
BAKER RIVER PROJECT RELICENSE

Economics/Operations Working Group

January 8, 2003

9:00 a.m. through 2:30 p.m.

PSE Office
1700 E. College Way, Mt. Vernon, WA

FINAL MEETING NOTES

The Economics Working Group Mission Statement:

"To ensure that alternative project proposals, operations and emergency plans for the Baker River Project and its components provide for:

- 1. Public health and safety; and*
- 2. Thorough analysis and evaluation of the economic costs and benefits (including non-market and economic impacts.)"*

Team Leader: Lloyd Pernela (PSE), 425-462-3507; lloyd.pernela@pse.com

Note: Please let the team leader know if you are unable to attend a meeting. If something comes up at the last minute, please call Lyn prior to the meeting. Lyn's cell phone is 425-890-3613.

PRESENT

Lloyd Pernela, Bob Barnes, Joel Molander, Kris Olin (PSE), Steve Hocking and Keith Brooks (FERC) by phone, Mark Kilgore and Rob Mohn- by phone (Louis Berger Group), Jon Vanderheyden and Rod Mace (USFS), Bob Helton (interested citizen), Stan Walsh (Skagit Systems Cooperative), Ken Brettman (Corps), Jerry Louthain (City of Anacortes & Skagit Co. PUD), Phil Hilgert (R2 Resource Consultants), Dave Brookings (Skagit County Public Works Department), Gary Sprague by phone (WA Dept. Fish & Wildlife), Rod Sakrison (DOE), Chuck Howard, (Senior Consultant and former president of CHAL), Do Tung Powel (President, Powel Ltd.), Dee Endelman and Bruce Freet (Agreement Dynamics), Mary Jean Bullock, note-taker and Lyn Wiltse, facilitator (PDSA Consulting Inc.)

INTRODUCTIONS

We welcomed first-time attendees Phil Hilgert (R-2), Steve Hocking and Keith Brooks (FERC), and Rob Mohn (Louis Berger Group).

DATES OF FUTURE MEETING DATES/LOCATION

(Note: Feb. 12 meeting will be from 9-2:30 at the USFS building in Sedro-Woolley)

February 12 (at USFS Building in Sedro-Woolley), March 12, April 9, May 14, June 11, July 9, August 13, September 10, October 8, November 12, December 10, 2003 at PSE Office, 1700 East College Way, Mount Vernon.

NEW ACTION ITEMS

- ALL: Send Lloyd feedback by January 28, on Mark's draft economic considerations list.
- ALL: Share flood control assumption with your organization. Let Lloyd know by January 17, if your organization has a problem with it so he can report to the Solution team on Jan. 21.
- ALL: Give Jerry feedback on Study Request R01: Additional Flow Releases from the Baker River Project by January 17th so he can incorporate them and send out a new version of the request prior to our Feb. meeting.
- ALL: Give Dave feedback on Study Request R02: Evaluation of Optimal Flood Control Storage in Upper Baker Reservoir (Baker Lake) by January 17th so he can incorporate them and send out a new version of the request prior to our Feb. meeting.
- ALL: Give Stan feedback on Study Request R03: An examination of spawning and incubation flows in the Skagit River below the Baker confluence during brood year 2000 by January 17th so he can incorporate them and send out a new version of the request prior to our Feb. meeting.
- Mark: By February 6, send out draft outline of economic guidelines that Working Groups could use to do economic analysis of working group recommendations. We will revise and reissue prior to next meeting.
- Jerry: Put together initial draft of PME around instream flows/water rights and send to Lloyd to distribute by Jan 31.
- Rod: Put together initial draft of PME related to Shoreline Management Act and other land use permits/Wild & Scenic, etc. and send to Lloyd to distribute by January 31.
- Lloyd: By Jan. 10, post "30 relevant pages" of 5/9/77 communications from Corps.
- Lloyd: Send hard copy of ~~200~~ pages of above document to those who requested it.
- Dave: Present update on Skagit River Flood Damage Reduction Study at our February meeting (combine with presentation by Pat Massey on updated flood plain maps)
- Keith: Issue FERC's interpretation of the legal mandate on flood control, and how FERC would respond if the settlement agreement included a request to change the existing amount of flood storage.
- Jon: Try to reserve both sides of the USFS Sedro-Woolley conference room for our Feb. 12 meeting.
- Lloyd contact FERC's Linda Lehman with regards to calling into our meeting.

AGENDA

January 8 2003, at PSE Office, 1700 E. College Way, Mount Vernon

9:00 to 1:30 p.m.

1. Introductions
2. Review notes/agenda
3. PMEs –
 - a. Narrow issue list (remove issues being addressed by other working groups)
 - b. Economic consideration
 - c. Role of this Working Group in assisting with PDEA

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4. Flood Control assumptions
 5. Review Studies
 6. Action Items
 7. HYDROPS UPDATE
 8. Set agenda for February 12th meeting (USFS Office in Sedro-Woolley)
 9. Evaluate Meeting

REPORT ON OLD ACTION ITEMS

- Lloyd: Updated and distributed Economics Group contacts list.
- Bob: Created comparative hydrology graph (contrasting the three candidate years). He will post all hydrology graphs on the web.
- Bob: Checked to see if there is a correlation between degree of annual wetness of years to reservoir levels. He reported that the correlation is not especially good.
- Bob: Ran flow duration curves for each candidate years. He will post these to the web.
- Bob: Gave the hydrology charts and data to the team leaders. He will post the graphs on the web.
- ALL: Considered how to approach flood control assumptions.

PMEs

Bruce and Dee walked us thorough a preliminary list of issues and interests previously developed by members of this working group. We removed from the list issues that were being addressed by other working groups. From this list, we felt that the following might be candidates for PMEs:

1. Water Quality/Hydrology
 - Instream flows and Water Rights, other releases (Jerry L. to draft PME)
 - Instream flows & Economics
2. Flood Control (potential)
 - PME for flood control?
3. Submerged lands on Lake Shannon (WDNR & Skagit Co.)
4. Project Impacts on Town of Concrete
5. Power Production/Ramping Rates Feasibility (Economic & Physical constraints)
6. Coastal Zone Management/Shoreline Mgt. Act, Floor Plain, Wild & Scenic Rivers, Town of Concrete, Skagit Co., Whatcom Co. (Rod S. to draft PME)

MARCH CROSS-RESOURCE WORKSHOP

Dee discussed with us the proposed schedule and format for this workshop. The purpose of this meeting is to come up with creative solutions to potential PMEs that are in apparent conflict across resource areas. They will also be looking to optimize opportunities to synergize across resource areas.

Prior to the workshop, all resource groups need to become familiar with what other groups are considering for PMEs. We will, in our February meeting, identify which options for PME should be written up and shared with other Resource Groups at our March Workshop.

We discussed having folks arrive at the Cottontree Inn on Tuesday afternoon, March 4, for a general overview presentation of all PMEs being considered by all Working Groups. There would likely be a

large group of participants attending this general information session. The list of PMEs would also be made available for review electronically prior to this presentation.

The actual workshop would start first thing Wednesday morning, March 5. We would finish the workshop by the end of the day on Thursday, March 6. Re: for participants, the idea is to get good representation across all the resource areas as well at the various governmental and non-governmental organizations. We would also have the group be as small as possible.

HYDROPS UPDATE

Stetson Engineering has completed their review of the model. They are in the process of discussing their assessment with PSE. There will be an official report on this at the Solution Team meeting January 21.

ASSUMPTIONS AROUND FLOOD CONTROL

We agreed that on the need to review additional information relating to the legal mandate around flood control for Baker. PSE will distribute copies of the May 9, 1977 Communication from the Corps to Congress on Additional Flood Storage at Upper Baker. Further, Keith Brooks of FERC will write an interpretation of the legal mandate, and how FERC would respond if the settlement agreement included a request to change the existing amount of flood storage.

After considerable discussion (see team leader notes at end), we agreed on the following statement. We will run this by our respective organizations and let Lloyd know if it is safe to share this with the Solution Team at their Jan. 21 meeting.

We will use the current flood control agreement (74,000 acre-feet from November to March) as baseline and perform analyses on these effects and recommend PMEs accordingly.

Note: Current flood control regime will not limit analysis.

STUDIES TO SHARE WITH SOLUTION TEAM

R-E01: Flow Releases from the Baker River Project

Jerry walked us through a high-level review of this study request and asked for feedback by Jan 17 so he can incorporate changes in the next version prior to our Feb. meeting.

R-E02: Evaluation of Optimal Flood Control Storage in Upper Baker Reservoir (Baker Lake)

Dave walked us through a high-level review of this study request and asked for feedback by Jan 17 so he can incorporate changes in the next version prior to our Feb. meeting.

R-E03: An Examination of Spawning and Incubation Flows in the Skagit River below the Baker Confluence during Brood Year 2000

Stan walked us through a high-level review of this study request and asked for feedback by Jan 17 so he can incorporate changes in the next version prior to our Feb. meeting. We agreed that though this request has also been presented to the Aquatics Working Group, its ownership is this working group. Requires working with Aquatics Working Group.

HANDOUTS (BOLDED HANDOUTS WILL BE POSTED ON THE WEBSITE)

- Baker River Project Relicense – Economics/Operations Working Group – Issues and Interests

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- Baker River Project Relicensing Study Request R-E-01 (Additional flow releases from the Baker River Project)
 - Baker River Project Relicensing Study Request R-E-02 (Evaluation of Optimal Flood Control Storage in Upper Baker Reservoir)
 - Baker River Project Relicensing Study Request R-E-03 (An examination of spawning and incubation flows in the Skagit River below the Baker confluence during brood year 2000.
 - Article 32 – Current Baker River Project License Article 32
 - Corps Draft Article 32 (11/13/2002.)
 - Letter to the Economics/Operations Working Group re: to formalize the assumption of that existing flood control is the analysis baseline for further work. From Marian Valentine, P.E, Action Chief, Hydrology and Hydraulics Section U.S. Army Corps Of Engineers.
 - Committee on Public Works and Transportation, U.S. House of Representatives, Washington, D.C. RESOLUTION re: flood control; Document Numbered 95-149

PARKING LOT

- Forest Service Watershed Analysis
- New Baker EAP Inundation maps are available at end October 2002
- Consider who will be the number cruncher for this team: PSE? Other?
- GANNT chart with due dates, etc.
- Presentations:
 - Wild and scenic river 101 Jon Vanderheyden
 - Fisheries/Hydraulics 102
- How will we define and share economic analysis (methods, assumptions re: unit costs, etc.) across Working Groups

EVALUATION OF THE MEETING

Well-Dones:

- Having HYDROPS experts here
- Phone participants- Thanks Steve, Keith, Gary, and Rob!
- Lunch

Need to Improve:

- Ran late
- Phone situation
- Ran out of coffee
- Need water/other drinks
- Room was too warm
- Pushing the limit on room size

What's Hot?

- Reached agreement in principle re: flood control assumption
- PME
- PDEA schedule (tight)

Summary of Studies to Share with Solution Team

- R-E01: Additional Flow Releases from the Baker River Project
- R-E02: Evaluation of Optimal Flood Control Storage in Upper Baker Reservoir (Baker Lake)
- R-E03: An examination of spawning and incubation flows in the Skagit River below the Baker confluence during brood year 2000

TENTATIVE AGENDA FOR NEXT MEETING (*NOTE NEW LOCATION/TIME*)

February 12, 2003 at USFS Office, Sedro-Woolley, WA

9:00 to 2:30 PM

1. Introductions
2. Review/revise minutes and agenda
3. PME's
 - Review drafts of initial PME's from Jerry and Rod)
 - Discuss PME's we want to highlight for consideration at March cross resource workshop
 - Economic consideration
 - Role of this Working Group in assisting with PDEA
4. Review Mark's draft of Economic Considerations in Evaluating Costs of Protection, Mitigation and Enhancement measures.
5. Presentation by Dave Brookings and Pat Massey on updated FEMA flood plain maps and Skagit River Flood Damage Reduction Study? (February/March 2003)
6. Flood Control Assumptions-
 - Review FERC analysis of legal mandate and response if settlement agreement proposes alternative flood control regime
6. Review Study Requests: R-E01, R-E02, and R-E03
7. Action Items
8. HYDOPS Update
9. Set March 12 agenda (at PSE Office in Mt. Vernon at USFS)
 - Consider meeting schedule- Add meetings or extend length of meetings?
10. Evaluate Meeting

Summary of Flood Discussion
By Team Leader, Lloyd.

- Article 32 of the existing FERC license requires the licensee to provide up to a maximum of 100,000 acre-feet of flood control storage at the Upper Baker Reservoir between November 1 and March 1 as directed by Corps District Engineer. With the condition that the licensee is to be compensated for any storage space provided in excess of the 16,000 acre-feet attributed to lost valley storage.
- The Corps has a congressional mandate to provide or acquire flood control storage under the Flood Control Act of 1962.
- Corps exercised this authority at Upper Baker through an EIS in 1976 and Report House Document 95-149 in 1977 that recommended the acquisition of 58,000 acre-feet of storage in addition to the 16,000 acre-feet of lost valley storage. The Federal Power Commission agreed with EIS and House Document and stated that the necessary flood control storage was already contained within the existing license.
- Congress in 1977 passes resolutions directing the Corps to acquire a total of 74,000 ac-ft of flood control storage at the Upper Baker Dam as described in House Document 95-149 and compensate the Licensee. This congressional action has no sunset provision.
- Skagit County and others are interested in acquiring more flood control storage at Upper Baker up to as much as the current license allows (100,000 acre-feet).
- While not taking a position on flood control per se, the SSC does not want flood control regimes, existing or proposed, restricting resource development and management or potential PMEs.
- To change the current Congressional mandate for Upper Baker would require congressional approval. Congress would act upon a Corps request similar to the 1977 FEIS and Report per the 1962 Act. However, the Corps has requested via formal letter that the Baker License process use the current flood control regime.
- USFS asserted that the existing Flood Storage was a continuing impact of the project and subject to PME's. Their opinion was that this be from no-flood control elevation to 74,000 acre-feet of drawdown. Puget voiced concern that the existing flood control storage was a Federal action already originally subject to a 1976 FEIS prepared by the Corps and that it was and continues to be the responsibility of the acting federal authority to address impacts and mitigate for their actions.
- USFS also suggested that an environment assessment of the existing flood control aspect should be conducted within the License process. Again Puget voiced concern that current level already was supported by the 1976 Corps' FEIS and that an environmental assessment should only be considered if the Corps changed their flood control storage volume using the Corps process.
- If a change in flood control storage is required through the licensing process, an EA on that incremental change and PME on that increment could be considered.

**Specifications for Operations Model to be Used in Baker Project Relicensing
and Current Capability of HYDROPS to Meet the Specifications**

December 16, 2002

	Specification	Current Capability of HYDROPS to Meet the Specification
Model Input	1 Capability of using historical inflow	Meets specification
	2 Capability to set the on-peak and off-peak period	Meets specification
Operational Constraints	3 Capability to set the required absolute maximum and minimum lake elevations for Baker Lake and Lake	Meets specification
	4 Capability to set the required target daily lake elevations for flood control and recreation (i.e., set rule curve)	Meets specification
	5 Capability to set the required minimum instantaneous flows in the lower Baker and lower Skagit Rivers	Meets specification
	6 Capability to set the required up and down ramping limitations (hourly rates of flow or stage fluctuations) in the lower Baker and lower Skagit Rivers (below Baker	Ramping rates can only be set for the lower Baker River. This is not acceptable.
	7 Capability to set the required up and down ramping limitations (hourly rates of flow or stage fluctuations) in lower Baker and lower Skagit Rivers over a period of one hour, several hours, or days (up to 30 to 60 days)	Does not have capability

	Specification	Current Capability of HYDROPS to Meet the Specification
	8 Capability to set the relative priority of operational constraints (e.g., 3- 7 above)	HYDROPS treats operational constraints as "soft constraints" and assigns penalties to these soft constraints. The relative values of the penalties set the relative priority of the constraints. Penalty assignment is based on the modeler's judgment and is accomplished through trial-and-error. This is too cumbersome and will require too much effort.
	9 Capability to set the turbine maintenance schedule	Meets specification
	10 Capability to reconfigure the system to include addition of new turbines, upgrade of turbines, or any other physical change to the project.	Does not have capability
Output	12 Capability to retrieve all model output in tabular or graphic format	Meets specification
	13 Capability to report water budget for Baker Lake and Lake Shannon on daily and monthly basis	HYDROPS is capable of providing a water budget report, but it is not working correctly.
	14 Capability to report violation of any operational constraint	HYDROPS is capable of providing a violation frequency report, but it is not working correctly.
	15 Capability to provide time series plots or summary tables of output, including lake elevations, releases, spills, power generation (see attached examples)	Meets specification
	16 Capability to provide plots showing hourly duration curves of lake elevations and releases for specified month or other defined time periods (e.g., summer recreational period)	Does not have capability

	Specification	Current Capability of HYDROPS to Meet the Specification
Model Operation	<p>17 Capability to run for multiple years (preferably over the entire period of record of inflow)</p> <p>18 Ease of use</p> <ul style="list-style-type: none"> - Capability to change operational constraints in just a few minutes - Capability to complete model run in just a few minutes 	<p>HYDROPS currently runs for only one year.</p> <p>Meets specification</p> <p>HYDROPS model run time for a one year period is reported to range from 1 second (for the long-term 52-weekly run) to 10 minutes (for the short-term 7-day hourly run). If HYDROPS is to run for a 30-year period, the model run time may take up to 300 minutes. This is too long.</p>