

**FINAL - Meeting Summary Notes**  
**Lewis River License Implementation**  
**Engineering Subgroup**  
**September 18, 2008**  
**Fish Passage Meeting Notes**

**Subgroup Participants Present: (13)**

Will Shallenberger, PacifiCorp  
Arnold Adams, PacifiCorp (for Merwin portion of meeting only)  
Frank Shrier, PacifiCorp  
Bryan Nordlund, NOAA Fisheries (NMFS)  
Eric Kinne, WDFW  
Neil Turner, WDFW  
Curt Leigh, WDFW (via phone and web conference)  
Peter Christensen, R2 Resource Consultants  
Dana Postlewait, R2 Resource Consultants  
Suzanne Picard, R2 Resource Consultants  
Ken Bates, Kozmo  
Monty Nigus, Black & Veatch  
Brian Friesz, Black & Veatch

**ADMINISTRATIVE**

Welcomed attendees and reviewed agenda. The FERC License was issued on June 26, 2008 with an effective date of June 1, 2008. The facility will therefore need to be operational by December 26, 2012 (4 ½ years after license issuance). Design schedule goals are therefore set at the following:

- The 60% Design target is December 2008 for Swift, and February 2009 for Merwin (internal team goal not tied to license).
- The 90% Design is due June 26, 2009.
- The final Design shall be completed by December 26, 2009.

The 90% and final design deadlines are tied to the Settlement Agreement and the new licenses, respectively and are therefore not going to be subject to change; consequently the internal 60% deadline is also firm.

**General Meeting Handouts:**

Distributed via email on 09/10/2008 by Kim McCune:

- Meeting agenda for 9/18/2008 subgroup meeting
- Copies of the draft 7/16/2008 subgroup meeting notes

Distributed at meeting 9/18/2008 (paper copies):

- Meeting agenda for 9/18/2008 subgroup meeting
- Copies of the draft 7/16/2008 subgroup meeting notes

### **FUTURE MEETING DATES**

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

- October 15, 2008
- December 4, 2008

Subsequent meetings will be scheduled at 2-month intervals.

### **OTHER ADMINISTRATIVE ITEMS**

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- **None**

## MERWIN TRAP PROJECT

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### Handouts

- Suggested ATE definitions for ACC consideration dated 9/16/2008
- Merwin Sorting Table Conceptual Layout drawings for 9/18/2008 Meeting

### Presentations

- None.

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

No.	SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)	STATUS
M81	R2 (Postlewait) – Coordinate review of sorting table revisions with Eric Kinne and Neil Turner	Completed today.
M92	PacifiCorp (McCune) attach the agency phased approach memo to the April 28 <sup>th</sup> meeting notes.	Done 6/13/08, rolls into M96.
M93	Design Team – define reporting system to supplement the final design document production that will document key decisions and discussions from the meeting notes regarding the model and design points.	Done. A Decision Log shall be included in the 60 and 90% Design Reports. See M99.
M94	PacifiCorp (Shrier/Adams) – update phase approach memo for ongoing discussion.	Pending, to be completed next meeting.
M95	NMFS/USFWS (Nordlund/Stow) – review Merwin Trap ATE proposal and coordinate with agency representatives to respond to PacifiCorp's proposal.	Done.
M96	PacifiCorp (Olson) – provide flow diagram depicting phases and adjustments	Pending, this will be coordinated with both the ES and the ACC, to be completed by next meeting.

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

None.

## **MERWIN TRAP AGENDA TOPICS**

### **Definition of ATE**

- o The group reviewed the guidelines for ATE evaluation developed by the team and summarized by Frank Shrier in a handout. The discussion made it clear that further development was going to be necessary before the group could reach a consensus on ATE evaluation guidelines and before the definition and guidelines can be forwarded to the ACC.
- o Highlights of the discussion include:
  - Bryan Nordlund feels that fish that leave the Lewis River system should be removed from the test fish sample set used to calculate ATE. Frank Shrier noted that more discussion would be needed to identify the measured end of the Lewis River system if this idea is implemented.
  - Curt Leigh at WDFW felt that fish that entered the Merwin Tailrace and subsequently left the system should be considered a "Fallback", regardless of how long the fish spent in the Tailrace area. He felt that only fish that never made it into the Tailrace area should be excluded from the test fish sample set used to calculate ATE.
  - 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.
  - To reach a consensus, it may be necessary to put a limit on the amount of time a fish can spend in the Merwin Tailrace before it is officially included in the ATE calculation. For example, fish that spend only a few minutes in the tailrace area and subsequently leave the system may never have intended to move upstream at all and may need to be excluded from the ATE calculation. Conversely, fish that spend several days in the tailrace and never enter the trap may have intended to move upstream but were not successfully attracted into the trap.

### **Sorting Table Layout**

- o The goal of the discussion is to get feedback on the current design from Engineering Subgroup members, specifically from WDFW, so the design of the sorting building can move forward.
- o Current Sorting Table Layout Highlights:
  - The ramp from the anesthesia baskets to the sorting table is adjustable.
  - There is a rolled edge in front of the sorting tubes to prevent fish from accidentally sliding into the wrong tube.
  - The CWT detectors are currently shown as vibration-isolated vee detectors built into the back of the sorting table. Eric Kinne suggested looking into using dead-end tube-style detectors instead. He will follow up with National Marine Technologies, Inc. to discuss this idea.

- The end portion of the sorting table is currently being shown as a T-shape. This area is out of the way of regular sorting activity and is intended for use in DNA and scale collection. The team felt the T-shape is not ideal, suggesting that the back portion of the “T” be removed to make the sorting area smaller. This topic needs more discussion, as the benefit of this layout is that it is out of the way of the other sorting processes.
- Currently, it is assumed that the waste stream from the sorting area will not require any special handling protocols. This is a no-kill facility, so there should be no blood or other fluids in the waste stream. Rinse water from the Sorting Table is currently shown as being routed directly back to the river.
- Frank has already distributed a fish handling protocol memo for review by WDFW. Once WDFW completes their review and Frank incorporates their feedback, the protocol will be presented to the Engineering Subgroup.

	<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.	Pending, to be completed next meeting.
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	Pending, this will be coordinated with both the ES and the ACC, to be completed by next meeting.
<b>No.</b>	<b>SUMMARY OF NEW MERWIN ACTION ITEMS (from September 18<sup>th</sup>, 2008 Meeting)</b>	<b>STATUS</b>
M97	PacifiCorp (Shallenberger) Contact John Johnson at the USFWS to discuss his role in the Merwin and Swift Project design processes.	Done. 9/30/08
M98	PacifiCorp (McCune) Add John Johnson at USFWS to all general e-mail distribution lists for the Engineering Subgroup.	Done. 9/30/08
M99	R2 (Postlewait) Create a mock-up of a General Decision Log for the Merwin Project to be included in future design reports for review by the Engineering Subgroup. To be distributed at the next meeting.	Pending.
M100	PacifiCorp (Shrier) Rework definition of ATE and forward to Engineering Subgroup members for further discussion.	Pending.

M101	WDFW (Kinne/Turner) 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. Make any final edits/suggestions to the sorting table layout.	Pending.
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**o SWIFT DOWNSTREAM PASSAGE PROJECT**

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**Handouts**

- o Swift Dam Downstream Passage Floating Surface Collector General Arrangement Plan and Section Drawings
- o Memo addressing M&E Team needs written by Kevin Malone and Al Giorgi
- o Visio diagram entitled 'Fish Sampling Facilities – Schematic Diagram', dated 9/18/2008

**Presentations**

- o None.

**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.	Pending completion of CFD runs with nets.
S43	R2 (Christensen) Work up velocity and acceleration profiles for the two different NTS geometries currently up for consideration and provide them to Bryan Nordlund for review.	Done 7/17/08
S44	Kozmo (Bates) Provide whatever physical modeling data is available from the Baker FSC physical model to assist in evaluating the NTS geometry.	Done.
S45	R2 (Christensen) Provide links to AquaScan fish counter product information to the subgroup team.	Done 7/17/08
S46	R2/PacifiCorp (Postlewait/Christensen/Picard/Shrier) Meet with the M&E team to discuss sampling facility requirements in early August.	Done.

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

On Page 5 of the minutes the table of Swift action items is mislabeled as Merwin. With that correction, meeting notes from the July 16<sup>th</sup>, 2008 meeting can all be finalized.

## SWIFT DOWNSTREAM AGENDA TOPICS

### Administrative Items

- o AquaScan will assist in testing the fish counters that are currently under consideration for use on the Swift FSC. This testing will take place on the day after the next Subgroup Meeting on October 15<sup>th</sup>, 2008.
- o A Study Plan will be put together to outline the testing procedures.
- o Peter Christensen walked through the latest FSC design updates. Highlights of the discussion include:
  - The elevation datum used for the FSC drawings has changed. Instead of the lake level being used as the zero datum as we have done in the past, the new zero datum is the bottom of the FSC entrance. This means that all elevations have been adjusted upwards by 16.00 feet.
  - Peter will use the existing spreadsheet hydraulic model to determine how sensitive the facility hydraulics is to debris clogging the fish screens. Results will be presented at the next Subgroup Meeting.
  - To discourage fish holding downstream of the capture point, the secondary screens are continuously dewatered, even through the ramp weir section at the downstream end. This holding problem was seen at the Baker FSC where dewatering stops upstream of the ramp weir.
  - The two spare primary screen pumps can be used for evaluating the effects of increased facility flow on fish attraction. The facility would operate slightly out of criteria during the test, but the additional 150 cfs capacity may help decide if the phased facility expansion would be beneficial in the future.
  - Bryan Nordlund raised concerns about the possibility that the screen flow will not be balanced because the first set of primary pumps is so much closer to the fish screens than the last pair. 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. It may be possible to test for impact of pump placement on the screen flow balance by changing which pump is turned off after the FSC is online. More discussion will be needed to determine if such testing is necessary.
  - The facility is designed to achieve a maximum velocity at the downstream end of the capture section of 7 ft/s in the secondary screens. It is possible to increase the maximum velocity in the secondary screens to 8 ft/s with baffle adjustments. This adjustment, however, would violate acceleration criteria upstream of this point and screen velocity criteria downstream.
  - Bryan Nordlund mentioned that darkening the channel downstream of the capture area may be beneficial to reduce fish holding in the decelerating environment. The team will consider removable covers for the secondary screen channel.
  - There is only one pair of VFD units. If one of the units fails, there will be no backup. However, each of the VFD's can be plugged into any of the pumps, and there are two

- spare pumps available. It will be possible to either swap pump plugs in the MCC room, or to physically move pumps from one location to another (It was subsequently learned that the VFD's are hard-wired to individual pump receptacles and can't be interchanged at the MCC room).
- The current screen cleaning system concept for the secondary screens is a water backwash system. A movable spray bar with multiple nozzles would service each screen section. This system is also being considered for the primary screens, to avoid large brush-bar cleaners, but there is concern that with screens this deep it will be much harder to manually clean them if the backwash can not keep up, especially with the potential for algae accumulation. Bryan Nordlund raised concerns about having moving parts below the water surface and suggested that we also investigate a fixed-array system. A backup power operated brush system that could be moved to individual screen bays may be beneficial. 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.
  - Neil Turner suggested covering the entire FSC channel to prevent algae-growth, thereby reducing the amount of pressure on the screen cleaning system.
  - Sorting Area Discussion:
    - Holding tanks are designed to hold 4.0 lbs of smolt/cf or 3.2 lbs of fry/cf.
    - Each smolt holding tank is sized to hold a single 1800-gallon truckload of fish.
    - The fry separator is sized to capture fish smaller than 60 mm. Currently; the team is using a conservative 80 fry/lb size to calculate hopper and holding tank capacities.
    - It has not yet been decided whether fry will be transported downstream or re-released into the reservoir to grow more before they are transported downstream. This decision will be made by the Services.
    - Adults will be collected in the Adult Holding Tank. Steelhead kelts and other downstream migrating adults will be transported downstream, while Bull Trout will be netted out of the adult holding tank and re-released into the reservoir. Very few Bull trout are expected. Eric Kinne asked what would be done with rainbow trout. Frank noted that the Biological Opinion only requires them to remove Bull Trout from the downstream transport.
    - The fry separator is not submerged and all flow entering the separator passes through the bars to the fry flume. The smolt separator is submerged in about 1 inch of water, and smolt will pass down through the separator bars whereas adults will pass over a "dry weir" at the downstream end.
    - 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.
    - There are redundant pumps available for removing circulation water from the adult holding tank area to prevent flooding.
    - The fish counters serving the holding tanks and sampling tanks will need to be supplied with a constant flow to function properly.



- Sampling Area Updates:

- The MS-222 anesthesia system is based on the successful system currently in place at Cowlitz Falls Facility. Fish are pre-anesthetized at a low concentration of MS-222 in the pre-anesthesia compartment adjacent to the sampling holding tanks and then undergo final anesthesia at the sampling table in the sampling trough. The procedure is the same for fry and smolt.
- Transfer of fish from the downstairs smolt and fry sampling tanks to the upstairs sampling holding tanks will be achieved using hoppers and water-to-water transfer.
- The next design steps include (a) making a list of various items needed in the Sampling Area that are not yet shown and (b) showing the Sampling Building. The drawings will be put into 3D before the next Subgroup Meeting.
- The smolt return flumes need to be revised to show the recovery area to be behind the crowders in the downstairs holding tanks.

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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.	Pending completion of CFD runs with nets.
No.	SUMMARY OF NEW SWIFT ACTION ITEMS (from July 16 <sup>th</sup> , 2008 Meeting)	STATUS
S47	R2 (Christensen/Postlewait) Put together a draft Study Plan for testing the AquaScan fish counters.	Pending.
S48	R2 (Christensen) Investigate how sensitive the facility hydraulics are to debris clogging the fish screens. Results will be presented at the next Subgroup Meeting.	Pending.
S49	(All) Review the M&E memo put together by Al Giorgi and Kevin Malone and provide feedback to the group.	Pending.
S50	(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.	Pending.

Adjourn 1:30 PM.