

**FINAL - Meeting Summary Notes**  
**Lewis River License Implementation**  
**Engineering Subgroup**  
**May 21, 2009**  
**Fish Passage Meeting Notes**

**Subgroup Participants Present: (15)**

Arnold Adams, PacifiCorp  
Will Shallenberger, PacifiCorp  
Frank Shrier, PacifiCorp  
Bryan Nordlund, NOAA Fisheries (NMFS)  
Eric Kinne, WDFW  
Neil Turner, WDFW  
Curt Leigh, WDFW (via phone and web conference)  
George Lee, Yakama Nation  
Monty Nigus, Black & Veatch  
Brian Friesz, Black & Veatch  
Dennis Anderson, Black & Veatch  
Dana Postlewait, R2 Resource Consultants  
Peter Christensen, R2 Resource Consultants  
Suzanne Picard, R2 Resource Consultants  
Ken Bates, Kozmo

**ADMINISTRATIVE**

Welcomed attendees and reviewed agenda.

**General Meeting Handouts:**

Distributed via email on 05/19/09 by Kim McCune:

- Meeting agenda for 5/21/2009 subgroup meeting
- Copies of the draft 3/19/2009 subgroup meeting notes

Distributed at meeting 5/21/2009 (paper copies):

- Meeting agenda for 5/21/2009 subgroup meeting
- Copies of the draft 3/19/2009 subgroup meeting notes

**FUTURE MEETING DATES**

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

- July 1, 2009
- August 18, 2009 (new date, rescheduled due to conflicts, meeting may be held in Olympia at the NMFS office, meeting location to be confirmed)
- September 29<sup>th</sup>, 2009
- November 5<sup>th</sup>, 2009
- December 17<sup>th</sup>, 2009 (last meeting before 100% Submittal Deadline)

**OTHER ADMINISTRATIVE ITEMS**

- No other general administrative items.

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**o MERWIN TRAP PROJECT**

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**Handouts**

- o Merwin Trap & Haul Phased Approach Decision Flow Diagram and Phase Timelines
- o 60% Design Report Comments and Responses
- o Computer Rendering of an overview of the Merwin Trap Facility
- o Drawings – Drawings and renderings of the Pump Station and Intake
- o Drawings – Drawings and renderings of the Fish Ladder
- o Drawings – Lift and Conveyance Entrance Crowder
- o Trap Closure Procedures, updated memo
- o Drawings – Direct Truck Loading Details
- o Drawings – Drawings and renderings of the Fish Lift and Fish Flume
- o Merwin Trap Pre-Sort Pond Sizing Calculations
- o Drawings – Drawings and renderings of the Sorting Facility
- o Drawings – Fish Truck Design Concepts

**Presentations**

- o No PowerPoint presentations.

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

No.	SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)	STATUS
M103	All – Review the draft Phased-Approach Flow Diagram handed out by Arnold Adams and provide feedback at the next Subgroup Meeting.	Done today
M116	All – Review entrance pool diffuser concepts (diffuser location and using an orifice to replace the first vertical slot to help propagate a clear jet into the entrance pool, past the diffusers)	In progress, hydraulic profile will be included in 90%.
M117	R2/Kozmo (Postlewait/Bates) Optimize diffusers as high as possible in the entrance pool and work through different ladder hydraulic scenarios for presentation at next meeting.	Pending
M118	PacifiCorp (Adams) Complete Failure Analysis to identify which emergency situations are most worth formulating contingency plans for.	Pending

M119	PacifiCorp (Shrier) Ask the ACC if they feel the direct loading concept is necessary.	Done, direct loading is necessary
M120	R2 (Postlewait/Danskine) Look at using the Swift Hopper's plunger design for the Merwin Hopper.	N/A, new design supercedes plunger concept.
M120	R2 (Postlewait) Verify jet trajectory calculations and look into curving the funnel shield to match the jet trajectory on the fish truck.	Done today

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

There were no comments on the Merwin portion of last meeting's notes.

## MERWIN TRAP AGENDA TOPICS

### Discuss General Topics

- o O&M/Safety workshop – Monty Nigus noted that PacifiCorp and the design team participated in an O&M/Safety workshop with a safety consultant from B&V, the design team, and PacifiCorp’s project, safety, and operations teams. Several safety, access, and maintenance items were identified and addressed, and will be addressed for the 90% design.
- o Phased Timeline – Arnold distributed a copy of the current Merwin Trap & Haul Facility Phased Approach Decision Flow Diagram along with new accompanying timelines. Feedback on the Decision Flow Diagram included comments about:
  - Moving the “Was failure attraction flow related” decision diamond into Phase 1.
  - Adding a “Can operations be adjusted?” diamond to Phase 1. (Clarification – the word “operations” in this context describes trap operations, not hydro operations. It may be beneficial to delineate what adjustments could be made to trap operations at each phase.)
  - Rephrasing or revising the “Dispute resolution selected?” diamonds in some way as to not imply triggering an official dispute resolution process through FERC, but rather to encourage an efficient and quick transition from one phase to the next while meeting all of the requirements of the Settlement Agreement. Dispute resolution is available at any time per the Settlement Agreement, therefore may not need to be mentioned in the chart as a specific action.
  - Research to date indicates that each implementation phase will need to be permitted separately through the state and county.
  - Phase 2 can be implemented with minimal impact on trap operations, though may trigger a short (5 day?) shutdown during construction. Phase 2 could take more than 1 year to implement.
  - Generally, two years of study data will be available to kick the project from Phase 1 to Phase 2. Exceptions to this would be if either (a) preliminary studies showed a very clear problem with trap operations after just one year or (b) if the biological evaluation after the second year was still somewhat inconclusive and an additional year of data was needed to identify to best course of action.
  - Phase 3 is a higher impact than Phase 2 because it requires a significant amount of in-water work. However, it still does not require a long ladder outage.
  - Long lead item equipment is one key limiting factor on how fast each phase can move forward.
  - Arnold and Frank will revise the diagram to reflect the group’s feedback and will distribute an updated draft prior to the next meeting.
- o 60% Design Report Comments – Written comments were received from both NMFS and WDFW. Arnold handed out PacifiCorp’s responses, and the group stepped through the 16 comments and comment responses. Many of the comments have been addressed in

the most recent design updates, to be presented later on in the meeting today. Highlights of this discussion include:

- Comment 9 – Bryan Nordlund mentioned tribal concerns about providing a conceptual framework for volitional passage into Merwin Reservoir in the future. Provisions for a future retrofit from the sorting facility will be provided in the 90%.
- Comment 14 generated an action item to consolidate the data the group has on Electro-Anesthesia and its impact on fish health and to follow up with Michelle Day on how to best address her concern about these impacts at the Merwin Trap facility. The group unfortunately has no good data on how electro-anesthesia affects the gamete viability and ultimate survivability of wild salmon, only data on hatchery fish. A site visit to the Cowlitz Salmon Hatchery to view their new Smith-Root electro anesthesia system in action is a possibility. A water quality monitoring plan will be necessary as part of regular O&M procedure to mitigate the impacts of water conductivity on electro-anesthesia. The intent with this comment is not to change the design approach, as long as it can be retrofitted if necessary in the future.
- Discussion around Comment 16 cleared up a few misconceptions about the fish flume from the fish lift to the sorting facility. This flume is actually intended to be a closed pipe, not an open U-shaped flume. Since the pipe is enclosed, the team sees no real benefit to adding an access walkway along the length of the flume. The flume will be inspected using a small number of ports in the pipe, accessible by bucket truck, and located near the flume’s vertical supports. The team intends to use a camera to inspect the full length of the pipe, similar to the way crews would inspect a buried sewer line. The pipe material and lining has not yet been selected, but pipe sections will be replaceable to address corrosion and pipe smoothness concerns. NMFS pointed out the need to incorporate a regular inspection plan as part of the O&M procedures.
- Frank Shrier expressed concerns about dissolved oxygen (DO) levels in the hatchery discharge flow. The Department of Ecology recently raised dissolved oxygen requirements from 8 to 9.5 ppm, making them more difficult to meet. Consequently, during warm weather and during some parts of the year, namely September and October, flow from the hatchery may not meet DO requirements for use at the trap. The hatchery will monitor water quality in the hatchery discharge this summer and fall to determine if this is an issue. Regardless, it is expected that flow from the hatchery will be appropriate to use at the trap for most of the year.
- Bryan Nordlund requested time to review and discuss the comment responses together with Michelle Day. He will provide an additional feedback to the group before or at the next ES meeting.

### **AWS Pump Station Update**

- o Dennis Anderson presented the current drawings and renderings of the pump station in 3D.
  - The piping arrangement hasn’t changed much since the last time it was presented to the group and it isn’t expected to change much in the future.
  - The team is currently working on resolving debris-handling issues at the pump station intake trash rack. Systems under consideration for use at this location include an air

burst system with a manual cleaning backup plan. Bryan Nordlund noted some concern for an air burst system's ability to clean a vertical rack.

- The pump bulkheads will do double duty as cofferdams during construction.

## **Fishway Update**

- o Dennis Anderson and Dana Postlewait presented current renderings and drawings of the fish ladder. Highlights of the group discussion follow.
- o Fish Counting
  - Because of the physical and mechanical characteristics of the ladder, the best location for a fish counter is at slot 4. Erik Kinne voiced concerns about having the counter at this location because the counter will not directly be able to determine exactly how many of the fish entering slot 4 will actually end up in the hopper during each crowding cycle. This issue will need to be dealt with operationally using trending information collected at the sorting facility. Specifically, if the counts at the sorting facility show hopper fish numbers increasing and closing in on the maximum hopper capacity, the crowding cycle time will need to be shortened to prevent possible overcrowding. Dana noted that additional details are being developed for the counting system.
  - The hopper will be equipped with oxygen tank(s) and air stones.
- o Ladder Access
  - Doors have been added to the ladder pools to allow staff access.
  - The recessed step ladder concept was felt to be acceptable by the team.
- o Water Supply
  - The ladder will have a pumped water supply. During Phase 1, two 30 cfs pumps will be located in Pump Bay 1, which will provide firm capacity to supply the 30 cfs FW1 ladder flow requirement. If Phase 3 is implemented, then a third pump with a 20 cfs capacity will be added (either in Pump Bay 2 or 3, depending on which pump bay is identified as the better location for Entrance 2 based on biological data). The total installed ladder pump capacity would then be 80 cfs, which satisfies the combined 80 cfs ladder flow requirement for FW1 (30 cfs) and FW2 (50 cfs). Providing firm pumping capacity for both fishways operating simultaneously is not considered necessary as FW1 can be considered as a backup for the other in event of a pump outage.
  - A ladder operation logic diagram will be provided as part of the 90% submittal.
- o Crowder Design – Dana Postlewait led the group through the current crowder design drawings.
  - The crowder will hang from and move laterally along guides anchored to the ceiling of Pool 4. The crowder pickets open and close in conjunction with the crowder's lateral motion by sliding in a set of UHMW guides recessed in the floor of the pool.

- The crowder has been designed to work even in fully submerged conditions. When fully submerged, however, the drive cable at the ceiling would be accessible to fish. The cable should be designed with a large enough clearance to avoid injuring or gilling fish. The group stated that the drive cable as shown would be acceptable.
- o Trap Shutdown for Emergencies and Maintenance – Dana Postlewait led the group through an updated version of the Trap Closure Procedures (draft document).
  - The goal of defining the trap outage procedures was to keep trap outages shorter than 1 day. Identifying which spare parts would be best to have on-hand to shorten outages was a part of this exercise. A complete list of recommended spare parts will be included in the 100% submittal.
  - Scenario A describes the shutdown procedure to provide personnel access to Pools 2 through 4 when there is only 1 Entrance. This procedure involves reducing the ladder flow from 30 cfs to 0.75 cfs for basic life support. Feedback from the group is needed to confirm this flow. This scenario, using the 0.75 cfs flow, would take less than an hour.
  - Scenario B describes the shutdown procedures to access the Entrance Pool while allowing fish to volitionally ascend the ladder prior to shutdown. The length of time required for this scenario is entirely dependent on how quickly fish move up through the ladder after the entrance is shut. It is estimated that it may take about half a day, but allowing fish to volitionally pass has the added benefit of minimizing fish handling and stress, and minimizes the need for personnel access to a confined space.
  - Scenario C describes the shutdown procedures to access the Entrance Pool without allowing for the volitional passage of fish that have already entered the ladder at the time the entrance is closed. This scenario is identical to Scenario B except fish that are already in the ladder would be manually collected and moved. This scenario is anticipated to be scheduled in advance during non-peak migration times.
  - Curt Leigh would like to see some sort of contingency plan set up in the event of an outage that lasts longer than 1 day. What measures can be taken to minimize migration delay if the trap is closed?
  - Due to the short time available prior to next submittal, Dana requested feedback on the updated trap closure procedures memo (included in today’s meeting handouts) from Bryan Nordlund and Eric Kinne within a week or so.

### **Lift and Conveyance System Update**

- o Direct Truck Loading – The ACC determined that a direct loading mechanism was a worthwhile safety measure. Dana stepped through the current drawings of the direct truck loading mechanism. This manual process should take about 15 minutes per load.
- o Conveyance Pipe Access Needs and Materials
  - The conveyance pipe is a 16” diameter pipe (standard available pipe diameter, inner diameter will be finalized in conjunction with structural design) with strategically located access ports. It was determined that no access walkway is necessary along



the length of this closed pipe. The ports will be accessible using a bucket truck. It was also noted that the pipe will have either bolted joints or Victaulic couplings to enable easy replacement if sections exhibit degradation of the pipe lining.

- Water velocities in the pipe are on order of 8 ft/s. Given that water velocity, the transit time for a fish is about 42 seconds, assuming the fish moves at the same velocity as the water in the pipe.

### **Sorting Facility Update**

- o Pre-Sort Pond Sizing – WDFW raised concerns regarding the fish numbers used for sizing the pre-sort pond. The numbers previously used to size the pond were based on historical returns to the Merwin Trap but since the trap will likely see much higher returns after its upgrade is completed and reintroduction has begun, those numbers may be too low and the resulting pond size is insufficient to handle the anticipated returns without additional staffing.
  - The team still needs to determine what the design fish numbers for the pre-sort pond shall be. This decision is critical path – the design team requested decision by next week. An action item has been created for PacifiCorp and WDFW to work together to determine an acceptable design fish number.
  - A determining factor in defining this fish number is whether or not the pond should be sized to prevent working long days during the peak run.
  - It is difficult to assess current daily numbers because historically the trap has only been emptied as needed, on order of twice or three times per week during the peak run.

### **Other Design Updates**

- o Dana Postlewait handed out updated 250 gallon fish truck drawings with the discharge jet trajectory shown as requested. Due to time limitations this wasn't discussed, but ES members were requested to review the drawings.

	<b>SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)</b>	<b>STATUS</b>
M116	All – Review entrance pool diffuser concepts (diffuser location and using an orifice to replace the first vertical slot to help propagate a clear jet into the entrance pool, past the diffusers)	In progress, hydraulic profile will be included in 90%.
M117	R2/Kozmo (Postlewait/Bates) Optimize diffusers as high as possible in the entrance pool and work through different ladder hydraulic scenarios for presentation at next meeting.	Pending
M118	PacifiCorp (Adams) Complete Failure Analysis to identify which emergency situations are most worth formulating contingency plans for.	Pending
<b>No.</b>	<b>SUMMARY OF NEW MERWIN ACTION ITEMS (from May 21<sup>st</sup>, 2009 Meeting)</b>	<b>STATUS</b>
M122	PacifiCorp (Adams/Shrier) Revise Phased Approach Decision Flow Diagram to reflect feedback received at the May 21 <sup>st</sup> Subgroup Meeting.	Pending
M123	PacifiCorp (Shrier) Consolidate available data on Electro-Anesthesia and its impact on fish health and follow up with Michelle Day on how to best address her concern about these impacts at the Merwin Trap facility. Determine if a site visit to Cowlitz Salmon Hatchery is in order to view the new EA system in operation.	Pending
M124	NMFS (Nordlund) Review and discuss 60% Design Report Comment Responses with Michelle Day, and respond to comments if necessary.	Pending
M125	NMFS/WDFW/PacifiCorp (Nordlund/Day/Kinne/Turner/Shrier) – Provide feedback on the 0.75 cfs life support flow proposed for use during Shut-down Scenario A.	Pending
M126	PacifiCorp/NMFS WDFW/NMFS (Shrier/Nordlund/Kinne/Day) Identify a realistic design fish number to use for sizing the pre-sort pond. This decision is critical path.	Pending
M127	All – review latest 250 gallon fish truck drawings, that were handed out at the end of the meeting.	Pending

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o **SWIFT DOWNSTREAM PASSAGE PROJECT**

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**Handouts**

- o Revised net layout drawings
- o Revised screen cleaning drawings
- o Fish truck loading facility and adult release concepts

**Presentations**

- o See discussion summaries below.

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

No.	SUMMARY OF PENDING SWIFT ACTION ITEMS (remaining from previous Meetings)	STATUS
S60	R2 (Christensen) Add capability for mounting oxygen tanks to the 250-gallon fish transport tanks.	Done, O <sub>2</sub> will be added to the transport cart on the bridge.
S61	R2 (Picard) Simplify backwash screen cleaner zones to minimize valving and evaluate cavitation potential at orifices located near the surface. Provide updated design by next meeting.	Done
S62	PacifiCorp (Shallenberger) Send out FSC access updates and other presentations to Bryan Nordlund and Michelle Day.	Done
S63	PacifiCorp (Shrier) Bring ACC up to speed on recent Swift and Merwin design changes. PacifiCorp will advise what level of participation, if any, by the design team is necessary at the next ACC meeting.	Done
S64	PacifiCorp (Shallenberger) Determine what kind of treatment, if any, will be necessary for the used MS-222 solution so that the team can move forward with the sampling area piping and drain design.	Done, no treatment necessary.
S65	(All) Determine a good design value for the maximum distance adults can be dropped for release.	Done, will be covered today.

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

Note 1- On page 10 of 13, the last bullet under the heading “Discuss Comments from Agency Representatives” includes the sentence “In the NMFS comments they recommended that consideration be given to making the impermeable barrier deeper”. Bryan Nordlund stated that although the NMFS comments discussed potentially deepening the impermeable barrier, his statement at the last meeting was that consideration should be given to a design that does not just allow deepening the impermeable barrier, but either deepening or shortening (in depth) the impermeable barrier portion of the guide nets.

## SWIFT DOWNSTREAM AGENDA TOPICS

### Net Configuration

- o Peter Christensen presented the latest version of the exclusion net drawings. He noted that the net design goal is to provide full exclusion, and reminded the group that the inability to position nets for guidance given the shape of the Swift Reservoir has been discussed in previous meetings.
- o The weighted line internal to the net has been relocated to the depth corresponding to the bottom of the FSC entrance. Spring 2008 reservoir elevation data has shown that the reservoir does in some years drop further than was suggested by the historical data used to previously locate the weight line.
- o Similar to the Baker FSC design, a series of floats and 20-lb weights maintain the submergence of the net support line when it is sunk. These weights and floats are meant to define a predictable lay-line for the sunken net.
- o Theoretically, the impermeable portion of the nets is intended to (a) better deal with algae growth and debris accumulation and (b) potentially enhance fish guidance. Currently under design consideration is the possibility of changing the design to either increase the impermeable layer to a depth of 30 feet and thereby eliminating the need for the fry-exclusion portion of the net or (b) adding the ability to cover up portions of the fry-exclusion net with impermeable barrier to allow for varying the exclusion depth.
- o Net materials – The group discussed the logic behind net material selection. Highlights of the discussion include:
  - The higher strength materials (Spectra, Dyneema) have an anticipated life span of about 20 years if left reasonably undisturbed. Nylon nets have a shorter lifespan, but can also be acquired at a fraction of the cost of higher strength materials.
  - Will Shallenberger said that PacifiCorp sees advantages with the use of the higher strength net material, both from an increased life-span and reduced maintenance requirements. However, given the significantly higher cost they would not want to make this investment if the net is seen as experimental and may need to be moved or reconfigured after the initial few years.
  - Frank Shrier noted that if the field studies show that fish are accumulating and holding in a particular area then supplemental localized guide nets could be installed to move the fish away. There should be no reason to move the main exclusion nets.
  - Bryan Nordlund said that he agreed with this approach and could not see a reason to relocate the exclusion nets. He also agreed that the use of high-strength net material for the exclusion nets was desirable.
  - Will Shallenberger suggested that the project criteria be rewritten to state that the initial exclusion nets will not be repositioned after installation.

## Screen Cleaning

- o Primary Screen Cleaners – The primary screen cleaners are now shown as horizontally sweeping units instead of vertically sweeping units.
  - The reasoning behind this change had to do with debris handling. The vertically-sweeping units originally included in the design would likely have removed some portion of the debris from the fish channel, however it is believed that this may have been a small percentage. The majority of the debris would still need to be handled further downstream, likely at the separators. Moreover, even if the vertical sweepers could have effectively removed the majority of the debris that had become impinged on the primary screens, the backwash cleaners on the secondary screens would still have washed debris downstream onto the separators. Since a debris management plan/system was going to be necessary at the separators regardless of the sweeping direction of the primary screen cleaners, it made sense to eliminate the added cost and effort of designing and maintaining the debris sluices at the primaries.
  - The horizontally-sweeping screen cleaners will be able to clean the screens in three sweeps.
  - A new lowered access walkway has been added along the entire length of the fish screens.
- o Secondary Screen Cleaners – Peter presented updated drawings of the secondary screen cleaner design.
  - The new lowered access walkway facilitates maintenance. It also provides access to the narrowest portion of the fish screens to allow for easier debris removal and control of the ramp weir.
  - The secondary screen cleaner design has been further refined to include smaller diameter spray bars and more easily removable submersible supply pumps. Also, cleaning zones have been combined where appropriate to reduce the number of valves and actuators.
  - Bryan Nordlund pointed out that it would be logical to run the port and starboard side secondary screen cleaners simultaneously to prevent debris from being transferred from one side to another instead of sent downstream.
- o Control Ramp Weir – Peter presented updated design drawings of the control weir at the entrance to the sorting area. The weir will be manually operated. The intention of the weir design is to provide a means of flow regulation into the sorting area (normally 4 cfs at 5 ft/s), though it was pointed out during the meeting that some short circuiting may occur when the weir is in the full-up (closed) position as flow could enter the secondary screens and then flow out into the space under the weir ramp.

## Fish Transfer from FSC to Fish Truck

- o Smolts will be transported off the FSC in the main hopper. Adults and fry will be transported off the FSC in 250-gallon tanks. In either case, the hopper or 250-gallon tanks will be mounted on the deck of a small trolley which will move on rails along the access bridge to the dam.

- The trolley moves at approximately 3 mph, requiring 3 minutes to travel the length of the bridge. The deck on the trolley will be able to handle either the main hopper or the smaller 250-gallon tanks.
- Oxygen tanks will be mounted on the trolley to quickly connect the hopper or 250-gallon tanks for the trip.
- Once at the dam, a bridge crane will hoist the hopper up onto a stand. Fish trucks will pull in under the stand to connect to the hopper. Fish will be moved from the hopper to the trucks using conventional water-to-water transfer.
- The bridge crane at the dam will also be able to lift the 250-gallon tanks onto flatbed trucks for transport.
- A truck turn-around will be located adjacent to the bridge crane on the downstream side of the dam, making backing of fish trucks unnecessary.

### **Adult Fish Release**

- o The group discussed potential adult release site concepts for varying reservoir conditions. Highlights of the discussion include:
  - Currently, adults are released at Swift Forest Camp. However, Swift Forest Camp is not an appropriate release site when the reservoir level is below 972 ft because that is the extent of the boat ramp, and it is difficult to access during snowy conditions. Currently two alternative sites are under consideration: Eagle Cliff and the north end of the dam.
  - Dam release – Releasing fish at the north end of the dam is a possibility, though there are some potential concerns. First, there is the possibility that fish may end up back in the FSC. Second, the dam release site is very far from the upstream end of the reservoir, exposing the fish to a long migration through the reservoir to reach the spawning grounds. To release fish at the dam, a simple fish release flume could be built. Fish are flushed into the funnel at the top of the flume, slide down the flume for about 20 feet, and then drop into the reservoir. It is still unclear how far a ripe adult can safely be dropped, although it was pointed out that when migrating upstream they jump six to ten feet and fall back into the water apparently without injury. The configuration of the fish release flume would limit the use of the dam release facility to periods of time when the reservoir is at or very near full pool. The accepted value for juveniles is a maximum impact velocity of 25 ft/s, but it is unclear how this would translate to ripe adults, some of which may hit the water tail-first, endangering their gills. It was suggested that we may not know the answer to this question until the facility is constructed and tested.
  - Eagle Cliff – It is possible to suspend a fish release pipe from the bridge at Eagle Cliff, but this will require approval of the US Forest Service. To release fish the release pipe would be lowered to the water surface using a manual crank. Fish would be discharged into the pipe and be released into the water. The pipe shown was 60 feet long, but the actual length will depend on the actual location of the primary channel. This location is easily accessible during snowy conditions and is a viable

option when reservoir elevations are low, making it a good alternative to Swift Forest Camp in winter.

- The group agreed that there is no one outstanding site. Feedback on this issue is needed from the ACC.

<b>No.</b>	<b>SUMMARY OF PENDING SWIFT ACTION ITEMS (remaining from previous Meetings)</b>	<b>STATUS</b>
S62	PacifiCorp (Shallenberger) Send out FSC access updates and other presentations to Bryan Nordlund and Michelle Day.	Pending
<b>No.</b>	<b>SUMMARY OF NEW SWIFT ACTION ITEMS (from May 21<sup>st</sup>, 2009 Meeting)</b>	<b>STATUS</b>
S66	R2 (Christensen) Refine Control Weir Design to reflect discussions about short circuiting and flow control.	Pending.
S67	PacifiCorp (Shrier) Discuss adult release concepts with ACC. More ideas and feedback are needed.	Pending.

Adjourn 3:15 PM.