

**BAKER RIVER FISH PASSAGE FACILITIES DESIGN
FISH PASSAGE TECHNICAL COMMITTEE
BAKER RIVER PROJECT, FERC NO. 2150**

West Coast Sea-Tac Hotel
18220 Pacific Hwy. S.
Seattle, WA 98188

9:00 a.m. - 3:00 p.m.
January 30, 2001

AGENDA

9:00 - 9:05	Edit Agenda
9:05 - 9:20	Review Meeting Minutes & Action Items
9:20 - 9:30	Review Design Concepts Matrix
9:30 - 10:30	Review Conceptual Designs from M-W
10:30 - 10:40	Break
10:40 - Noon	Review Conceptual Designs from M-W
Noon - 2:00	Conceptual Design Development/Questions
2:00 - 2:45	Technical Discussions – Information Needs <ul style="list-style-type: none">• Temperature• Hydroacoustics• Physical Modeling• Intake Flow Test - Baffle and Gulper Pumps• Lower Baker Bathymetry• Mark-Release-Recapture Studies• Lower Baker Barrier Net
2:45 - 3:00	Evaluation, Set Agenda & Dates for Next Meetings



DRAFT MEETING MINUTES
Fish Passage Technical Working Group

Mission Statement: To develop an efficient fish passage design for the Baker River Project.

Project: Baker River Project
FERC No. 2150

Written By: Nick Verretto

Meeting Date: January 30, 2001 (*after cancellation of 12/12/00 mtg.*)

Location: West Coast Sea-Tac Hotel, Seattle

Attendees:	Arnie Aspelund, PSE	Ed Meyer, NMFS
	Kevin Brink, PSE	Steve Fransen, NMFS
	Doug Bruland, PSE	Jim Stow, USFWS
	Cary Feldmann, PSE	Fred Seavey, USFWS
	Wayne Porter, PSE	Gary Sprague, WDFW
	Nick Verretto, PSE	Karen Kloempken, WDFW
	Clint Smith, M-W	Ray Eldridge, M-W
	Mort McMillen, M-W	

Purpose: The purpose of the meeting was to analyze conceptual design alternatives for replacement of juvenile fish passage facilities at the Baker River Hydroelectric Project and to discuss technical information needs related to continued design work.

Future meeting dates: none scheduled.

Agenda:

1. Review meeting minutes & agenda
2. Review action items & parking lot
3. Review design concepts matrix
4. Review M-W conceptual designs
5. Continue conceptual design development
6. Technical information needs
7. Meeting evaluation
8. Schedule & set agenda for next meeting

Review Meeting Minutes & Agenda

The minutes of the 19 October 2000 meeting were accepted as written.

New Action Items

- PSE - design Upper Baker fish baffle breaching and complete modification for 2001 smolt season

- PSE - design Upper Baker surface flow migration study and conduct (at least a pilot study) during 2001 smolt season
- PSE - seek FERC approval for fish baffle modifications
- PSE - complete Lower Baker bathymetric survey

“Old” Action Items

- Fred will bring Skagit Chinook length-frequency data.
- Fred will look at statistical variation from year to year in the gulper mark and recovery data (by September).
- Kevin Brink will analyze how fluctuation limits affect spill (# events, amounts, seasons, duration, flow-days by month), to facilitate discussions regarding limits to drawdown range and effects on screening designs. Kevin will report at future meeting.

Report on Completed Action Items

- Mort refined design options based on the options matrix with the filename ‘Options matrix 10_19_00.xls; Options classification’ (bottom tab; see attachment) for review at the January meeting (rescheduled after cancellation of the December 12th meeting).

Parking Lot

- Hydroacoustic data - Arnie
- Fish species run timing, emergence timing, length-frequency data – Doug, Nick
- Design strategy process
- Conceptual designs as they relate to costs
- Sediment studies

Review Design Concepts Matrix

Mort presented information related to the 26 downstream passage design alternatives for each of the reservoirs developed and evaluated in the last technical committee meeting (October 19, 2000). Alternatives included fixed, adjustable and floating designs. Three variables within these categories expand the possible alternatives. These variables are the design flow, limiting the reservoir elevation within a set range, and the design approach velocity. A short descriptive text and cost estimates with a range of plus 50% and minus 30% were also presented for each alternative. The benefits and disadvantages of each alternative were not presented in this document; rather, they are contained in the original Montgomery review document of May 2000.

Fixed Alternatives

- F.1 - conventional/full flow/0.4 fps
- F.2 - conventional/full flow/0.8 fps
- F.3 - conventional/full flow/limited reservoir/0.4 fps
- F.4 - conventional/full flow/limited reservoir/0.8 fps
- F.5 - conventional/60% flow/0.4 fps
- F.6 - conventional/20% flow/0.4 fps
- F.7 - conventional/60% flow/limited reservoir/0.4 fps
- F.8 - conventional/20% flow/limited reservoir/0.4 fps
- F.9 - MIS/full flow/high velocity
- F.10 - MIS/60% flow/high velocity
- F.11 - MIS/20% flow/high velocity

Adjustable Alternatives

- A.1 - conventional/0.4 fps
- A.2 - MIS/full flow/adjustable
- A.3 - MIS/60% flow/adjustable
- A.4 - MIS/20% flow/adjustable

Floating Alternatives

- FL.1 - conventional/full flow/0.4 fps
- FL.2 - gulper/60% flow/0.4 fps
- FL.3 - gulper/20% flow/0.4 fps
- FL.4 - gulper/10% flow/0.4 fps
- FL.5 - gulper/5% flow/0.4 fps
- FL.6 - MIS/full flow/high velocity
- FL.7 - MIS/60% flow/high velocity
- FL.8 - MIS/20% flow/high velocity
- FL.9 - MIS/10% flow/high velocity
- FL.10 - MIS/5% flow/high velocity

Steve discussed his frustration at the lack of a targeted design process, or of an undefined goal. It is unclear whether the group is attempting to collect fish, attract fish, or provide passage. For instance, existing information (e.g., past studies) is insufficient to identify limitations of the system or the effectiveness of the gulpers. We cannot currently even identify what 60% collection efficiency means. As an example, he noted the observed early smolt migration and apparent higher collection rates during last year's low pool elevations, and the inability to accurately interpret the data. He suggested that the group develop studies and information to steer the development process.

Cary agreed with Steve's suggestions, noting that PSE wants to address the biological issue, rather than solely or strictly complying with the prescription criteria if the conditions suggest that the prescriptions don't show promise.

Doug proposed that the group move away from the apparent position that fish will show up (i.e., behave in a fully predictable and controlled manner) if we construct a new facility, which is the equivalent of letting the fish accommodate us, rather than building to fish behavioral (i.e., biological) needs.

Mort stated that the group had identified the potential structural options, and now needs to move to an approach centered on biological requirements, operational risks and strengths while the biological needs are being developed.

Both Steve and Cary suggested that continued design work will be unproductive without answering many biological questions, and that downstream facilities design work doesn't answer critical questions needed to guide that very work.

Fred added that the facilities design evaluation needs to be revised based on a limited reservoir elevation range, and utilizing Kevin's reservoir management analysis. Mort responded that these options were covered under the existing analysis based on the lowest and highest cost alternatives. Ed suggested looking at options for spillway passage to make the route safer.

Review Montgomery-Watson Conceptual Designs

Twenty-one sheets of design drawings were presented by Montgomery Watson, and reviewed with only a few comments. Cary noted that Upper Baker fixed designs would entail building a box in 285' of water with 300' of screen upstream of the dam, or constructing a suspended penstock leading to the right bank shoreline and a land-based screening structure. He stated that these concepts would be potentially unconstructable and/or prohibitively expensive. The partial flow component in the Upper Baker alternatives is critical to overall facility cost.

Gary indicated that the WDFW prefers to use Lower Baker for increased productivity, rather than passage (?). At present, a trap-and-haul is the preferred alternative due to data that suggests that this transport method is more successful than other bypass methods. He would like to be able to capture kelts and resident fish (?).

Technical Information Needs

- **Temperature**
On-going data collection will continue for an undefined period.
- **Hydroacoustics**
The group requested that hydroacoustic study designs be developed for the 2001 smolt season at both Upper and Lower Baker reservoirs, in part to support the Upper Baker fish baffle modification.
- **Physical Modeling**
The need for construction of physical models for both Upper and Lower Baker dams and forebays to assist in design development was discussed. Steve advised that construction of a physical model is not always a safeguard against failure and would be premature. To illustrate this, he presented Cowlitz Falls downstream passage as an example where confidence in the final design was supported by physical modeling, yet fish behavior was not as anticipated and passage effectiveness was very poor. As a result of this and the biological information needs, he feels strongly that PSE should pursue the Upper Baker fish baffle modification and biological testing in 2001, if possible.
- **Intake Flow Test - Baffle and Gulper Pumps**
All agency representatives on the technical committee were in favor of pursuing the baffle breaching modification in 2001 over other options, primarily physical model construction and testing. Some of the information needs identified included: a mark-recapture study (check HTI and LoTech for tag availability in 2001), completing a pilot study
- **Lower Baker Bathymetry**
The group suggested completing this work in 2001, to support later design development and cost estimates for Lower Baker facility construction.
- **Mark-Release-Recapture Studies**
See below.
- **Lower Baker Barrier Net**
The group agreed that the net should be made fully exclusionary.

Additional information needs were discussed by the group, and included:

- Gulper collection efficiency
- Passage survival (reservoir and/or facilities?)
- Wild versus reared release differences
- Handling impacts and lack of control groups in previous studies
- Effects of attraction flows on gulper effectiveness
- Effects of trapping velocities in a gulper

- Direction of fish movement (i.e., identify using hydroacoustics, radio/sonic/acoustic tags, etc.) – follow fish released at various sites
- Surface attraction flow effects – need to conduct the baffle modification and migration tests supported by hydroacoustics, temperature and velocity profiling at various generation (i.e., flow) levels
- Design all studies with means of confirming that release groups are composed of volitional migrants

Meeting Evaluation – not conducted

Well-Dones:

-

Opportunities to Improve:

-

Tentative Agenda for next meeting – none scheduled

Handouts – Montgomery Watson alternatives matrices with costs, design drawings, downstream fish passage concepts analysis

Attachment – Options matrix