD releases 200 fish above Wells Dam and all study fish end up in the Chewuch River. He said without understanding the data below, he does not want to base conclusions on these data. Lewis said, however, it seems conducting a study in 2017 should somewhat inform 2018.

Ferguson summarized that Douglas PUD will consider conducting a 2017 Douglas PUD Pacific Lamprey Study involving releasing study fish in the Wells Dam forebay.

6. Aquatic SWG Email Distribution Lists and Extranet Site Access – Sean Goudy (Bob Rose and Ralph Lampman):

Bob Rose introduced Sean Goudy to the Aquatic SWG. Rose said Goudy provides technical support regarding Pacific Lamprey and will likely become more involved in the Aquatic SWG.

Ralph Lampman requested that Goudy be added to the Aquatic SWG email distribution list, including Technical Representatives-only emails, as well as provide Goudy with access to the Aquatic SWG Extranet site. Aquatic SWG members present agreed to add Goudy to the

requested Aquatic SWG email distribution lists, as well as provide Goudy with access to the Aquatic SWG Extranet site.

Kristi Geris will contact Julene McGregor to request visitor access to the Aquatic SWG Extranet site for Goudy and will add Goudy to the requested Aquatic SWG email distribution lists. *(Note: Geris contacted McGregor about Extranet access and added Goudy to the email distribution lists on June 13, 2017.)*

Andrew Gingerich reminded Aquatic SWG members to please be mindful of coordinating and consolidating edits and comments from one agency when reviewing individual documents. Gingerich said similarly, voting on decision items should still be submitted by the designated Technical Representative, unless the representative notifies the Aquatic SWG another member of their agency will submit the vote in their absence.

VII. Next Meetings

1. Upcoming meetings (John Ferguson):

The Aquatic SWG meeting on July 12, 2017, will be held by conference call.

Upcoming meetings are as follows: August 9, 2017 (TBD); September 13, 2017 (TBD); and October 11, 2017 (TBD).

List of Attachments

Attachment A List of Attendees

Attachment B Proposed 2018 Douglas PUD Pacific Lamprey Study Design and Matrix

Attachment C Pacific Lamprey Conversion Rate Figure

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
Chas Kyger	Technical Support	Douglas PUD
Steve Lewis	Aquatic SWG Technical Representative	U.S. Fish and Wildlife Service
Breean Zimmerman	Aquatic SWG Technical Representative	Washington State Department of Ecology
Patrick Verhey	Aquatic SWG Technical Representative	Washington Department of Fish and Wildlife
Kirk Truscott	Technical Support	Colville Confederated Tribes
Bob Rose	Aquatic SWG Technical Representative	Yakama Nation
Ralph Lampman*	Technical Support	Yakama Nation
Sean Goudy	Technical Support	Yakama Nation

*Joined by phone