

Final Conference Call Minutes



Aquatic Settlement Work Group

To: Aquatic SWG Parties **Date:** August 16, 2014
From: Michael Schiewe, Chair (Anchor QEA, LLC)
Re: Final Minutes of the May 28, 2014 Aquatic SWG Conference Call

The Aquatic Settlement Work Group (SWG) met by conference call on Wednesday, May 28, 2014, from 2:00 p.m. to 4:00 p.m. Attendees are listed in Attachment A of these meeting minutes. The primary purpose of this meeting was to present findings of the 2013 Lamprey Passage and Enumeration Study and to discuss possibilities for conducting a lamprey study at Wells Dam in 2014.

I. Summary of Action Items

1. Douglas PUD and the Yakama Nation (YN) will identify which questions raised by the 2013 Lamprey Passage and Enumeration Study may be addressed by opportunities in 2014, considering the tools and timeframe available, which may help frame studies in additional years; a document summarizing these findings will be provided to the Aquatic SWG for review no later than Wednesday, June 4, 2014 (Item VI-4).

II. Summary of Decisions

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

III. Agreements

1. The Aquatic SWG members present agreed to continue discussing potential opportunities to study lamprey passage at Wells Dam in 2014, at the Aquatic SWG meeting on June 11, 2014 (Item VI-4).

IV. Review Items

1. There are currently no items out for review.

V. Documents Finalized

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

VI. Summary of Discussions

1. **Welcome and Agenda Review** (Mike Schiewe): Mike Schiewe welcomed the Aquatic SWG members (attendees are listed in Attachment A) and opened the meeting. Schiewe said that the purpose of this conference call is to follow up on lamprey discussions from the last Aquatic SWG conference call on May 14, 2014. He said that Douglas PUD planned to present a summary of the 2013 Lamprey Passage and Enumeration Study, and that Bob Rose expressed interest in discussing possible lamprey research in 2014. Rose added that the YN is not only interested in discussing research in 2014, but also in building a greater understanding of coordination between the PUDs over the next 2 to 3 years. Rose said that he does not expect to reach any conclusions today, and that he views this as the first of many discussions.
2. **2013 Lamprey Passage and Enumeration Report Summary Presentation** (Andrew Gingerich and Chas Kyger): Andrew Gingerich said that a 3-page summary of the 2013 Lamprey Passage and Enumeration Report, including a recommendation for a path forward, was distributed to the Aquatic SWG by Kristi Geris on May 13, 2014. Gingerich said that along with the 3-page summary, a Wells Fish Passage System overview was also distributed. He encouraged the Aquatic SWG to review the document if they have not done so because it provides a thorough summary of how fish can travel through the fish ladders at Wells Dam, and will also help with understanding results of the 2013 lamprey study. He asked members to contact him or Geris if they lost track of or misplaced the overview document in their email.

Chas Kyger said that a 2013 Lamprey Passage and Enumeration Report Summary Presentation (Attachment B) was distributed to the Aquatic SWG by Geris prior to the conference call on May 28, 2014. Kyger said that the presentation incorporates information from the 3-page summary as well as some items from the Wells Fish Passage System overview.

Kyger reviewed that the goal of the study was to evaluate lamprey passage and enumeration through the Wells Project, with specific objectives to evaluate passage behavior and success using radio-tagged lamprey, evaluate entrance efficiency under reduced fishway entrance velocities, and evaluate enumeration and passage efficiency with the newly installed modifications to the existing fish count stations. He reviewed the modifications to the fish count stations, the modified fishway operating conditions, and the locations of the radio telemetry (RT) equipment (slides 3 to 5 of Attachment B), and he recalled that the study fish included 110 radio- and passive integrated transponder (PIT)-tagged lamprey released at three different locations within the Wells

Project area. He said that based on data collected between June 27 and November 23, 2013, detection efficiencies were highest for antennas at the adult fish trap and in the upper fishways (slide 7 of Attachment B). He also noted that Douglas PUD considered the overall detection efficiencies to be acceptable. Pat Irle asked how detection efficiency is measured, and Kyger explained that it is measured by detections at each antenna. He added, for example, that if a fish traveling upstream is detected at an upstream antenna without being detected at the downstream antenna, this would lower the detection efficiency for the downstream antenna. Gingerich added that 70% detection efficiency means that 30% of the study fish passed the antenna without being detected.

Kyger said that in 2013, overall entrance efficiency was 55%, which was an improvement compared to previous studies. He said that the reduced head differential (from 1.5 feet [high] to 1 foot [moderate]) did not significantly improve entrance efficiency; further, passage efficiency was lower during periods of reduced head differential. He reviewed entrance and passage efficiencies by treatment and fishway (slide 10 of Attachment B), noting the poor passage efficiency under moderate conditions for both fishways. He also noted that no results were found to be statistically significant. Gingerich added that although there was no significant difference found between moderate and high treatments, these data suggested that overall passage potentially goes down under moderate operations. He said that LGL Limited Environmental Research Associates (LGL), the contractor developing the report, conducted a power analysis to determine how many fish would be needed to produce statistically significant results; they concluded that approximately 12 times as many fish interacting with the collection gallery would be needed.

Kyger said that the 1.5-foot head differential, which is the standard salmonid operating criteria, was the dominant condition during daytime hours; whereas, the alternate condition (1.0-foot differential) was implemented during nighttime hours. This pattern was based on the generally held opinion that lamprey prefer to move at night; however, these data indicate that more lamprey entered the fishways during daytime hours. Bob Rose said that he would like to see the amount of time it took a fish to find the fishway entrance during reduced head differentials, because it seems it would be harder for a fish to find the entrance during those conditions. Jason McLellan asked, when estimating entrance efficiency, what behavior lamprey exhibit to indicate that they intend to move into the ladder, versus just milling around and not intending to go into the ladder. Kyger said that entrance efficiency was measured by whether fish detected outside of the fishway were also detected inside of the fishway. Gingerich added that it was assumed that if a fish is detected outside of the fishway, then the fish is intending to pass. Rose suggested that fish released farther downstream and then detected within radio range might be a better way to determine whether a fish was intending to move upstream and pass the project. Gingerich recalled that releasing fish farther

downstream had been discussed for the 2013 study; however, ultimately, the decision was to release fish closer to the dam (about 1.5 miles downstream) so as many fish as possible would interact with the project. He said that in the end, several fish released at the 1.5-mile location never interacted with the project. Steve Lewis asked if the fate of the fish that never interacted with the project is known, and Kyger indicated that some were detected during mobile tracking efforts; however, about 30 to 40% of the study fish were never detected. Rose noted that these numbers are not inconsistent with fish released in front of other Columbia River dams, and he asked if it is possible that fish passed the center of the dam without detection; if so, he suggested installing an additional antenna. Gingerich questioned whether RT application would be efficient at the center of the dam because of the depth of the river at that point. Rose suggested that a RT antenna may detect a few fish, and then conclusions may be inferred from those data.

Irle asked if data that are broken down by day versus night will be available, and Kyger replied that those data will be included in the final report. Kyger added that data on time of passage and travel times between detection zones will also be in the final report. Irle cautioned that before coming to conclusions about fishway flows, part of the reasoning behind reduced flows for lamprey passage was based on recommendations from lamprey experts regarding data that indicate that lower flows are better for lamprey passage. Kyger agreed that this may be true, but he also noted that each fishway is different. He said that lower velocities may help lamprey enter the project, but then they may struggle to locate the fishway entrance. He said that more studies are needed to make these types of determinations. He said, however, based on the results of the 2013 study, lower velocities do not appear to aid in lamprey passage. Irle said that she does not think it is appropriate to make long-term decisions based on the results of the 2013 study. Gingerich agreed.

Kyger reviewed recommendations to improve entrance efficiency based on results of the 2013 study (slide 11 of Attachment B). He said that one consideration is to re-open a channel (referred to as the "c-channel") that runs across the face of the dam and provides a low level entrance opposed to the main front entrance (slide 12 of Attachment B). Gingerich added that the c-channel leads to the collection gallery immediately below the entrance to Weir 1. Kyger said that this may be a preferred route for lamprey because it is deeper and likely darker than the main entrance, and there is attraction flow through the c-channel. He said that re-opening the c-channel will require approval from the Habitat Conservation Plans Coordinating Committees because the channel was initially closed to aid in salmon passage. Rose agreed, noting that modifications are being considered for several other Columbia River dams because it is thought that fish may be moving into the fishways and then exiting through side orifices. He said that grating could be installed to enable lamprey passage but exclude salmonid passage. Kyger agreed.

Kyger reviewed passage results (slide 13 of Attachment B), noting that once lamprey reached above the trap and count area, passage efficiency was higher (i.e., 67% upper ladder passage efficiency). He also noted the multiple passage attempts observed at the count stations, and suggested that this may have been caused by the bright lights in that area. He said that passage was most problematic in the lower ladder (14% passage efficiency), and suggested that this may be because lamprey are accessing and getting lost in the auxiliary water supply (AWS) system, which largely influences the lower ladder.

Lewis asked about lamprey passage through the count area (e.g., free-swimming, multiple attempts, etc.), noting that suggesting 100% passage efficiency seems deceptive. Kyger indicated that all video shows that lamprey were free-swimming through the count area, and that there was no evidence of “attach and burst” passage. He added that some lamprey were able to pass under the counting plate. Gingerich also added that 1 or 2 lamprey suctioned to the count window; however, it did not appear that they were using the window or sill/bottom plate to attach and burst. Lewis asked if there was a difference in fish size among those that passed the count area. Gingerich replied that LGL ran an analysis and indicated that there was no statistically significant difference in fish size. He asked Lewis what he thought was “deceptive” about 100% passage efficiency through that location, and added that even if it took a fish a long time to pass, they eventually did. Lewis said that he would define 100% passage efficiency as within the first or second attempts—not over numerous attempts. Gingerich said that passage efficiency for this study was determined as outlined in the Pacific Lamprey Management Plan (PLMP).

Kyger reviewed a graphic that illustrates passage data throughout the Wells Dam fishways (slide 14 of Attachment B). He noted that the greatest loss in passage occurs between the lower ladder and below the trap. Gingerich added more specifically that between Weir 1 and Weir 7, only 52% of fish that were detected at Weir 1 were detected again at Weir 7. He said in that location that the only place to go, other than to continue up the ladder, is through a series of diffuser gratings into the AWS system. Rose asked for clarification about the last four circles depicted on the passage data graphic. Kyger explained that in that area, some fish were detected closer to the exit without being previously detected, adding that those lamprey must have accessed different passage routes. He said that when the fishways were dewatered, staff inspected the fishways and located some areas where the grating was degraded and also some areas where lamprey might be able to jump up and over into other areas without being detected.

Kyger reviewed recommendations to improve lamprey passage based on results of the 2013 study (slide 15 of Attachment B). He said that opening the low level fishway

entrances, as previously discussed, would allow lamprey to bypass the diffuser grating that leads to the AWS system. He also noted that installing a lamprey passage system through the count station area could create an environment more attractive to lamprey while also maintaining enumeration capabilities. He said that a more unusual consideration is to hold ammocetes or use a pheromone drip to guide lamprey through the fishway. Gingerich said that some interesting work has been done in the Great Lakes on sea lamprey. He said they have had positive results using synthetic hormones to lure them into traps. He said that there is also an interesting presentation on the use of synthetic pheromones on sea lamprey from the American Fisheries Society National Conference in Minneapolis-St. Paul, Minnesota a couple of years ago and it appears that pheromones is a highly effective way to attract lamprey into traps.

Kyger reviewed the AWS system (slide 16 of Attachment B), noting the several locations where lamprey can possibly access the system. He added that the AWS system is complicated with several areas where lamprey can get lost. Rose asked if the fishway through this area is accessible to install modifications. Gingerich said that some areas are accessible by crane, and that some areas are more easily accessible than others.

Kyger reviewed enumeration results (slide 17 of Attachment B), noting that although the narrower diffuser grating was effective, lamprey are still finding ways to bypass the counting area. Gingerich added that although enumeration efficiency was only 55%, this is still improved over results from previous studies. Kyger also added that one of the objectives of the lamprey studies is to locate and close these gaps. Gingerich said that when the fishways were dewatered and inspected, more gaps were identified in the east ladder than in the west, which is indicative of the count area enumeration efficiencies by fishway (slide 18 of Attachment B).

Kyger reviewed overall study results and considerations (slide 20 of Attachment B), noting the importance of larger sample size for future studies. He also noted that size targets were not met for most fish and that tag burden increases as fish size decreases. Rose noted that one would expect that the study fish obtained from Bonneville would be larger than fish obtained elsewhere; however, these considerations indicate that the fish sizes were suboptimal. He added that by the time lamprey travel to the Mid-Columbia, fish sizes will be even smaller. Kyger agreed and explained that this consideration is about tag burden. He added that there was no evidence suggesting that smaller fish were less effective in passing. Gingerich also added that it is unknown whether tagged fish are representative of a population that has not been tagged. Rose suggested trying smaller tags with a longer ping rate.

Kyger and Gingerich reviewed recommendations for a 2015 study (slide 21 of Attachment B), including establishing downstream RT detection to determine when tagged lamprey leave the study area, and installing finer scale resolution in areas such as

the lower fishways and throughout the AWS system. Gingerich also noted the high PIT-tag detection efficiency in Pools 19 and 68 in the Wells Fishways that can aid in teasing out tag effects through the use of a PIT-tag-only control group. He also suggested using a control group released above Wells Dam and detection in the Methow and Okanogan to provide more insight on whether lamprey are moving upriver. Irle recommended conducting a power analysis to determine which studies, given the available resources, will produce statistically significant results; and recommended foregoing studies where inadequate sample sizes will result in statistically insignificant results. Mike Schiewe asked Rose if the YN knows how many fish they will be able to obtain from Bonneville this year, and Rose said that the YN can obtain a total of 917 fish this year. Rose added, however, that those fish are also needed for the U.S. Army Corp of Engineers and a Snake River lamprey research project, which requires 100 fish in front of each Snake River dam. He said that the limited numbers of test fish is a strong reason for conducting coordinated studies in the Mid-Columbia.

- 3. Regional Coordination on Lamprey Studies (Bob Rose):** Bob Rose emphasized the need for a long-term research framework for the Mid-Columbia. He said that in addition to needs in the Snake River and in the Mid-Columbia, there is also concern that removing 5% of the run at Bonneville for research upriver adversely affects lower river runs. He added that the only reason why the YN has 917 fish this year is because there have been large runs over the past 2 years (because allocations are based on the previous 2 years' runs). He said that if there are 2 to 3 years of bad runs, those numbers will decrease. Andrew Gingerich said that if 110 fish is assumed to be the average number of study fish available each year, and applying LGL's power analysis result, which indicates 12 times that amount is needed to be statistically significant, that means 1,200 fish are needed, which may never happen. He added that he does not necessarily believe that results have to be statistically significant to find value in a study. Pat Irle suggested basing assumptions on data obtained from studies at other projects. Rose said that he believes that valuable results can be obtained from a couple hundred fish, and that a regional effort is the only way to obtain this information.

Rose said that he also believes that valuable data can still be collected in 2014. He said he believes that the 2013 effort was not stellar, and that this year, additional fish can be obtained from Grant PUD. He encouraged the Aquatic SWG to also consider the use of acoustic tags, which he said may require a pilot year to determine how to make the best use of them. He said that three dimensional data that can be obtained using acoustic tags (which cannot be obtained with RT) could be very valuable in improving passage. Gingerich reminded the Aquatic SWG that the goal of the study is to identify passage problems and data gaps, fix them, and re-test them, as outlined in the PLMP. He added that continuing on this track does not circumvent what Rose is suggesting, and he noted that PIT-tag capabilities are available throughout the Wells fishways, including half-duplex and full-duplex in some areas. Rose suggested that he and Gingerich further

discuss how to move forward with these ideas, and said that he has started a table that works through some of the specifics. Mike Schiewe asked if this table can be made available to the Aquatic SWG, and Rose said that it can be once it is more complete. Rose added that additional participation is needed to complete the table, but he has not yet been able to convene the appropriate people.

Schiewe said that he does not see why passage at Wells Dam cannot be a part of a larger regional effort, so long as it meets the goals of the Aquatic SWG and the Aquatic Settlement Agreement. He encouraged developing a more substantive table that outlines how each action addresses the objectives of the respective dams and also addresses the regional effort.

4. **Closing Discussions (All):** Andrew Gingerich said that he hopes to distribute the final 2013 Lamprey Passage and Enumeration Report soon, and he encouraged the Aquatic SWG to think about ways to improve lamprey passage at Wells Dam. Bob Rose said that the YN will do their best to provide fish for future studies. He said that the YN recently collected 100 lamprey from Bonneville, and he added that they also have interest in translocating lamprey. He suggesting considering releasing duplex-tagged lamprey at Bonneville and John Day dams to see if they reach Wells Dam, and also to evaluate any differences between the release groups. Pat Irle asked if only 50 of 100 fish are detected, would that be adequate for statistically significant conclusions? Rose suggested installing more PIT-tag antenna locations, which would be valuable for all studies. He said that by using different types of tags, those data can be compared. He added that he does not expect any one PUD to be responsible for all of this, which is why these ideas need to be considered on a regional scale. He said as for the Aquatic SWG, he does not believe strong statistical power is needed to obtain valuable information.

Mike Schiewe asked if Rose is proposing a lamprey PIT-tag study for Wells in 2014, and Rose said that this may be the best option available. Rose added that he has been meaning to develop a map of PIT-tag detection sites in the area, and Schiewe said that the PIT-tag Information System likely has that information readily available. Schiewe suggested that if this is something that the Aquatic SWG is interested in exploring further, Rose and Gingerich could develop a list of additional information that can be collected. Rose agreed and suggested developing a flow chart of outstanding questions and how to proceed over the next few years; Schiewe said that would be useful for the Aquatic SWG to consider, as they are the decision body. Douglas PUD and the YN agreed to identify which questions raised by the 2013 Lamprey Passage and Enumeration Study may be addressed by opportunities in 2014, considering the tools and timeframe available, and especially those that may help frame studies in additional years; a document summarizing these findings will be provided to the Aquatic SWG for review no later than Wednesday, June 4, 2014. Irle added that she hopes the document

will also include how many fish are needed and where they will be released. She said that this level of specificity may reveal that some questions cannot be addressed with a limited number of study fish.

The Aquatic SWG members present agreed to continue discussing potential opportunities to study lamprey passage at Wells Dam in 2014, at the Aquatic SWG meeting on June 11, 2014.

VII. Next Meetings

1. **Upcoming meetings** (Mike Schiewe): Upcoming meetings are as follows: *June 11, 2014 (conference call); July 9, 2014 (conference call); August 13, 2014 (conference call).*

List of Attachments

Attachment A – List of Attendees

Attachment B – 2013 Lamprey Passage and Enumeration Report Summary Presentation

Attachment A List of Attendees

Name	Role	Organization
Mike Schiewe	SWG Chair	Anchor QEA, LLC
Kristi Geris	Administration/Technical Support	Anchor QEA, LLC
Andrew Gingerich	SWG Technical Representative	Douglas PUD
Chas Kyger	Technical Support	Douglas PUD
Pat Irle	SWG Technical Representative	Washington State Department of Ecology
Jason McLellan	SWG Technical Representative	Colville Confederated Tribes
Bob Rose	SWG Technical Representative	Yakama Nation
Steve Lewis	SWG Technical Representative	U.S. Fish and Wildlife Service