

FINAL - Meeting Summary Notes
Lewis River License Implementation
Merwin Trap Engineering Subgroup
March 7, 2006
Merwin Hydro Facility, Ariel, WA

Subgroup Participants Present: (11)

Sean Flak, PacifiCorp
Will Shallenberger, PacifiCorp
Frank Shrier, PacifiCorp
Arnold Adams, PacifiCorp
Pat Phillips, WDFW
Pat Klavas, WDFW
Eric Kinne, WDFW (via phone for part of the meeting)
Curt Leigh, WDFW (via phone)
Bryan Nordlund, NOAA Fisheries
Monty Nigus, Black & Veatch (via phone for part of the meeting)
Dana Postlewait, R2 Resource Consultants

Handouts (Distributed at the meeting):

- o Agenda.

ADMINISTRATIVE

Welcome of attendees and review agenda.

Introductions: Pat Phillips (WDFW Hatchery Manager for Lewis River Hatchery and Speelyai Hatchery) participated in this meeting for Erik Kinne, who was not able to attend in person.

FERC License Schedule Update: Frank Shrier provided another license schedule update. The “issuance of license” date is now anticipated from mid-June to mid-July, 2006.

Review of Last Meeting’s Action Items: See status summary table below. Additional discussion is provided below the table.

NEW ASSIGNMENTS (FROM FEBRUARY 7TH MEETING):	STATUS:
Will Shallenberger will provide an update on PMF needs and preliminary alternatives to address them at the next meeting.	Complete – Agenda item for this meeting.
Design Team (Shallenberger, Nigus): Complete permit drawings for the Swift Canal upper release structure - pending flow recommendations from WDOE, and further definition of downstream spawning area requirements.	Complete for this item – Agenda item for this meeting.

PacifiCorp (Flak, Shrier): Submit 30% fish trap safety improvements to ACC.	Complete – distributed 2 weeks ago. Update an agenda item for this meeting.
Design Team (Flak, Nigus): Check ladder capacity in fish trap.	Complete – agenda item for this meeting.
Design Team (Nigus): Complete 60% design for fish trap safety improvements.	Complete – agenda item for this meeting.
Subgroup (Kinne, Nordlund, Leigh, Klavas, Shrier): provide one last critical review of Attachment 14 – the Tank Loading Plan. Confirm that 4 small tanks are sufficient for the program. Desire is to finalize this document and add a summary recommendation memo for presentation to the ACC. Please email comments to Kim McCune, with a cc to Dana Postlewait.	Complete – agenda item for this meeting.
Sean Flak: confirm at what spill flows the bridge is typically closed to access the proposed sorting facility site.	Pending – action item for next meeting.
Eric Kinne: confirm surplus station concepts as described above, in conjunction with a review of the latest tank loading plan.	Complete – agenda item for this meeting.

Additional Comments on Last Meeting’s Action List:

Other discussions related to past topics and meeting record include:

1. Bryan Nordlund stated that NMFS desires to begin discussions to define trap efficiency standards for the Merwin Trap facility. The group agreed that this should be an agenda item for a future meeting. See the action item list.
2. Relative to item #1, Frank Shrier provided an update at the start of the meeting relative to the fish tracking studies currently underway and how they may be applied to performance standards. Currently there is no Spring Chinook data. By May he should have Winter Steelhead, Summer Steelhead, and Coho data. Due to operational constraints, he was not able to get any Winter Steelhead data with Unit #1 off. As an action item, Frank will coordinate with Pat Phillips to utilize used tags to study 10 to 15 fish ASP with Unit #1 off (see action list).

Frank also summarized the general observations of fish behavior based on the preliminary data analysis so far. The Steelhead and Coho show similar behavior, they all enter the tailrace and pass the Yagi antenna, and once these fish enter the tailrace the existing trap is collecting about 80% of the fish. There does not appear to be a big difference in capture rate when Unit #1 is on or off; however, the fish do show a tendency to “tighten up” and school together more when Unit #1 is on. Frank stated that he’d like to define a more permanent system to monitor adult trap capture efficiency.

Bryan N. asked if acoustic tags would show any benefit. Frank reported that he believe there are too many bubbles and air in the tailwater for acoustic tags to register accurately, and would continue to look for other means for testing.

Frank will plan on providing a more complete Interim Presentation on the fish studies sometime in May, prior to release of the formal study results scheduled for July or August.

Comments and Finalization of February 7th Meeting Notes: The February 7th meeting record can be finalized with one edit as follows.

Page 10 – Paragraph under heading “Fish Entrance Options”. Strike the first part of the sentence reading “These alternatives would be major construction efforts and are note the desired approach; however”. Begin the next sentence with “It was acknowledged that the trap monitoring...” A final meeting record with this change was distributed by Kim McCune on 4/10/06 via email.

SWIFT CANAL UPPER FLOW RELEASE PROJECT

Will S. and Frank S. provided an update on this project. Last month WDOE provided input on their desire for spawning gravels in the channel. There it a meeting scheduled for March 8th where he expects to have further guidance on the flows and spawning gravel specifics. The flow regime and desired flows at each release structure (see last months notes for a more thorough brief) need to be decided first, as they will drive the design process. There are several parties providing input (WDOE, Tribe, DNR, etc.), so this is a topic to be decided outside this group.

The group had a lengthy discussion on this topic, with the following concerns noted, and further reported in the action items at the end of this meeting record.

1. Need to define whether the property is on DNR land, in order to confirm the project is within the initial goals of the current “use permit”, or if a permit modification application is necessary. Will S. will follow up on this item.
2. Pat Klavas and Curt Leigh wish to be involved in the channel design. Concerns are:
 - Want to provide a stable channel, gravel mix/gradation suitable for spawning, and a design that will be stable over the long term.
 - Pat will coordinate with WDOE to provide a desirable spawning gravel specification.
 - Identify access routes for maintenance and construction, and protect to the extent possible the established riparian vegetation.
 - Show both the maintenance and construction areas on the permit drawings and on the final design drawings so they can be staked out and flagged to limit access prior to construction.
 - Identify spoil location for excavated material. Avoid filling wetlands, near sensitive areas, etc. Curt would like to review the earthwork plan for the permit drawings.
3. Bryan N. asked if there was a maintenance fund or other means identified as part of the Settlement Agreement to provide for repair if the channel washes out during spill. Will

noted that the upper channel is likely to be flooded, but not necessarily washed out. The lower channel is likely to be protected. Frank explained that the SA didn't anticipate a spawning channel associated with the upper release structure, but that PacifiCorp had agreed to provide spawning habitat if it doesn't significantly affect the project cost. PacifiCorp has a desire to minimize excavation of this feature to reduce excavation costs associated the project. Overall, there is more design work to be done on this feature. More information will be available for discussion with the design once the desired release flows are provided.

SWIFT PMF AND DOWNSTREAM FISH PASSAGE UPDATE.

Will Shallenberger provided a brief overview of the Swift Downstream Passage work, to be addressed per Settlement Agreement (SA) 4.4.1, and its relationship to the new FERC requirements to evaluate and address the Probable Maximum Flood (PMF) for Swift Dam. The overview was intended to give the group notice that PacifiCorp intends to begin work on this SA article, and will more formally begin consultation with this effort at the next engineering subgroup meeting. SA 4.4.1 calls for construction of a Modular Surface Collector to provide downstream fish passage at Swift Dam. The SA language is quoted below:

4.4.1 Modular Surface Collector. By six months after the fourth anniversary of the Issuance of the New License for the Swift No. 1 Project or the Swift No. 2 Project, whichever is later, PacifiCorp shall construct and provide for the operation of a passage facility at the Swift No. 1 Dam, including a modular surface collector, to collect, sort, tag, and transport downstream migrating Transported Species (the "Swift Downstream Facility"). PacifiCorp shall provide for the downstream transport of migrating Transported Anadromous Species to below Merwin Dam to a Release Pond (Section 4.4.3). Unless otherwise directed by USFWS, bull trout collected in the Swift Downstream Facility shall be transported to Yale Lake, except that bull trout with a smolt-like appearance, as determined by PacifiCorp (using methods devised in Consultation with the ACC), shall be transported to a location determined by USFWS below Merwin Dam. PacifiCorp shall Consult with the ACC concerning the precise location of the passage facility, which PacifiCorp shall incorporate into the design to be approved by the Services as provided in Section 4.1.2.

PacifiCorp shall provide for the tagging of a statistically valid sample of the fish transported as appropriate to accomplish the monitoring and evaluation objectives set forth in the M&E Plan (Section 9), the methodology of such tagging to be determined by the Licensees in Consultation with the ACC and approved by the Services. PacifiCorp shall provide for the operation of the passage facility for the remaining term of the New License for the Swift No. 1 Project.

PacifiCorp shall provide the 90% preliminary designs to the ACC by the first anniversary of the Issuance of the New License for the Swift No. 1 Project or the Swift No. 2 Project, whichever is later. PacifiCorp shall submit final designs to the Commission upon approval by the Services, subject to Section 15.14, but not later than six months after the first anniversary of the Issuance of the New License for the Swift No. 1 Project or the Swift No. 2 Project, whichever is later.

Due to new FERC PMF regulations and evaluation methods, PacifiCorp has determined that measures will be required at Swift Dam to address the new PMF requirements. These measures could include the construction of additional spillway capacity, a dam raise, or a combination of both. Last June PacifiCorp conducted an internal workshop and performed a subsequent study to examine and preliminarily evaluate options to address the PMF needs. Given the potential opportunity to take advantage of some of these PMF alternatives to also include fish collection and passage facilities, the study also identified a series of downstream fish passage options for the dam: both in combination with the PMF measures, and as stand-alone facilities that could offer alternative approaches to the surface collector concept.

More information will be provided at the next meeting; however, the results of the study indicated that a floating surface collector (FSC) is still the preferred path for PacifiCorp to provide the fish passage facilities. The primary driver to be considered is the reservoir fluctuation to be accommodated with the downstream passage facilities (fluctuation of up to 100 feet). The facility envisioned will be something like the FSC currently under design for Puget Sound Energy's Baker Project – a floating barge with pumps, and a converging fish screen to dewater the attraction flow.

One technical concern identified in the study is the feasibility of a guide net leading to the FSC if it is located in the intake channel, as shown in the relicensing study concept drawings (Technical Study AQU5). Based on updated bathymetry data, it appears that the velocities in the intake channel are likely too high to place a guide net in this location. Bryan Nordlund commented that a perceptible velocity near the desired location is usually good, as fish may be able to find the FSC without any nets. This issue is highly site specific, and will need to be addressed further during the development phase for the fish passage facilities.

Frank Shrier briefly summarized the fish studies that were conducted during the relicensing effort. There were some juvenile tracking studies, performed with radio tags on coho. Most fish (about 80%) migrated down the reservoir, typically along the left bank and schooled up at the face of the dam. There was a 2.8 day average travel time for the 12 mile reservoir. Frank noted that one coho smolt was observed to traverse the entire reservoir four times in three days. There will be a more formal description of these studies in the future, and the group noted that more studies may be warranted as part of the design process. The intent with this briefing was to communicate the positive signs that fish are able to find their way through the reservoir towards the dam.

Will S. stated PacifiCorp's goals to begin the design effort, with a hope of performing the 30% design this summer. Key issues to be addressed in the next several months include: define what to build, where it should be located, and work out the sorting facilities necessary to support the SA program. Many items will need to be performed concurrently.

Bryan N. cautioned the group on pursuing a "modular" concept for prototype development, i.e. assuming passage results from a small attraction flow could be extrapolated to project the passage efficiencies of a production type system. He noted that it could be more beneficial to start with a prototype flow amount substantially the same as what would be anticipated for a production system, and allow sufficient flexibility in design to fine tune the hydraulic conditions

at the entrance to best facilitate fish collection and retention. He cited Chelan PUD's efforts with Rocky Reach forebay surface collector, where the prototype entrance hydraulics were adjusted over a period of 6 years before collection and passage efficiency were optimized. He also asked for a summary review of the Baker development work. Goals would need to be clearly defined, and consensus reached that a modular prototype would represent the true facilities potential.

Will S. noted that the timeline for the design and construction of the facility is tight, and that more fish studies and/or prototype development could compromise the SA schedule. As such, PacifiCorp would need the agencies support with the ACC to work with a revised schedule if more study or prototype development were pursued. Bryan noted that he would be inclined to support a prototype approach, such as plumbing an attraction flow to the spillway to see if fish would enter this type of a bypass system with a given flow amount. Obviously, more details will be required, and this issue will be discussed more as this project begins.

Frank observed that the sorting facilities and disposition of each species will need additional development. For example, USFWS will need to direct the group on where any bull trout collected in the facility should be released (back in the lake, or downstream). Placement of steelhead kelts and sea run cutthroat will also need to be addressed. At this time a bar grader is envisioned as one component of the sorting facility. Additional work and a sorting process diagram and a facility criteria document (similar to the Merwin Trap fish process diagrams) will need to be performed to help define these issues.

The next meeting will devote more time to the downstream passage work at Swift.

MERWIN FISH TRACKING STUDY

Frank S. presented an update of the tracking studies currently underway. The radio antennas are all back operating after the damage due to the high flows reported last meeting.

For the Winter Steelhead, all but 18 of the 100 fish released have been accounted for. Frank feels that this is a good retrieval percentage for the study. Tags are ordered for the Spring Chinook, and Frank & Pat will work together to get these tests underway.

Bryan N. brought up the topic of the need to develop numbers and protocols for the Adult Trap Efficiency (ATE) standard, to be used for long term facility performance monitoring. He has been discussing this issue with Michelle Day. Frank noted that there is no timeline for this work defined in the SA; however, he agrees that work should begin on this effort as soon as practical. The group's preference is to hear Frank's preliminary report on the existing trap's collection efficiency to be presented in May, and to work from there. Additionally, the need to incorporate ATE goals into the best population life-cycle models was discussed. It was generally accepted that it will be easier to reduce losses with the collection of upstream migrants at the trap, than to control losses with the downstream collector at Swift. As such, a high performance standard is desirable at the upstream trap.

Bryan noted that Upstream Passage Survival standards (UPS) on the mainstem upper Columbia River dam fish passage facilities are at least a 98%, and some can consistently achieve 100%. He also noted that since fishway attraction is tougher to achieve on the mainstem Columbia than

it would be at a dam such as Merwin with its compact tailrace, 98% UPS should not be hard to accomplish at Merwin when combining handling survival and ATE for the new trap. These types of numbers should be considered as this process moves forward. Two questions that will need to be addressed include:

- 1) What is the ATE goal, and desired outcome.
- 2) How does the existing trap operate relative to this goal?

Frank offered to provide additional information to the engineering subgroup on the existing fish population models (there are three: 10,000 Years Institute model, by Janna Kaje, Kevin Malone's model, and Cramer's model), and to outline a process by the next meeting if possible (probably using Cramer's model as it was the latest) to begin definition of the ATE goals.

FISH TRAP SAFETY IMPROVEMENTS

Sean Flak reviewed the status of the fish trap safety improvements. PacifiCorp sent WDFW an updated letter of proposed measures on February 21st with the 30% design drawings, and is currently waiting for comments. They are proposing limiting operations to 5,500 cfs (corresponds with chest level) when personnel are in the trap. Pat Phillips noted that he's read the letter, and would work with Sean to identify any comments.

Sean also reported that he had checked on the structural rating for the access ladders into the trap. They will hold 22 people, so structural concerns as a limiting factor for egress are not an issue with the ladders: typically there could be two people on the ladder, and two on the platform.

Pat is working with Cindy Schultz on tag-out procedures, and Sean will send input on the tag-out protocols to be incorporated into the safety plan.

Regarding trap operation, PacifiCorp will work with WDFW to develop protocols for collecting fish when flow exceeds 5,500 cfs (for use until the new trap improvements are complete). The group discussed the potential to close the Merwin Trap for fish collection when flows exceed the 5,500 cfs limit, and to perhaps collect fish at Lewis River. There are approximately 40 days per year where flows will exceed the 5,500 cfs limit; however, it may be possible to temporarily reduce plant flows so this number may be more like 20 days per year. The critical period is for collection of Spring Chinook, as they don't tend to enter the hatchery ladder. Pat reported that the hatchery typically collects only 3 to 5 Spring Chinook per year.

Frank will coordinate with Holly once WDFW and PacifiCorp are in agreement with the safety improvements, and will take the lead to prepare a minor amendment to the SA for approval by the ACC to adopt the proposed safety improvement measures. Sean reported that the 60% design is the next step, anticipated in the next work period.

FACILITY DESIGN CRITERIA. SA 4.2 MERWIN TRAP, AND SA 4.3 MERWIN UPSTREAM COLLECTION & TRANSPORT FACILITY.

Dana Postlewait gave a status summary for the Design Criteria Documents. The documents have not been modified since the last meeting, to give group members time to review the

recommendations. Eric Kinne joined the meeting by phone at this point, and he and Pat Phillips indicated their concern that one more large holding tank may be necessary.

Frank Shrier drew a sketch that outlined the entire sorting process for the limiting month of September, as it is envisioned on the spreadsheets in the criteria documents. Up to 1,500 fish may need to be handled in a single day (say 6 hours). The sketch is included on the next page as Sketch 1.

After the group worked through the development of the diagram above, it was apparent that the last remaining issue is to agree upon a fish surplus protocol: specifically, whether the surplus process should be performed at the Merwin Trap, or at Lewis River Hatchery. This decision will have impacts on either facility, as the surplus station will require killing fish, kill fluid collection and treatment facilities, and organization of holding and cold storage for the fish (for up to one day) for buyers.

There was a long and interactive discussion regarding the number of fish to design to, staffing needs, number of trucks, tank and tote needs, impacts to the surplus station facilities, and some detail on how the surplus station will actually function. The group agreed that the facility should be designed to accommodate 2,000 fish per day in September. The design of the surplus station will need further development, but it is clear that a coded wire tag reader will be needed, and surplus fish will be placed on one of two totes:

Tote 1 – no tag, surplus to kill station.

Tote 2 – CWT, take heads, freeze, and transport to WDFW's Olympia office for tag reading.

Pat noted that if possible it would be helpful to have fish counters at the entrance weirs to the trap, to help with staffing needs and to know when it is time to work up fish. This will be considered in the future depending on feasibility.

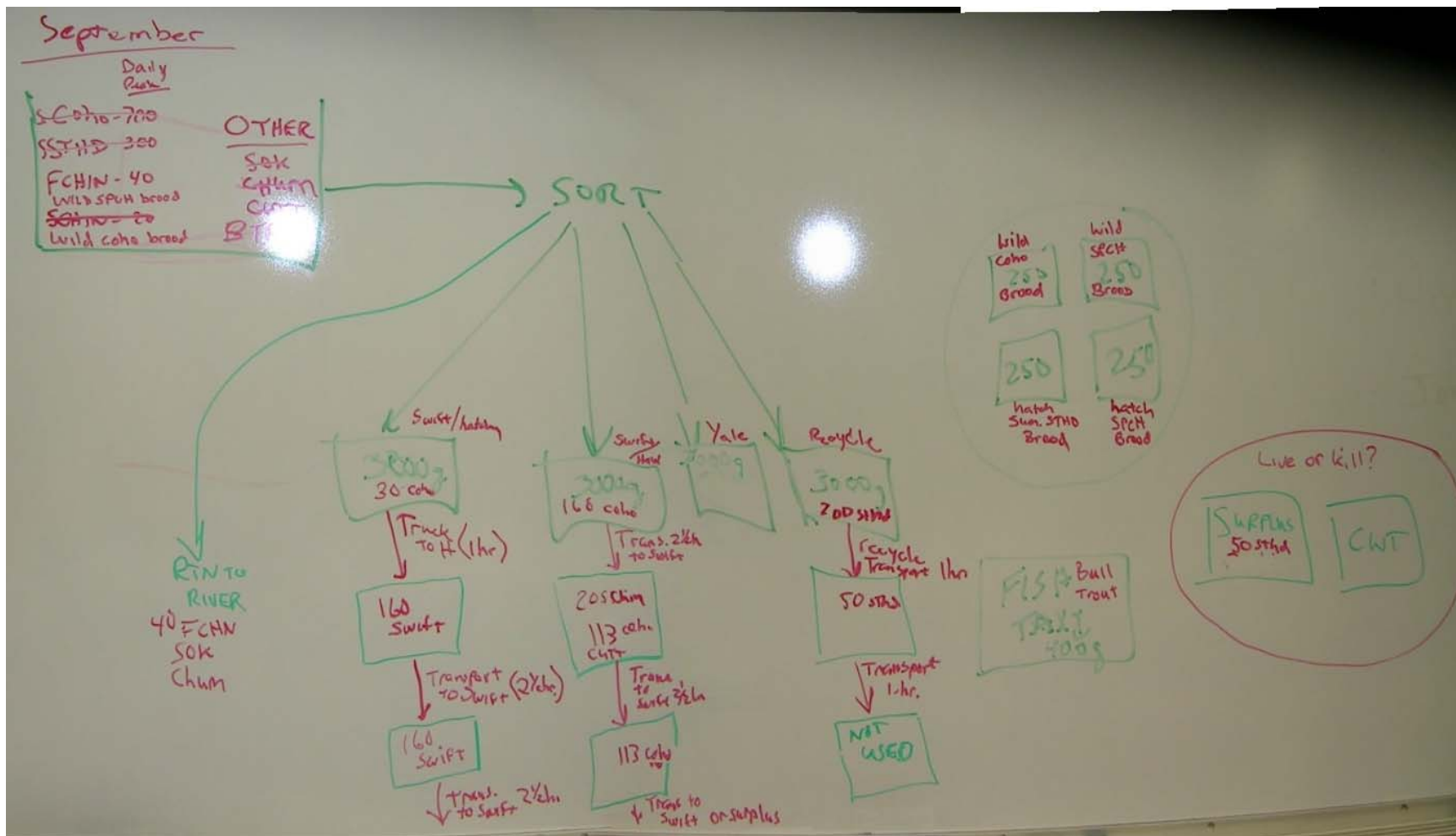
This discussion ended with an action item for both WDFW and PacifiCorp to review desirable surplus protocols internally with their organizations, and to hold a meeting outside of the engineering subgroup to decide on the following:

- Live haul surplus fish or kill at Merwin trap and transport via totes to Lewis River Hatchery. Agree on where the surplus station facilities should be located (Merwin Trap or Lewis River Hatchery).
- Define a handling protocol for the surplus fish.
Discuss whether an additional large tank or fish truck is required.
- Agree on the 50 to 100 fish/day maximum surplus number.

PacifiCorp and WDFW will report back with this information at the next subgroup meeting. Once this decision is made, it will be possible to complete Attachment 14 (the tank loading spreadsheet),

The other action item was for Eric Kinne and Pat Phillips to review Attachment 15 to the criteria document, the sizing of the pre-sorting tank. Dana also agreed to create a similar calculation to size the recovery tank.

Once these items are complete, the criteria document can be completed unless any other comments are reported at the next meeting. A summary memo recommending adoption of the criteria document can then be created, for reporting to the ACC.



Sketch 1: Sorting Process for September

NEXT STEPS AND OTHER ITEMS

As the criteria document needs are on the critical path and decisions need to be made, the remaining agenda items were tabled until the next meeting, or further into the future.

The next design priorities will be:

- Develop the fish trap safety improvements to the 60% design level,
- Development of the facility programming and preliminary layout for the sorting facility, (after criteria document memo is completed), and
- development of design concepts for the fish trap entrance improvements at the powerhouse.

NEW ASSIGNMENTS (FROM MARCH 7 TH MEETING):	STATUS:
PacifiCorp (Shrier): Coordinate with Pat Phillips to do W-SH testing with Unit #1 off with 10 to 15 re-used radio tags. This work will help to provide a complete data set for W-SH, as the original test were not able to be conducted with Unit #1 off.	Pending
PacifiCorp/R2/B&V: Provide agenda item for future subgroup meeting to discuss development of an efficiency standard for the Merwin Trap improvements.	Pending
PacifiCorp (Shrier/property group): Clarify that work proposed for upper release channel, other work proposed in the bypass reach is compatible with DNR, as they own some of the property. Goal is to notify DNR folks early enough to work out any property issues in time for permitting and future construction.	Pending
PacifiCorp/B&V (Shallenberger/Shrier/Nigus): Show construction access and future maintenance access on the permit drawings for upper release / bypass reach work. Bring this to future subgroup meeting for discussion (or distribute prior to meeting). Goal for WDFW is to preserve to the extent possible established riparian zones within the construction area.	Pending
PacifiCorp/B&V: Coordinate design of spawning channel with Pat Klavas (WDFW).	Pending
WDFW (Klavas): Coordinate with DOE, and provide PacifiCorp with guidance on spawning gravel specification (washed vs. well graded, and recommended gradation to meet goals).	Pending
WDFW (Leigh): Provide review of gravel disposition, placement of fill, etc. for channel work, once draft drawings are updated. Goal will be to prevent filling of wetlands, sensitive areas, etc., including access (construction and future maintenance), disposal areas, etc. (Note, this item correlates with the above three action items).	Pending

PacifiCorp (Shallenberger): Provide update to group on Downstream Passage project at Swift.	Pending
PacifiCorp (Shrier): Review and report to subgroup on what is needed to develop the Adult Trap Efficiency (ATE) goals. Outline a process by the next meeting that seems feasible (potentially based on Cramer's model).	Pending
PacifiCorp (Shrier/Flak): Work out details of a minor amendment to the SA to address interim safety improvements to the fish trap. Frank will talk to Holly.	Pending
PacifiCorp (Flak/Adams): Revise text in draft letter regarding redundancy of electrical systems for fish trap safety improvement alarms.	Pending
PacifiCorp and WDFW: Internally consider options on how best to surplus fish at the Merwin Trap (alive or killed). Once each organization's preference is developed, Shrier and Kinne to meet prior to next meeting, to work out details, and ripple affects on the design (number of tanks, trucks, etc.).	Pending
PacifiCorp/R2 (Flak, Postlewait): Draft letter recommending number of tanks and rough configuration of the facility based on last several meetings and technical memo attachments (contingent on finalization of goals developed in the above item).	Pending
R2 (Postlewait): Once above two items are done, provide final edits to Attachment 14 showing number of tanks and sizes.	Pending
R2 (Postlewait): Prepare draft calc showing size needed for recovery pond, for discussion at next meeting.	Pending

FUTURE MEETING DATES

- The next meeting is scheduled for April 12th at WDFW's Vancouver office.

Meeting was adjourned at 2:45 pm.