# Water Quality Team Meeting Notes

March 14, 2006

***1. Greetings and Introductions.***

The March 14 meeting of the Water Quality Team was chaired by Mark Schneider and facilitated by Robin Harkless. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Kathy Ceballos at 503-230-5420.

***2. Water Quality Team Guidelines.***

Harkless said she had pulled out the WQT guidelines, finalized in the fall of 2005, to remind the group of their role as WQT members and of WQT's mission: to provide scientific and technical recommendations and advice and guidance on water quality issues to the Regional Forum committees, subcommittees and other regional Columbia River Basin entities for decisions that may impact aquatic resources. In looking through this document, Harkless said, I see the WQT's role as one of providing consultation, technical guidance, review and coordination. We've done a very good job of that in some areas, she said, but there are probably areas where our performance could be improved.

Harkless added that, according to the WQT guidelines, the Regional Forum's goal is to reach consensus on technical and policy issues whenever possible; consensus is defined as the lack of strong objection. Participation in a consensus process implies that all members are actively participating in good faith, and are searching for an accommodation of those interests represented at the table. The members will make all reasonable efforts to achieve consensus.

I mention this so that we can all keep it in mind as we move forward, said Harkless; I know that the region is struggling with some important water quality issues right now.

### *3. Implementation Team and Regional Forum Technical Team Chairs Update.*

John Palensky distributed a copy of the most recent version of the 2006 Implementation Team meeting schedule and agenda items planning spreadsheet. He said the most recent IT meeting was held March 2; prior to that the IT and TMT held an emergency call on operations in support of the Spring Creek Hatchery release. We also discussed the Little Goose RSW schedule, 2008 vs. 2009, Palensky said; the IT agreed with the Corps' assessment that it would be too risky to attempt to have the Little Goose RSW operational by 2008. We also discussed the Corps' system flood control study, he said; there was some surprise at the cost estimate associated with that study, on the order of $30 million. There was also some discussion of the need to extend the comment period on the Corps' draft study. The IT also discussed the sea lion predation problems at Bonneville Dam, Palensky said, as well as the 2007-2009 Council funding process, in particular, the mainstem/systemwide projects. There are $45 million in ongoing projects alone, including many important BiOp-related research projects, but only about $35 million in available funding, Palensky said.

The IT has also been discussing the Lower Columbia River Water Quality Plan, he continued; I'm not sure where that's going to go yet. It's a bit of a festering issue; at some point, we're going to have to talk about Bonneville operations in the new BiOp, and this is a fairly critical piece of that question. In terms of upcoming issues, said Palensky, the IT has been doing some strategic planning, in an effort to deal with recurring issues, such as Spring Creek, in a timely fashion. Palensky added that Jim Ruff has now returned to work for the Council, and will be working with various Regional Forum teams as his duties allow.

### *4. Update on Lower Columbia River Estuary Partnership/Corps of Engineers Coordination of TDG Shallow Water Quality Monitoring in 2006.*

Jim Britten briefed the WQT on recent monitoring coordination efforts in the Lower Columbia shallow water habitat. Britten said a small amount of funding has been identified to allow this work to go forward at a couple of sites; Dennis Schwartz and Blaine Edwards will be coordinating this effort. Schneider noted that his understanding was that he would be involved in choosing the 2006 monitoring sites, but that he has not yet heard from anyone at the Corps, despite the fact that he has talked to both Edwards and Rudd Turner. I continue to have an interest in broadening those discussions to include NOAA, said Schneider. Britten said he will facilitate this coordination. Schneider said he still has questions about the lack of biological evidence that a TDG problem exists in the shallow water habitat in the estuary, and about the fundamental need for this study. I continue to think the Corps has put the cart before the horse on this issue, he said.

All we're really talking about is taking a look at a couple of shallow-water areas below Bonneville, for a short time, to get an idea of the TDG levels, so that we can get a feel for whether or not there is a problem, and if so, how great a problem it is, said

Adams. We might measure gas levels for a week in each location. Again, said Schneider, I'm still looking for some evidence that a problem even exists. Adams said he will facilitate a dialogue between Schneider and Edwards on this issue.

***5. Removable Spillway Weir Presentation.***

Paul Ocker led this presentation. He distributed a diagram showing what an RSW looks like and what flow characteristics it produces. He also shared some preliminary 2005 biological data from the Ice Harbor RSW, including the paired release study and the behavior study. We released 4,800 yearling Chinook and 3,200 steelhead between May 3 and May 29, said Ocker; when the RSW was on, we generally had about 96 Kcfs in the river. When it was off, the average flow was 105 Kcfs, so the two treatments were roughly equivalent, Ocker said. The difference in spill levels during these treatments was 34 percent vs., 82 percent – spill volumes and TDG levels are significantly less when the RSW is operating.

Ocker showed a series of pictures of Ice Harbor, showing the RSW in operation. During the yearling Chinook releases, when the RSW was not operating, with 82 percent bulk spill, 97 percent of the fish passed the project via the spillway, one percent via the powerhouse. Spillway survival was 97 percent; total dam survival was 93 percent, including the forebay.

With the RSW operating, 77 percent of the fish passed the project via spill (48 percent via training spill, 29 percent via the RSW), Ocker continued; 16 percent passed via the bypass system. Survival through spill was 96 percent, while bypass survival was 100 percent. With respect to total project survival, it was 96 percent while the RSW was operating – no statistical difference between RSW and non-RSW survival. Including the forebay, total dam survival was 95 percent with the RSW in operation, Ocker said.

Moving on to the steelhead data, Ocker said that, during the period the RSW was not operating, 96 percent of the test fish passed the project via the spillway, two percent via bypass. Spill survival was 100 percent, but overall dam survival was 93 percent, including the forebay. When the RSW was operating, 76 percent of the fish passed via spill; most of the steelhead used the RSW. Overall spill survival was 98 percent with the RSW operating; total project survival, including the forebay, was 91 percent. Ocker added that there is some indication that survival could be improved during periods when the RSW is in operation through changes to the training spill pattern.

Ocker then showed a graph displaying information on the differences in TDG levels when the RSW was and was not in operation. Obviously, TDG levels were significantly lower when the RSW was in operation, he said.

Moving on to 2005 summer data from Lower Granite, Ocker said the project spilled 46 percent of total river flow when the RSW was operating and 70 percent when it was not. During non-RSW operation, about 94 percent of the fish passed via the

spillway and six percent through the powerhouse; spillway survival was about 90 percent. With the RSW operating, about 86 percent of the fish passed the project via spill; overall dam survival was just over 93 percent with the RSW operating. In other words, survival was higher during RSW operation, with less spill. The RSW seems to work well, Ocker said.

We also looked at fall Chinook, Ocker said; during the non-RSW period, 98 percent of the fish passed the project via spill, with nearly 100 percent survival. Dam plus forebay survival was 95 percent. During periods of RSW operation, 98 percent of the fish passed via spill; dam survival plus forebay survival was 93 percent. Ocker also showed a graph displaying TDG levels when the RSW was and was not operating; again, he said, TDG levels were lower when the RSW was operating.

In response to a question, Ocker said the Corps has been studying various training spill patterns at ERDEC, but that he is unaware if a decision has been made to change the training spill patterns at Ice Harbor and Lower Granite for 2006. In response to another question, Ocker said the behavioral guidance screen will be in operation at Lower Granite this year. The group also briefly discussed the temporary spillway weir technology; Ocker noted that there is a desire to test a temporary structure in December 2006 or January 2007, with balloon-tag studies to determine injury rates.

The bottom line from the 2005 research is that we are seeing similar survivals and lower TDG levels at the two projects when the RSWs are operating, Ocker said.

***6. Report Overview of "Total Dissolved Gas Characterization of the Lower Columbia River Below Bonneville."***

Harkless asked what the group's objective is with this agenda item today. What I was hoping to get is a sense of what the WQT needs from us in order to be able to complete their review of this report and submit their comments, Adams said. We would like to facilitate that any way we can. This is a very detailed and complex report, and we would be happy to answer any questions anyone might have, Mike Schneider said. Adams said the Corps would like to receive comments on the report within three weeks of today's meeting.

Mike Schneider then devoted the remainder of today's meeting to an overview of this report, touching on the following major topics:

- The scope of the report: historic TDG levels, fisheries habitat, river bathymetry, river stage, variations due to project operations and tidal influences. Water quality parameters included in the study include TDG pressure and saturation, temperature, dissolved oxygen and barometric pressure.
- Past research into sourcing at dams and processes in-river, as well as FMS evaluations.
- Geographic scope: the 100 river-miles below Bonneville, down to RM 42. Major

tributaries were also included in the report.

- TDG mixing processes within and below the aerated zone below the dam
- Historical operations at Bonneville – average annual spill volumes and total river flow before and after construction of Powerhouse 2.
- The importance of tributary flows to total river flow below Bonneville – up to 40+ percent during the winter months
- Influences on tailwater stage below Bonneville – project releases, tidal influences
- Gas production at Bonneville, pre- and post-deflector construction
- Data from the 2002 post-deflector TDG exchange study in the exit channels below Bonneville – TDG exchange as a function of project operations and river stage.
- Sampling bias issues in the spillway channel
- TDG exchange below Bonneville – research shows a 2-3 percent reduction in TDG levels for the reach from Bonneville to the Camas/Washougal FMS, a function of travel time and meteorological processes
- Longitudinal variations in TDG levels, by river-mile
- How much TDG does Bonneville add to the river? Up to 6-8 percent, depending on the year.
- Management issues: rule modifications, river stage and discharge, operating policy at the dam, auxiliary releases (from the corner collector), forebay conditions, meteorological conditions, the locations of the fixed monitoring stations, the risks of not achieving the relevant water quality standards

Mark Schneider reiterated his earlier point: that until evidence that a biological problem associated with TDG exists in the reach below Bonneville, all of this information is somewhat academic.

Mike Schneider said some of the potential areas the report identifies where further investigation may be useful include alternative spill patterns that will generate less gas, the importance of water stage and how it varies throughout the reach, and how project operations influence river stage.

It was agreed that, because of the time constraints at the end of today's meeting, the WQT will revisit this report at its April meeting, focusing in particular on questions related to the Recommendations section of the draft report, e.g.,:

- PH2 vs. PH1 operation
- Spill pattern modifications
- Water stage & TDG interaction
- Development of mixing zone (where sensitive habitat may be located).

***7. Federal/State Memo to WQT File.***

Mark Schneider said the fishery managers and state water quality agencies had some questions and issues related to a presentation provided by the Corps in January.

There was a graph of the three trend lines of dissolved gas measured in the Bonneville tailrace, he said; this is simply a memo for the WQT file, signed by the state and federal agencies, stating two points: first, before they are convinced of what those three trend lines mean, some statistical analysis needs to be done. Second, said Schneider, the memo notes that the graph shows only one year of data. It is also important to realize that some of the lines diverge as spill volumes increase, but the area of convergence occurs at the level of voluntary spill that is expected to be provided over the next few years.

***8. Next WQT Meeting Date.***

The next meeting of the Water Quality Team was set for Tuesday, April 11. Meeting summary prepared by Jeff Kuechle, BPA contractor.

Enc. A

# Water Quality Team
# Meeting Agenda
# March 14, 2006

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**Time:** 1:30 to 4:30 pm
**Place:** National Marine Fisheries Service
Suite 1100
1201 – NE Lloyd Blvd.
Portland, Oregon
97232-1274

Mt. St. Helens Conference Room
10th Floor.

Please sign in with the Receptionist on the 11th Floor on arrival.

Conference Call Number: 503-872-2897

**Agenda:**

1. Water Quality Team Guidelines – Robin Harkless, DS Consulting.

2. Implementation Team and Regional Forum Technical Team Chairs Update. – Mark Schneider and John Palensky, NMFS.

3. Update on the Lower Columbia River Estuary Partnership/Corps of Engineers Coordination of TDG Shallow Water Quality Monitoring in 2006. – Jim Britton, COE.

4. Removable Spillway Weir Presentation – Paul Ocker, COE.

5. Report Overview of "Total Dissolved Gas Characterization of the Lower Columbia River below Bonneville". – Mike Schneider, Kathryn Barko, COE,

6. Federal/State memo to WQT File, February 23, 2006.

Enc. B.

# WATER QUALITY TEAM MEETING

March 14, 2006
Portland, Oregon

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