Pend Oreille River TMDL Watershed Advisory Group
Meeting Summary
Thursday, January 25, 2007
1:00- 4:00
Sandpoint, Idaho

Attendees:
Chris Berger, Portland State University; Scott Jungbloom, Pend Oreille Public Utility District; Christine Pratt, Seattle City Light; Russ Fletcher, Pend Oreille Conservation District; Heather Scott, Golder Associates; Lori Blau, Ponderay Newsprint; Kym Cooper and Patty Perry, Kootenai Tribe; Randy Curliss, City of Dover; Paul Pickett, Marcie Mangold and Jon Jones, Washington Dept. of Ecology; Michele Wingert, Kalispel Tribe; Jenna Borovansky and Bob Steed, Idaho Department of Environmental Quality; Don Martin, EPA Region 10; Ruth Watkins, Tri-State Water Quality Council.

Welcome:
Ruth welcomed everyone to the meeting and reviewed the day's agenda. She noted that the Council has been facilitating an update of the three-state Clark Fork-Pend Oreille Watershed Management Plan and handed out the link to the document on the Council's website (www.tristatecouncil.org/documents/07cfpo_wmplan.pdf) so people could comment on the final draft. The public comment period on the plan ends on February 20th.

Model Calibrations:

Introduction: Paul Pickett gave a brief overview of basic "modeling 101" from the October meeting and noted that the purpose of today's meeting is to show the calibration results from the modeling efforts taking place for the Idaho and Washington portions of the Pend Oreille River. Calibrating the model is critical to the process to see if the conditions that the model predicts are close to data collected (or observed) in the field. Paul introduced Chris Berger from Portland State University, who is the contractor with both Idaho DEQ and Washington DOE for the river modeling effort.

1. Idaho-Lake Pend Oreille long bridge to Albeni Falls

Info on model: Chris gave an overview of the model he has developed for the river segment from Lake Pend Oreille long bridge to Albeni Falls. For this section, the model is divided into 234 segments, each 250 meters in length with a vertical layer of 1 meter thick. The model was set up using temperature data along with data for water quality parameters—including BOD from each wastewater treat plant, nutrients, algae, and sediment. Meteorological data was also added—including air, wind, cloud cover, precipitation and topographic shade.

Calibration results: The calibration used data from 2004 and 2005. At calibration sites, the absolute mean error between the model and observed data was $.51^0$C; vertical profiles at 7 sites had an absolute mean error of $.38^0$C. Chris explained that the error factor should be below $.5^0$C. He showed a "movie" of vertical profiles that illustrated cooler water coming into the river from Lake Pend Oreille. He also noted that the range in travel time for water from the lake to Albeni Falls is 3 days (spring) to 9 days (winter).

Summary statement: The Pend Oreille hydrodynamic and water quality model has been developed and is well calibrated relative to other water quality models.

2. Washington-Albeni Falls to Box Canyon

Info on model: Chris explained that for this section, the model is divided into 359 segments, each 250 meters in length with a vertical thickness of 1 meter. The model was set up using data similar to the upstream model, i.e., temperature, water quality parameters and meteorological data.

Calibration results: Results at calibration sites showed absolute mean error of $.25^0$C (8 sites, 1997 data); $.45^0$C (6 sites, 1998 data); and $.27^0$C (12 sites, 2004 data). Absolute mean error for vertical profiles was $.24^0$C (13 sites). The "movie" for this section illustrated that the water is warmer than in the upstream (Idaho) section; it is thought that the water is in the river longer so it heats up more.

Summary statement: The error is smaller in the model for this segment than the Idaho model, and is generally below $.25^0$C.

3. Washington-Box Canyon-Boundary

Info on model: Paul Pickett provided an overview of a presentation prepared by Seattle City Light's contractors at Battelle and Pacific Northwest National Laboratory. He explained that the contractors did bathymetric surveys for inputting to the model. For this section, the model is divided into 117 segments, which vary in length from 180 to 373 meters length with a vertical thickness of 2 meters. This model only used temperature data. Time series, profiles and error analysis were conducted the same as the two upstream models.

Calibration results: The absolute mean error ranged from $.24^0$C - $.29^0$C at various depths. The highest error factor was at the tailrace ($.4^0$C), but info at that site needs to be corrected, which will improve the error factor.

Summary statement: The overall average of error is $.27^0$C, which is at the low end of the range for other such studies.

4. Q & A, Group discussion

Bob Steed asked the WAG members to think about how the error factor will be considered when we look at model results to develop the TMDL and allocations. During discussion it was agreed that the information we get from the model won't be exact, yet for the TMDL we have to have an exact number for a target and an exact number for reducing temperature loading. The standard we will be working with is for natural conditions: 0.3^0C is the maximum increase allowed at any time when natural conditions are above the established criteria. Once we have used the model to determine natural conditions (or natural thermal potential) and add in human effects, will the combined result be more than $.3^0$C warmer than natural thermal potential? If so, we will need to determine what can be done to get conditions back to $.3^0$C above natural conditions. If the error factor ranges from $.1^0$C to $.4^0$C, and we are working with $.3^0$C above natural conditions as the standard, then the work of the WAG may be extremely difficult. Paul said he didn't know of any

TMDL similar TMDLs that we could follow as an example since this is such a large system. He suggested that first we ask whether not there is impairment and if so, were can we improve things. He also noted that the margin of safety requirement for TMDLs might cover any uncertainty about the model results. It was also suggested that the criteria were written to protect fish and maybe there are things that can be done to improve temperature—especially in the tributaries—to protect fish and fish habitat.

After discussion, it was agreed that the WAG will need to decide how to address the error factor; this item will be placed on the agenda for the next meeting.

Randy Curliss explained that the point sources in Idaho are exploring the feasibility of building a regional wastewater system, which would improve river water quality by reducing the number of septic systems; he thought that temperature might not be as large a factor as point source pollution. Bob Steed agreed and explained that septics (and other nonpoint sources) are being modeled at a higher rate of contribution than point sources.

Overview of next steps—Bob Steed and Jenna Borovansky, Idaho DEQ

The next step in the modeling effort is to run scenarios through the model(s) to determine the effects of important variables—such as point sources, tributaries, Albeni Falls Dam and bank shading—on river temperature, and to establish existing and baselines conditions. The results of the scenario phase will help the WAG determine the strategy for TMDL development.

Modeling scenarios:
Bob explained that the Idaho segment of the river (Lake Pend Oreille to Albeni Falls dam) will be the first segment to be run through the model with scenarios, of which there will be 8. Bob noted that the scenarios were carefully planned out and developed by DEQ, Ecology, EPA and the Kalispel Tribe. Once the scenarios are run through the model for the Idaho segment, the results will be "handed off" for running through the next downstream segment of the model (Albeni Falls to Box Canyon.) The 8 scenarios are:

1. Current simulation. Scenario includes current conditions with Albeni Falls Dam operational, current point sources discharging, tributaries at current temperature and current vegetation along river corridor. Desired output: Establish existing conditions.
2. Impounded, no point sources. Scenario includes Albeni Falls Dam operational, tributaries at current temperature, and current vegetation along river corridor, without current point source discharges. Desired output: Evaluation of point source contributions to temperature.
3. Impounded, no point sources or non-point sources. Scenario includes Albeni Falls Dam operational, current vegetation along river corridor, without current point source discharges and tributaries at *natural* temperature. Desired output: Evaluation of point source and tributary contributions to temperature.
4. Un-impounded. Scenario includes current conditions for point source discharges, current tributary contributions and current vegetation along river corridor, without Albeni Falls Dam in operation. Desired output: Evaluation of Albeni Falls Dam's effects on river temperature.
5. Un-impounded, no point sources. Scenario includes current tributary contributions and current vegetation along river corridor, without Albeni Falls Dam in operation and

without current point source discharges. Desired output: Evaluation of Albeni Falls Dam's effects on river temperature, without point source discharges.

6. Un-impounded, no point discharges or non-point sources. Scenario includes current vegetation along river corridor, tributaries at *natural* temperature, without current point source discharges and without Albeni Falls Dam in operation. Desired output: Evaluation of Albeni Falls Dam's effects on temperature, without point source discharges and tributaries at *natural* temperature.
7. Potential natural vegetation (PNV) current condition. Scenario includes current conditions with Albeni Falls Dam operational, current point source discharges, tributaries at current temperature and *potential natural* vegetation along river corridor. Desired output: Evaluation of effects of bank shading along river on temperature.
8. Pristine simulation. Scenario includes without Albeni Falls Dam operational, without point source discharges, tributaries at *natural* temperature and *potential natural* vegetation along river corridor. Desired output: Establish baseline for natural conditions criteria.

Compliance points:
Bob explained that specific points along the river will need to be picked for the compliance points for the TMDL; these may be near the long bridge, before Albeni Falls Dam or somewhere near the middle of these two. Factors for selecting points will also involve warmest (near the surface) and coolest (spill out of the lake or deep pocket in mid-river) locations.

Timeline:
Jenna gave an overview of the temperature TMDL timeline as follows:

- Today's meeting: present model calibrations
- February: agencies run draft scenarios
- March WAG meeting: present draft scenario results, get feedback from WAG and work on strategy for TMDL development
- April: TetraTech (contractor to Tri-State Water Quality Council) begins work on TMDL and allocations
- May WAG meeting: review status and early drafts of TMDL
- July: draft TMDL presented to WAG
- September: final draft of TMDL made available for public comment

Wrap up:

Next meeting: The next meeting date was set for **Tuesday, March 20** from 1:00 to 4:00. Ruth will let everyone know the location.

The meeting adjourned at 4:05.

Respectfully submitted by Ruth Watkins, February 7, 2007