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December 17, 2010

Washington Dept. of Ecology
Surface Water Quality Standards
P.O. Box 47600
Olympia, WA 98504-7600

Attention: Becca Conklin

Subject: Surface Water Quality Standards Triennial Review

Dear Ms. Conklin:

Public Utility District No.1 of Douglas County (Douglas PUD) submits comments for consideration by the Washington Department of Ecology (Ecology) during the State Surface Water Quality Standards Triennial Review. Our comments are specific to Washington Administrative Code Chapter 173-201A-200(f), fresh water designated uses and criteria, aquatic life total dissolved gas (TDG) criteria.

Part (ii) of the TDG criteria states:

> The TDG criteria may be adjusted to aid fish passage over hydroelectric dams when consistent with a department approved gas abatement plan. This plan must be accompanied by fisheries management and physical and biological monitoring plans. The elevated TDG levels are intended to allow increased fish passage without causing more harm to fish populations than caused by turbine fish passage. The following special fish passage exemptions for the Snake and Columbia rivers apply when spilling water at dams is necessary to aid fish passage:
>
> • TDG must not exceed an average of one hundred fifteen percent as measured in the forebays of the next downstream dams and must not exceed an average of one hundred twenty percent as measured in the tailraces of each dam (these averages are measured as an average of the twelve highest consecutive hourly readings in any one day, relative to atmospheric pressure); and
> • A maximum TDG one hour average of one hundred twenty-five percent must not be exceeded during spillage for fish passage.

This TDG criteria adjustment to aid fish passage in the Columbia and Snake rivers is used by the U.S. Army Corps of Engineers (Corps) and Bonneville Power Administration (BPA) for projects of the Federal Columbia River Power System (FCRPS) with fish passage, and is used by the five mid-Columbia River Public Utility District Federal Energy Regulatory Commission (FERC) licensed dams: Wells (FERC No. 2149), Rocky Reach (FERC No. 2145), Rock Island (FERC No. 943) and Priest and Wanapum (FERC No. 2114), which all facilitate fish passage.

Ecology, the Spokane Tribe of Indians, and the Environmental Protection Agency (EPA) issued a joint Total Maximum Daily Load (TMDL) addressing TDG in the mainstem Columbia River from the Canadian border to the Snake River confluence (Ecology et al. 2004). Although Chief Joseph Dam does not have fish passage, during Phase I of the TMDL implementation (2004-2010), Chief Joseph Dam has operated under the fish passage adjustment higher TDG load allocation criteria. The purposes for the Phase I TMDL load allocation were: 1) to allow higher TDG in the tailrace of Chief Joseph Dam due to the joint operations of Grand Coulee and Chief Joseph dams, and 2) to authorize TDG in excess of the standard during the Phase I spill deflector construction and testing at Chief Joseph Dam.

Deflector construction was initiated in 2005 at Chief Joseph Dam in response to RPA 136 in the 2000 Biological Opinion, and testing was completed in 2009 (BPA et al. 2010). Subsequent to the installation and testing of the spill deflectors, the Phase 2 load allocation for the reach from Grand Coulee Dam to the Okanogan River under all conditions is 73 mm Hg above saturation, a calculation based on 110% TDG saturation (Ecology et al. 2004). Douglas PUD supports implementation of the Phase 2 load allocation for Chief Joseph Dam of 73 mm Hg above saturation for 2011 and future years.

Recent publications raise concerns that the Corps may continue managing TDG at Chief Joseph Dam toward saturation levels allowed under the fish passage adjustment, concomitant with a three to five-fold increase in spill volume. Although the Corps' Gas Abatement Plan for Columbia River and Lower Snake River Corps Projects (Corps 2010) does not include an appended gas abatement plan specific to Chief Joseph Dam, under structural accomplishments it states:

> The Chief Joseph Dam total dissolved gas abatement report recommended that spillway flow deflectors be implemented in combination with joint operations with Grand Coulee Dam. The spillway flow deflectors were completed in October of 2008 on all 19 spillbays. The field evaluation of the TDG exchange performance was conducted in April and May of 2009 with the final report describing the test results and proposed joint operations policy scheduled to be completed during the summer of 2010. **The spill capacity as limited by the tailwater TDG criteria of 120 percent was limited to 32 kcfs prior to the addition of spillway flow deflectors. The preliminary finding post flow deflector installation indicates a three to four-fold increase in the spillway capacity as limited by the tailwater TDG criteria (emphasis added).** The difference between the hydraulic capacity of the Chief Joseph Dam powerhouse and the 7Q10 flow was only about 41 kcfs. A spill of 41 kcfs uniformly distributed across the spillway was found to generate TDG levels that fell well

> below the TDG standards. The joint operating policy aimed at more effective management of TDG supersaturation at Grand Coulee and Chief Joseph dams can limit outlet works operations in favor of generation with additional spill scheduled at Chief Joseph Dam.

BPA recently stated installation of flow deflectors at Chief Joseph Dam increased allowable spill from 20 kcfs to 100 kcfs (BPA 2010). Douglas PUD infers from these statements that BPA and the Corps may presume future allowable TDG at Chief Joseph Dam will include spill up to the fish passage adjustment levels, e.g., maximum hourly TDG production of 125%, 120% 12C-High saturation, and 115% in the Wells Dam forebay. Such an operational adjustment is counter to the TMDL for TDG, counter to the intent stated in the Environmental Assessment (EA) for the Chief Joseph Dam spill deflectors (Corps 2000a), and contrary to the mandate of the FCRPS Biological Opinion (BiOp) to minimize TDG production below Grand Coulee Dam (NOAA Fisheries 2008). Both the joint operations strategy and flow deflector installation at Chief Joseph were implemented to further reduce TDG production from existing spills – not to allow drastic increases in the volume of high TDG spill as a result of the deflectors.

The 2008 FCRPS BiOp directs the Corps to operate Grand Coulee to minimize TDG production (Reasonable and Prudent Alternative No. 4). The purpose is to minimize TDG exposure of ESA-listed salmonids to elevated TDG downstream of Chief Joseph Dam. Allowing Chief Joseph Dam to triple or even to quintuple its volume of spill up to 100 kcfs will result in greatly increased forced spill at Wells Dam due to the extremely limited storage capacity of the run-of-river Wells project. Wells Dam can be operated in compliance with the TDG adjustment for fish passage up to the 7Q10 flood flow (Politano et al. 2009). However, that would likely not be possible when the magnitude of future sudden increases in spill from Chief Joseph Dam could increase several fold, and the Chief Joseph Dam discharge continues to be supersaturated up to fish passage adjustment levels even though the Dam does not allow fish passage. Under this scenario, water in the Wells Project forebay arrives at the dam supersaturated to the fish passage TDG limit. Increased forced spill volume of high TDG water at Wells Dam will result in increased exceedances of TDG in the Wells tailrace and downstream Rocky Reach Project forebay, and increases the frequency with which downstream mid-Columbia PUD projects receive water out of compliance with the TDG Water Quality Standards. Such operations will also greatly increase the duration and frequency of downstream migrating salmonid exposure to elevated TDG conditions.

Both the joint operations of Chief Joseph Dam and Grand Coulee Reservoirs and installation of flow deflectors at Chief Joseph Dam, were implemented in order to further reduce TDG levels within the Wells Reservoir and downstream. This is recognized in the 2008 BiOp for the FCRPS (and its predecessor 2000 BiOp), in the EA and Finding Of No Significant Impact for the flow deflectors (Corps 2000b), and in the TDG TMDL (Ecology et al. 2004). With the narrow exception of any exceedances necessary to meet salmon augmentation flow requirements of the 2008 BiOp, future operations of the Chief Joseph Project must attain compliance, to the greatest degree possible, with the TDG load allocation: 73 mm Hg above saturation under all conditions.

Ecology should ensure that future operations at Chief Joseph Dam under Phase 2 of the TDG TMDL attain compliance with the Phase 2 load allocation for the reach from Grand Coulee Dam

to the Okanogan River: 73 mm Hg above saturation under all conditions, with the narrow exception of any exceedances necessary to support salmon flow objectives (e.g., 135 kcfs at Priest Rapids Dam April 10-June 30). At a minimum, to protect juvenile and adult salmonids at the Wells Project and downstream, during the fish spill season the TMDL's Phase 2 TDG load allocation should be met from the Okanogan River downstream to the Wells Dam forebay.

Douglas PUD appreciates the opportunity to provide comments on the TDG adjustment for fish passage during this Triennial Review of Washington State Surface Water Quality Standards. If we can provide additional information, please contact Mr. Beau Patterson or Mr. Shane Bickford of my staff.

Sincerely,

William C. Dobbins
General Manager

Cc: Charlie McKinney - Water Quality Section Manager
Pat Irle – Hydropower Projects Manager

References

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