

# **Updated Study Report Meeting**

Date: April 30, 2009

Time: 9:00 am – 12:00 pm

Location: Douglas County PUD

Agenda

Sign-In Sheet

**Meeting Notes** 

# Agenda Updated Study Report Meeting

Wells Hydroelectric Project Relicensing Douglas County PUD April 30, 2009 9:00 am – 12:00 pm

Meeting Location:		Douglas PUD 1151 Valley Mall Pkwy. East Wenatchee, WA 98802		
Meeting Coordinator:		Shane Bickford (509) 881-2208		
Meeting Objective:		Review and discuss studies contained within the Updated Study Report.		
Time	Topic		Lead	
9:00	Welco	me and Introductions	Shane Bickford	
9:10	Meetin	ng Goals and Relicensing Status	Shane Bickford	
9:15	Transı	nission Line Wildlife and Botanical Study	Mike Hall	
9:45	Adult	Lamprey Passage Study	Josh Murauskas	
10:15	DO, p	H and Turbidity Study	Josh Murauskas	
10:45	Break	(10 minute)		
10:55	Total	Dissolved Gas Investigation	Duncan Hay	
11:25	Wrap Up (Question and Answer Session)		Shane Bickford	
11:50	Next S	Steps	Shane Bickford	
Noon	Adjou	rn		



# Wells Project Relicensing Updated Study Report Meeting

DATE: April 30, 2009

LOCATION: Douglas PUD

Name	Organization	Phone	Email
J. MURAUSKAS	Douglas	881-2323	JOSHM@DCPVD. 8R6
John Devine	DTA / DCPUD	207-775-4495	John devine @ devine tarbell.com
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SCOTT EDIGER (PHONE)	FERC		
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Pat Irie Cohone)	Ecology		
Steve Lewis	USFWS	665-3508	Stephen Lewis DEws, gor
Beau Patterson	DEPUD	<u> 981 - 2332</u>	beaupedand.org
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# Updated Study Report Meeting Summary

Wells Hydroelectric Project Relicensing Douglas County PUD April 30, 2009

Meeting Coordinator:	Shane Bickford (509) 881-2208	
Meeting Location:	Douglas PUD Auditorium, East Wenatchee, Washingtor	
Attendees:	Relicensing Stakeholders and General Public See Exhibit A: USR Meeting Sign-In Sheet	

#### I. Introduction (09:10)

Shane Bickford, Natural Resources Supervisor for Douglas PUD, provided those attending the meeting with an overview of the agenda for the Updated Study Report (USR) Meeting, including the goals of the meeting and the list of presenters and presentations. Mr. Bickford also provided the group an overview of the updated Wells ILP schedule including upcoming deadlines for comment on the USR Document. The agenda for the meeting is attached to these notes (See Exhibit B: Agenda, Updated Study Report Meeting – April 30, 2009).

Question: Pat Irle, Washington State Department of Ecology, asked if this was a formal meeting and could their agency send in their comments in writing.

Answer: Mr. Bickford confirmed that this is a formal FERC meeting and that stakeholder comments on the studies filed in the ISR Document and presented at today's meeting are due by June 15, 2009.

Mr. Bickford provided the group with an update on the status of the final four relicensing studies that were included as interim reports in the Initial Study Plan Document. Mr. Bickford indicated that results from these four relicensing studies were included into the Updated Study Report Document (USR Document) filed with FERC on April 15, 2009.

### II. Meeting Goals

1. To provide stakeholders with an overview of the Updated Study Report.

2. To answer stakeholder questions about the final four relicensing studies contained within the USR Document.

## III. Presentations (09:20)

## (1) Transmission Line Wildlife and Botanical Study

### Notes:

Mike Hall (Parametrix) presented the methods and results of the study. The overall goal of the study was to provide information needed to guide land management decisions, avoid damage to valuable habitat during future transmission corridor management activities, and minimize the spread of invasive weeds. The study provides baseline data on plants and animals found within or adjacent to the corridor and information on the presence and habitat associations of rare, threatened, and endangered plant and animal species in the corridor.

Surveys in the transmission line corridor targeted rare, threatened and engendered plants, invasive plant species, birds, mammals, and reptiles. Field surveys were also conducted to identify and classify the specific vegetation cover types in the transmission line corridor. Additional data were collected to document (1) nesting by raptors and corvids, (2) use by sharp-tailed grouse and greater sage-grouse, and (3) evidence of avian collisions with the transmission line and associated structures in the study area.

## **Questions & Comments:**

Question: Scott Ediger, FERC, asked Mr. Hall to describe a list of factors when looking for bird collision.

Response: Mr. Hall responded that he first would look for trauma to the bird such as broken wing bones. He would next look at the condition of the carcass and indirect evidence such as plucked feathers by predators.

Question: Steve Lewis, U.S. Fish and Wildlife Service, asked Mr. Hall to describe the methodology for transmission line surveys.

Response: Mr. Hall indicated that the persons doing the meander surveys followed a random zig-zag path along the transmission line unless something unusual caught their eye. The protocol for the surveys was dependent on habitat, time of day and type of survey (avian point count, collision, botanical); all had different protocols.

Question: Tony Eldred, Washington Department of Fish and Wildlife, asked Mr. Hall what time of the day were the collision surveys done.

Response: Mr. Hall responded that the surveys were done in the late morning and early afternoon.

Beau Patterson, Douglas PUD, noted that five of the six avian mortalities detected have known causes, and that is an unusually high percentage of attributable causes of death for avian collision surveys. Mr. Eldred found it interesting that there was no direct evidence of avian collision mortality.

Question: Mr. Eldred asked if Mr. Hall found any evidence of bird collisions near the towers.

Response: Mr. Hall indicated that there was no evidence of bird collisions near the towers.

Question: Mr. Lewis asked Mr. Hall to describe where the birds perched on the towers.

Response: Mr. Hall said that there were no observations of attraction to particular parts of the towers and the towers did not pose any obvious risks.

Mr. McGee noted most raptors were using towers not avoiding them and mostly raptors just sit on the towers. All 4 nests were on structures where lines formed a corner. Mr. Patterson added that the lines all have greater than 11 foot spacing, the conducting elements are too far apart for electrocutions by space and configuration.

Question: Mr. Lewis asked if any pygmy rabbits were found in this survey.

Response: Mr. Hall indicated that there were no pygmy rabbits found in this survey.

Question: Mr. Eldred asked if any jackrabbits were found in this survey.

Response: Mr. Hall responded that there were no jackrabbits found in this survey, just cottontails.

Mr. Bickford asked the group if there were any additional questions for Mr. Hall.

None of the people in attendance at the meeting had any additional questions to suggest that the final transmission line terrestrial resources studies were incomplete.

## (2) Adult Lamprey Passage Study

## Notes:

Mr. Murauskas presented the 2008 Adult Lamprey Passage Study. He discussed the original objectives (FERC approved study), fishway overview, 2007 study results, modifications to the study approach, and the 2008 study results. He noted that this was a voluntary second year of study to answer questions raised by the Aquatic Settlement Work Group (ASWG).

## **Questions & Comments:**

Question: Mr. Lewis asked about drop back at Wells Dam versus Bonneville Dam.

Response: Mr. Murauskas said that there are many ways to define drop back. Drop back occurs when a fish ascends the fishway, exits to the forebay, and subsequently "drops back" to the tailrace. Fall back occurs within the ladder itself; for example, a fish that ascends 16 pools then "falls back" 10 pools before continuing ascent. Drop back is 0% at Wells Dam for a second consecutive year, compared to 19% at Bonneville Dam. This is a very important factor – related to bioenergetics – that is often overlooked. Fish that are forced to ascend a fishway twice (i.e., after "dropping back" into the tailrace) burn substantially more energy than those that only ascend once (i.e., do not drop back).

Question: Mr. Lewis asked if it is possible for fish to be injured in the Auxiliary Water Supply (AWS) and is there any source of mortality in the AWS.

Response: Mr. Murauskas indicated there have been no injuries and that few fish use this area for passage. However, the few fish that do interact with the AWS through wall diffusers ultimately pass in relatively quick times. For example, in 2007, one fish that entered into the AWS through the side wall diffusers, and ultimately reentered the fishway near the base of the ladder several minutes later. The fish then ascended the lower fishway in roughly six hours

Question: Mr. Lewis asked if there are diffusion grates in the AWS.

Response: Mr. Murauskas responded that there are no floor diffusion grates in the AWS at Wells. He also reiterated that other projects have substantial diffusion grating throughout fishway floors, whereas fishway floors at Wells are entirely concrete except for two pools where partial floor diffuser gratings are exposed. Mr. Murauskas also explained how this is beneficial to lamprey in allowing a continual surface for "burst and attach" swimming displayed by lamprey. The "diffuser grating", as related to the AWS, is largely through the wall diffuser system in the collection gallery, not to be confused with other fishways downstream that supply most supplemental water through fishway floor diffuser gratings, effectively limiting lamprey passage. In-ladder passage at Wells Dam has been demonstrated to be one of the fastest on the Columbia River.

Mr. Bickford described the flow of the attraction water system and how water is guided through the wall diffusers at a slight downstream angle from the AWS to the collection gallery. This angled wall diffuser flow is intended to guide fish from the entrance to the base of the ladder that then leads the fish up the ladder and to the fishway exit in the forebay.

Question: Mr. Eldred said that looking at the passage performance of Wells Dam versus Bonneville Dam, there was a great difference in the success rate. He asked if the Bonneville fish may have less sense of spawning urgency versus a heightened spawning urgency at Wells Dam.

Response: Mr. Murauskas said that is why uniform passage standards are not applicable across all projects. You cannot apply one standard to all dams across the basin due to dam size, location (i.e., distance inland), configuration, and seasonality (i.e., water temperatures). Passages differ as in the time of year, different water temperatures and fish size differences. The two projects are very different in size. Bonneville is more complex than Wells but also has a much lower head differential between the forebay and tailrace. There is a huge difference between project configurations, run timing, water temperature and run disposition. Their AWS is quite different. Bonneville Dam has a much higher velocity at the northern most fishway entrance compared to their south entrance on the Washington channel of the river. Mr. Murauskas further explained that unlike anadromous salmonids, which home to a specific spawning stream reach, lamprey do not appear to show spawning fidelity, and spend more than one season migrating to spawning areas in the upper Columbia River. Therefore, lamprey that do not pass a dam in the fall sometimes overwinter in the reservoirs and then pass the dam in the spring In addition, a fish that does not pass a dam in the fall may spawn in the reservoir or tailrace, enter a tributary between projects, or simply begin overwintering in between projects. Until more is understood about their life history strategy, it would be impossible to accurately measure compliance with a passage standard.

Question: Mr. Devine asked if the bottom diffusion grating is different at Bonneville than at Wells.

Response: Yes. Bonneville Dam has substantially more floor diffuser gratings. Mr. Murauskas indicated that Bonneville has many more entrances and a more complex AWS system.

Mr. Murauskas indicated at Wells Dam that the perforated plates for the lamprey trapping structure were used to block fish passage to enhance trapping efficiency; but had the additional effect of inhibiting passage and compromising lower fishway passage data. The perforated plates have since been removed following discussion with the Aquatic Settlement Work Group.

Question: Mr. Lewis asked about the tailrace releases at Wells. Five of 15 fish that approached the entrance entered; what was the fate of the other 10 fish?

Response: Mr. Murauskas responded that there are many possibilities. Some fish rejected the gallery. He was not sure if it was because of blockage, uncharacteristic behavior, tagging effects, or perhaps the entrance velocities were too high.

Question: Mr. Lewis asked if there was a threshold for lamprey movements related to temperature.

Response: Mr. Murauskas indicated that lamprey stop migrating to overwinter near late September or early October, especially once temperatures drop below 16°.

Question: Mr. Lewis asked about the tag life used in the study.

Response: Mr. Murauskas indicated that the Lotek NanoTags used had an 87 day battery life. Mr. Bickford added that we also included PIT tags during the 2008 study just in case some of the radio-tagged fish decided to ascend the ladder, after overwintering.

Question: Mr. Lewis asked about the 182.4 hour passage time at Bonneville and what is the bottleneck at Bonneville?

Response: Mr. Murauskas responded that Bonneville is a very complex system and he did not know the answer to this question.

Question: Mr. Lewis noted that the entrance efficiency for Bonneville (6% to 32%) and Wells (33%) is characteristically overly generous.

Response: Mr. Murauskas responded that all the implementation measures are being done to increase passage efficiency. He discussed the Bonneville study done by Mary Moser that showed a 50% efficiency rate. They selectively used larger fish with greater girth than typical in their trapped sample; versus smaller fish with a lower energetic reserve tagged at Wells Dam. The main reason for the different morphology of the lamprey at Wells Dam is the fact that these fish have already migrated over 500 miles of the Columbia River. Mr. Murauskas presented some additional slides that showed the girth of lamprey at Bonneville and Wells versus the girth of the 2008 lamprey tags used at both dams. Mr. Murauskas indicated that at Wells the tag/tagging effects are too great to assume that the fish tagged were representative of the lamprey population at large at Wells Dam.

Question: Mr. Devine asked if there was a male/female differential.

Response: Mr. Murauskas was not sure if that was a factor but said that females are generally larger.

Question: Mr. Lewis noted that the study does not address the fish bypassing the count stations. What would you propose to do? Put in counting system or picket leads?

Response: Mr. Murauskas said that the 2007 report covers this issue. The 2008 study was focused on passage efficiency for the entrance structure. He indicated that, in fact, fish bypassing the count station is not a passage problem but an enumeration problem. Perhaps the answer is to use a correction factor or use an alternative counting measure. Mr. Murauskas mentioned that the lamprey paused in the video bypass area during the daylight hours and then when it got later and darker, they went right out; presumably as a function of their nocturnal nature. There was no bunching at Wells. There are no passage obstructions in the AWS or collection gallery at Wells.

Mr. Bickford listed a few possible future actions – put in a low light camera into the counting area bypass, expand the actual count to reflect the two year average rate of count station bypass (75%), or do something else. The Aquatic Settlement Work Group will determine how to proceed on this issue. The study documents current conditions. The Aquatic Settlement Work Group will use the data from the 2007 and 2008 lamprey passage studies to make recommendations for the new license.

Mr. Bickford asked if there were any other questions related to the 2008 adult lamprey passage study. No party suggested the adult lamprey passage study was incomplete.

## (3) DO, pH and Turbidity Study

## Notes:

Mr. Murauskas provided the objectives, methods and results from the DO, pH and Turbidity Study. Mr. Murauskas also indicated that the DO, pH and Turbidity study was not required by FERC but instead was voluntarily conducted by Douglas PUD based upon agreement among the participants involved in the resource and settlement work group processes.

## **Questions & Comments:**

Question: Ms. Irle asked if the number of days when pH was out of compliance was included in the report.

Response: Mr. Murauskas indicated that the data was contained within the report. Mr. Bickford mentioned that it was on page 115 of Updated Study Report.

Ms. Irle responded that only part of the standards were in the methods section of the report. The 0.1 deviation is for conditions where pH is above 8.5 or below 6.5. The 0.2 deviation is for anything within that range. Ms. Irle asked if the analysis of the difference between pH at Malott and Monse made it into the report.

Response: Mr. Bickford responded that this information could be found on pages Appendix A-115 and A-124 of the USR Document

Question: Ms. Irle asked if the Project was in compliance with the standards for pH.

Response: Mr. Murauskas answered that the Wells Reservoir was in compliance with the pH standards for pH and that this information was indeed contained within the USR report for pH. The requested information was on page 35 (Appendix A-124).

## (4) Total Dissolved Gas Investigation

## Notes:

Duncan Hay (Oakwood Consulting) presented the results of the Total Dissolved Gas Investigation Study.

## **Questions & Comments:**

Question: Ms. Irle asked if the model used 115% TDG in the forebay of Wells Dam. What if you use a different percentage of TDG for the forebay monitoring station?

Response: Mr. Hay responded that a forebay TDG of 113% was used in the model because it was the most representative number for the conditions observed at Wells Dam during high flow events (flows greater than 200 kcfs)

Question: Ms. Irle asked why a forebay TDG of 115% was not used to evaluate tailrace compliance for the 7Q10 flow scenario developed in the model. At other projects Ecology has asked the licensee to use 115% incoming forebay TDG.

Question: Mr. Hay asked what this input would be based upon.

Response: Ms. Irle responded that it is based upon Ecology's preference to remain consistent with the 401 water quality certification issued for Wanapum and Priest Rapids dams

Mr. Hay said the model used median values of environmental conditions observed at Wells Dam during high flow events. This was done in order to have the most representative input for the model. A similar analysis was used to select all of the environmental parameters used in the TDG model including the flow rates for the turbines, powerhouse and the average forebay elevation.

*Mr.* Bickford pointed out that the model used a day-to-day average value for turbine flow and powerhouse operations to ensure that the model results were representative of the dams operation on an average day. 20 kcfs per turbine unit was the flow provided for each turbine in the model.

Question: Mr. Bickford asked what turbine and powerhouse loading was used for the Priest Rapids and Rocky Reach TDG analysis.

Response: Ms. Irle indicated that it was her understanding that at Priest and Wanapum dams, that Ecology and Grant PUD agreed to use 115% TDG in the forebay and that they agreed to use 9 of 10 units with the 9 units that were in operation fully loaded

*Mr.* Hay responded that using these same turbine and powerhouse loading assumptions for Wells Dam would reduce spill by 18 kcfs.

Mr. Bickford mentioned that Douglas could ask Iowa to develop a TDG model analysis that could be directly compared to the output from the Wanapum and Priest Rapids TDG regression analysis. This new model run would use a forebay TDG of 115% rather than the environmentally representative conditions typical of high flow events (forebay TDG 113%). The new model analysis would represent a worst case scenario for TDG compliance.

Question: Mr. Bickford asked if Ecology could provide Douglas PUD with the model assumptions used at Priest Rapids and Wanapum.

*Response: Ms. Irle indicated that she would be willing to find and forward the assumption to Douglas PUD.* 

Question: Ms. Irle requested a CD containing the TDG modeling animations presented during the USR Meeting.

Response: Mr. Bickford indicated that Douglas PUD would send her a CD containing all of the TDG modeling animations shown at today's meeting

## IV. Concluding remarks (12:00)

Mr. Bickford asked if there were any further questions or comments related to the recently filed USR Document.

## Notes:

No remarks were made. Mr. Bickford thanked everyone for attending the meeting and reminded stakeholder that comments on the USR are due to FERC by June15, 2009 per the Process Plan and Schedule for the Wells ILP.

The meeting was adjourned.

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Exhibit A: USR Meeting Sign-In Sheet



# Wells Project Relicensing Updated Study Report Meeting

DATE: April 30, 2009

LOCATION: Douglas PUD

Name	Organization	Phone	Email
J. MURAUSKAS	Douglas	881-2323	JOSHM@DCPVD. 8R6
John Devine	DTA/DCPUD	207-775-4495	John devine Covine tarbell.com
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Beau Patterson	DEPUD	<u> 881 - 2332</u>	beaupe dead.org
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## Exhibit B: Updated Study Report - Meeting Agenda

# Agenda Updated Study Report Meeting

Wells Hydroelectric Project Relicensing Douglas County PUD April 30, 2009 9:00 am – 12:00 pm

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