

**FINAL - Meeting Summary Notes**  
**Lewis River License Implementation**  
**Engineering Subgroup**  
**October 15, 2008**  
**Fish Passage Meeting Notes**

**Subgroup Participants Present: (12)**

Will Shallenberger, PacifiCorp  
Arnold Adams, PacifiCorp (for Merwin portion of meeting only)  
Frank Shrier, PacifiCorp  
Tom Hickey, PacifiCorp  
Bryan Nordlund, NOAA Fisheries (NMFS) (left at noon for another appointment)  
Michelle Day, NOAA Fisheries (NMFS)  
Peter Christensen, R2 Resource Consultants  
Dana Postlewait, R2 Resource Consultants  
Suzanne Picard, R2 Resource Consultants  
Ken Bates, Kozmo  
Monty Nigus, Black & Veatch (via phone and web conference)  
Brian Friesz, Black & Veatch

**ADMINISTRATIVE**

Welcomed attendees. Advised that after today's meeting, there would be an opportunity to view the new PacifiCorp fish truck with a fiberglass tank. Additionally, fish counter testing would be taking place in the incubation room of the Merwin Hatchery (next door). Meeting attendees were invited to observe the tests.

**General Meeting Handouts:**

Distributed via email on Friday, October 10<sup>th</sup>, 2008 by Kim McCune:

- Meeting agenda for 10/15/2008 subgroup meeting
- Copies of the draft 9/18/2008 subgroup meeting notes

Distributed at meeting 10/15/2008 (paper copies):

- Meeting agenda for 10/15/2008 subgroup meeting
- Copies of the draft 9/18/2008 subgroup meeting notes

## **FUTURE MEETING DATES**

Future meeting dates were presented to the group for review, as follows:

- December 4, 2008
- January 15, 2009

## **OTHER ADMINISTRATIVE ITEMS**

- Will Shallenberger has spoken with John Johnson at US Fish and Wildlife in order to clarify John's anticipated role in the Swift and Merwin projects. John will be the USFWS engineering representative for the project and will likely want to be involved in some capacity, though his ability to participate in the subgroup meetings is still unclear.

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**o MERWIN TRAP PROJECT**

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**Handouts**

- o Design Decision Log – Discussion Draft for Format
- o Suggested ATE definitions for ACC consideration dated 9/16/2008
- o Copy of emails between Frank Shrier, Curt Leigh, Michelle Day, and Bryan Nordlund discussing revisions to the definition of ATE.
- o Merwin Trap & Haul Phased-Approach Decision Flow Diagram, DRAFT dated 10/7/2008.

**Presentations**

- o None.

**Review of Previous Meetings' Merwin Action Items:** See status summary table below.

<b>No.</b>	<b>SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)</b>	<b>STATUS</b>
M94	PacifiCorp (Shrier/Adams) – update phase approach memo for ongoing discussion.	Done today
M96	PacifiCorp (Olson) – provide flow diagram depicting phases and adjustments. Attach the agency phased approach memo to the April 28 <sup>th</sup> meeting notes	Done today
M97	PacifiCorp (Shallenberger) Make contact with John Johnson at the USF&W Service to discuss his role in the Merwin and Swift Project design processes.	Done, 9/30/2008
M98	PacifiCorp (McCune) Add John Johnson at USF&W Service to all general email distribution lists for the Engineering Subgroup.	Done, 9/30/2008
M99	R2 (Postlewait) Create a mock-up of a General Decision Log for the Merwin (and Swift) Project to be included in future design reports for review by the Engineering Subgroup. To be distributed at the next meeting.	Done today
M100	PacifiCorp (Shrier) Rework definition of ATE and forward to Engineering Subgroup members for further discussion.	Done today
M101	WDFW (Kinne) Investigate the possibility of using dead-end type-style CWT detectors with National Marine Technologies and report findings back to the Engineering Subgroup at next meeting.	Pending. WDFW not present at this meeting.

### **Additional Comments on Last Meeting's Merwin Notes:**

Bryan Nordlund provided feedback on last meeting's notes. His edits included:

- In the notes, under "Other Administrative Items", it was originally said that John Johnson would replace Jim Stow as the USFWS Engineering Subgroup representative. Bryan Nordlund noted that this was not yet a known certainty at the time of the last meeting. Will subsequently contacted John and has confirmed that he will, in fact, be acting as the USFWS Engineering Subgroup representative. The note will be stricken from the last meeting's minutes.
- On page 4, replace the sentence "If this idea is implemented, where should the measured end of the Lewis River System be." With "Frank Shrier noted that more discussion would be needed to identify the measured end of the Lewis River system if this idea is implemented."
- On page 4, the fifth bullet from the top shall be edited to read; "Everyone agreed that lost tags and mortalities should be removed from the sample set. Identifying these fish, however, will need further planning in the study."
- On page 4, in the last bullet under "Definition of ATE", replace the word "exempted" with "excluded".

### **MERWIN TRAP AGENDA TOPICS**

#### **Example Decision Log for Design Reports**

- o R2 prepared a mock-up Decision Log table for presentation to the Subgroup. The purpose of the mock-up was to generate discussion on Log contents and format. Highlights of the discussion included:
  - Entries into the Log shall not be overwritten. New updates should be added directly after the previous entry they pertain to.
  - Add a column of ID numbers and decision dates. Include a column showing related decision items.

#### **Reworked ATE Definition**

- o Frank Shrier updated and distributed the draft ATE decision document presented at last meeting based on the Subgroup's feedback.
- o The group discussion about how to further refine the decision document went on at length. The take-away points from the discussion were as follows:
  - The description of ATE and how it is measured will still need to be refined further.
  - A distinction needs to be drawn for fish that presumably never intended to move upstream in the Lewis River system, yet may have made brief appearances in the tailrace. Such fish would be classified as "Dropbacks" and should be excluded from the calculation of ATE. At the same time, fish that did presumably intend to move upstream

yet failed to successfully navigate the trap will be classified as “Fallbacks”, and need to be included in the ATE calculation.

- Obvious tagging mortalities will be removed from the data set. How long do fish need to be observed for tagging mortalities before being released?
- Michelle Day impressed upon the group that the location where a fish is caught for tagging is significant when considering the difference between dropbacks and fallbacks, and should be described clearly. Fish that are caught in the Merwin trap, tagged, released downstream, and then make a single subsequent appearance in the tailrace need to be described separately from fish that are caught at Lewis River Hatchery, tagged, released, and then make a single appearance in the Merwin tailrace only to leave immediately, never to be seen again. Frank Shrier agreed with the distinction.
- The group still needs to agree on a length of time that a fish is allowed to visit the tailrace during a single, isolated visit before it is counted as a dropback.
- Frank Shrier, Michelle Day, and Bryan Nordlund will continue this discussion off-line from the Engineering Subgroup meetings, and then bring it before the ACC.

### **Phased-Approach Flow Diagram**

- o Arnold Adams distributed a copy of the draft Phased-Approach Flow Diagram to the group. The group is to provide feedback at the next Subgroup meeting.

	<b>SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)</b>	<b>STATUS</b>
M101	WDFW (Kinne) Investigate the possibility of using dead-end type-style CWT detectors with Northwest Marine Technologies and report findings back to the Engineering Subgroup at next meeting.	Pending. WDFW not present at this meeting. Dana will contact Eric Kinne.
<b>No.</b>	<b>SUMMARY OF NEW MERWIN ACTION ITEMS (from October 15<sup>th</sup>, 2008 Meeting)</b>	<b>STATUS</b>
M102	Design Team (R2, Black & Veatch) Populate the Merwin Decision Log with past decisions.	Pending
M103	All – Review the draft Phased-Approach Flow Diagram handed out by Arnold Adams and provide feedback at the next Subgroup Meeting.	Pending
M104	PacifiCorp, NMFS, WDFW (Shrier, Day, Nordlund, Leigh) – Continue work to resolve ATE definition outside of the Engineering Subgroup. Coordinate with ACC, and report progress summary to ES at next meeting.	Pending

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o **SWIFT DOWNSTREAM PASSAGE PROJECT**

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**Handouts**

- o Swift Downstream Passage - Updated drawings of the Exclusion Nets

**Presentations**

- o Net Layout and Investigations

**Review of Previous Meetings' Swift Action Items:** See status summary table below.

No.	SUMMARY OF PENDING SWIFT ACTION ITEMS (remaining from previous Meetings)	STATUS
S42	PacifiCorp (Shallenberger/Friesz) Distribute index and copies of all CFD runs on a CD and via a link to the PacifiCorp website. Additional CFD model runs will be completed soon and will be included.	Done today.
S47	R2 (Christensen) Put together a draft Study Plan for testing the AquaScan fish counters. Distribute the plan to all interested parties before the next Subgroup Meeting so the plan can be finalized before the testing session on October 16 <sup>th</sup> , 2008.	Done. Testing will take place today and tomorrow.
S48	R2 (Christensen) Peter will use the model to determine how sensitive the facility hydraulics are to debris clogging the fish screens. Results will be presented at the next Subgroup Meeting.	Done today.
S49	All (all) Review the M&E memo put together by Al Giorgi and Kevin Malone and provide feedback to the group.	Pending.
S50	All (all) Review the schematic sampling and sorting conceptual diagram and provide feedback to the group.	Pending.
S51	R2 (Christensen/Picard) Coordinate with drafting to consolidate the existing 2D drawings into 3D.	Done.

**Additional Comments on Last Meeting's Swift Notes:**

- o Bryan Nordlund provided the following comments on last Meeting's notes:
  - On page 7, on the eighth bullet from the top, which begins with "Bryan Nordlund raised concerns...", the second and third sentences will be combined to indicate ownership of the idea and he also suggested that the phrase "...it is anticipated that the flows should be balanced" be changed to "...it is anticipated that the flows will be balanced". It was agreed that these sentences will be combined to read: *"This question has been evaluated at R2 and reviewed by NHC and BV, and they have concluded that due to the relatively high head loss across the baffles, the low velocities within the system, and the distance of even the closest pump it is anticipated that the flows will be balanced"*.
  - In the final portion of the same bullet on Page 7, there is a suggestion that which pump is turned off could be changed to demonstrate that it does not impact the screen flow

balance. Bryan asked what is the contingency plan if you do that and find it does impact the screen balance. Peter suggested that in that event the settings of the individual baffles could be readjusted to compensate. It was agreed that R2 will prepare documentation of their reasoning that the locations of the pumps will not impact the overall screen balancing.

- On page 8, on the first complete bullet, amend the fourth sentence to read: “Bryan Nordlund raised concerns about having moving parts below the water surface and suggested that we also investigate a fixed-array system.”
- On page 8, on the first complete bullet, amend the last sentence to read: “Bryan noted the vertically traveling brush cleaning system at the Rocky Reach Facility as something to be considered as a backup screen cleaning method for Swift.”
- On page 8, on the bullet beginning with “The water supply...” Amend the bullet to read as follows: “The water supply to the smolt and adult holding tanks shall be screened to meet smolt criteria, i.e. shall be ¼” clear or smaller, to prevent fish from swimming up into the water supply plumbing.”

## **SWIFT DOWNSTREAM AGENDA TOPICS**

### **Administrative Items**

- o Bryan Nordlund suggested that a Decision Log similar to the one presented for Merwin be developed for Swift also. It was agreed that this would be included as part of the 60% report.

### **Sensitivity Analysis of Screen Blockage**

- o Peter Christensen explained how screen blockage is expected to impact FSC flows. Because the majority of the incoming headlosses occurs at the baffles rather than the screens, a 20% blockage of the screens is expected to only decrease the flow of the FSC from 600 cfs to 591 cfs (approximately 1 to 2%). The variable frequency drive (VFD) operated pumps (which are maintaining a constant water level downstream of the baffles) will slow down in response to the reduced flow demand and the change in pump speed can be used to trigger an automatic cleaning cycle.

### **Net Concept Design Update**

Peter Christensen presented the new information that has become available concerning the net design and the revisions that have been made to the design in response. The following items were discussed:

- o Comments received from design team and during the July 16 Subgroup Meeting have been incorporated into the current version of the Net design.
- o The previous net layout was an initial “starting point” concept based the assumption that PacifiCorp would start with a partial-depth guide net so an attempt was made to optimize a partial-depth layout over the range of reservoir levels experienced during the downstream salmonid migration season. This reservoir level range was based on historic reservoir level

information collected from 1993-2006. The spring 2008 season, however, had reservoir levels well below the historic data due to a very large snow pack and a late snow melt. Consequently, it appears prudent to amend the design to accommodate lower reservoir levels than had previously been anticipated.

- o Will Shallenberger noted that PacifiCorp is now leaning toward installing full-depth exclusion nets with the initial installation. There is concern that the risks associated with fish passing under the net may outweigh any savings associated with partial-depth nets.
- o The reservoir CFD model has been modified to incorporate the nets and the ability to model spill flow. The net layout presented at the July 16 Engineering Subgroup meeting was incorporated into the model. Two runs of the model were performed to determine the distribution of flow over the net area. One run had powerhouse flow (9,400 cfs) plus 10,000 cfs spill, and the other had powerhouse flow plus 30,000 cfs spill.
- o It was found that with both modeled conditions (spill flows of 10,000 and 30,000 cfs) the velocities are significantly larger (by a factor of 1.7 times the average) near the middle of the nets, and that the outer most few hundred feet of the north net were essentially ineffective. Therefore, the north net has been shortened by 250 feet from the previous design iteration to reflect this realization.
- o This revised net layout was analyzed for hydraulic loading considering the redistributed flow condition and it was found that to protect the nets from excessive loading during spill events, they will be lowered when spill flows exceed 5,000 cfs. Dropping and raising the nets will be accomplished with simple, pushbutton controls.
- o Will Shallenberger said that the policy will most likely be to drop the nets whenever they are spilling. He noted that spill is not that common but that when they do it can very rapidly increase well over 5,000 cfs, and that there is typically a lot of debris in the river during spill so the nets could become very problematic.
- o Frank Shrier noted that PacifiCorp's new High Runoff Procedure (HRP) includes future spill procedures that will have spill events occurring somewhat more frequently than the current operations plan for high runoff events. The new flow regime developed for the HRP should be reviewed for the net design.
- o The analysis showed that the nets can withstand full powerhouse flow down to a reservoir elevation of about 920 ft.
- o Additional CFD model runs will be suggested in the future to model reservoir flows with the nets lowered during spill, and with the nets raised during full powerhouse flow at reservoir elevations down to 920 ft.
- o The net designs currently show two different size meshes below the impervious layer over the top 15 feet of depth. To a depth of 30 feet the nets are currently shown with a mesh size of 3/32" since fry are more likely to move near the surface. The lower portions of the nets are shown with a mesh size of 1/4", sufficient for smolt and adults. This is the same net material and design used at the Upper Baker FSC project, although there is not an impervious section at the top in the Upper Baker net. The team is to provide feedback on this variable net porosity concept by the next Subgroup Meeting.



- o Ken Bates pointed out that cross-flow drag on the nets will likely generate additional loading forces on the nets. Peter still has to include cross-flow drag into his net analysis.
- o The lead net along the center of the approach to the FSC is an optional addition and has been included based on anecdotal evidence at the Baker FSC. It is uncertain just how much impact the net will have on collection efficiency, but if initial tests don't meet expectations it could be a good adjustment to the system.
- o Bryan Nordlund received copies of Peter's PowerPoint net presentation and the 3D Sorting and Sampling model for his review.

### **3D Model of Sorting and Sampling Area**

- o Peter presented the new 3D Sorting and Sampling Area model to the group. The 3D model is a good visualization tool for understanding the operations and accessibility of the sorting and sampling components.
- o Michelle Day suggested possibly adding video monitoring to the sorting tanks to make monitoring fish recovery easier, if there is not a direct line of sight to observe the recovery tank from the sampling area.
- o Michelle received a copy of the 3D model pdf file at the meeting for her review.

<b>No.</b>	<b>SUMMARY OF PENDING SWIFT ACTION ITEMS (remaining from previous Meetings)</b>	<b>STATUS</b>
S49	All (all) Review the M&E memo put together by Al Giorgi and Kevin Malone and provide feedback to the group.	Pending.
S50	All (all) Review the schematic sampling and sorting conceptual diagram and provide feedback to the group.	Pending.
<b>No.</b>	<b>SUMMARY OF PENDING SWIFT ACTION ITEMS (from October 15<sup>th</sup>, 2008 Meeting)</b>	<b>STATUS</b>
S52	R2 (Christensen) Prepare documentation of R2's hydraulic review concerning pump location, baffle adjustment, and general screen hydraulics.	Pending.
S53	NMFS/WDFW/PacifiCorp (Nordlund/Day/Shrier) Provide feedback on the dual-sized net concept, net length, and net layout to the design team by next meeting.	Pending
S54	R2 (Christensen) Include cross-flow drag forces in the net loading analysis.	Pending
S55	R2 (Christensen) Review new high runoff procedure from Flood Operations Study for impact on net design	Pending

Adjourn 1:15 PM. Several members of the ES traveled over to the Merwin Hatchery to observe the fish counter tests being conducted by R2.