

August 27, 2009

VIA ELECTRONIC MAIL

Katharine Carter  
North Coast Regional Water Quality Control Board  
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RE: Transmittal of Comments on Draft Staff Report for the TMDL

Dear Ms. Carter:

Enclosed with this transmittal letter are PacifiCorp's "Comments on the Public Review Draft of the Staff Report for the Klamath River Total Maximum Daily Loads (TMDLs) and Action Plan Addressing Temperature, Dissolved Oxygen, Nutrient, and Microcystin Impairments in California." The TMDL potentially has significant implications for operations of the Klamath Hydroelectric Project ("Project"), as the TMDL will establish the regulatory framework for future water quality certifications for the Project. As you are aware, in November, 2008 PacifiCorp, the United States, and the States of California and Oregon executed an Agreement in Principle that established a framework to arrive at a final settlement agreement to address the relicensing and future of the Project, which could include removal of Project facilities. PacifiCorp strongly supports these settlement efforts, but also must ensure that ongoing regulatory processes accurately and fairly assign water quality responsibilities to the Project, which ultimately must be borne by PacifiCorp's customers or successors.

PacifiCorp has actively cooperated in the Klamath River TMDL development process by providing the water quality models developed by its contractor, Watercourse Engineering, Inc., as part of the Federal Energy Regulatory Commission relicensing process for the Klamath Hydroelectric Project (FERC Project No. 2082), to be used as the foundation for the TMDL water quality model. PacifiCorp invested hundreds of thousands of dollars to develop its water quality model, and agreed in good faith to allow the North Coast Regional Water Quality Control Board ("Regional Board"), the Oregon Department of Environmental Quality ("ODEQ"), and the United States Environmental Protection Agency ("U.S. EPA") to use the models in order to save those agencies substantial time and money. PacifiCorp has an ongoing interest in model development and has continued to fund Watercourse Engineering's refinements to the water quality models to ensure that these models are the best scientific tools available to inform policy and management decisions related to the Project.

PacifiCorp provided its water quality model to the Regional Board with the understanding that refinements to the models would be developed cooperatively between the agencies' consultant and Watercourse Engineering in an open and transparent manner with the expectation and

understanding, as documented in our July 25, 2005 letter to the State Water Resources Control Board, Regional Board, ODEQ and U.S. EPA, that: 1) the TMDL model would incorporate the latest water quality monitoring and data collection information; 2) modifications, additions, and recalibrations of the model would be identified and shared; and 3) model scenarios and assumptions necessary to enhance model calibration, identify data gaps, and lead to model improvements would be identified and shared. Unfortunately, despite PacifiCorp's and Watercourse's efforts, this collaboration did not occur and PacifiCorp's review of the water quality models relied upon to develop the draft TMDL has been limited to review of the modeling information only recently produced during the public comment period for the TMDL. Improved coordination between PacifiCorp's and the Regional Board's modeling experts may have avoided the serious modeling flaws identified in PacifiCorp's comments.

PacifiCorp's comments on the Public Review Draft of the Staff Report are extensive, including but not limited to the following:

### **Modeling Flaws**

- 1. The modeling performed to support the Draft TMDL's analyses and source allocations is flawed and cannot be relied upon to accurately represent "natural conditions" against which current impairments are assessed.** Undocumented, unjustified, and questionable source code modifications were made that render the model-based aspects of the TMDL flawed and unsuitable for use to set load allocations..
- 2. Analyses and model performance metrics that allow model uncertainty to be quantified are absent.** Without quantification and incorporation of model uncertainty, the adequacy and accuracy of the TMDL analyses are dubious, and the resulting TMDL load allocations questionable. The models used are based on only a single model year and additional model years are not included even though sufficient data were available to extend the models to additional years. This omission severely limits the TMDL analysis because of a complete lack of accounting for inter-annual variability. This results in uncertainty that the allocations accurately represent source contributions to water quality impairment or will achieve the desired water quality objectives.
- 3. The upstream boundary conditions rely on flawed assumptions.** The Draft TMDL indicates that the models' upstream boundary conditions were based on a scenario that assumes full compliance with Oregon's Upper Klamath Lake TMDL (ODEQ 2002). However, upon review, it is clear that the model's upstream boundary conditions were set at levels that are below the average loading conditions predicted when water quality conditions are fully compliant with the Upper Klamath Lake (UKL) TMDL, and possibly below expected natural conditions. Given the likelihood that the UKL TMDL will never be met, it is unreasonable and inappropriate to set the Klamath TMDL model boundary conditions to those water quality parameters, much less values that are substantially below the average values predicted by ODEQ even if the UKL TMDL were to be met.

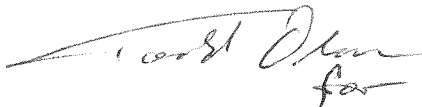
## Allocation Flaws

4. **The Draft TMDL's water temperature allocations and targets are inconsistent with the Clean Water Act** because they are not based on ensuring the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife (BIP). Based on agency testimony, the Administrative Law Judge's findings in the Energy Policy Act of 2005 trial-type hearing for Project support the conclusion that the temperature effects of the Project are consistent with the protection and propagation of a BIP. Alternatively, the water temperature allocations in the Draft TMDL are unachievable.
5. **The Draft TMDL's dissolved oxygen and nutrient-related allocations and targets are based on management decisions that would require shifting the upper Klamath River system to a water quality state not representative of documented natural conditions.** The upper Klamath River is naturally eutrophic, and Upper Klamath Lake, the upstream source for the river is currently hypereutrophic (Bortleson and Fretwell 1993, Wee and Herrick 2005). Yet, the Draft TMDL proposes less-than-eutrophic nutrient allocations and targets that would require very large nutrient reductions that are unrealistic and unprecedented in scale.
6. **The Draft TMDL's nutrient allocations at Stateline (and other downstream locations by extension) are unachievable,** as there are no realistic methods for the 90-98 percent reduction in total phosphorus and 65-75 percent reduction in total nitrogen in the upper Klamath River as required in the Draft TMDL at Stateline.
7. **The Draft TMDL's chlorophyll *a* targets of 10 µg/L for suspended algae chlorophyll *a* in the reservoirs and 150 mg/m<sup>2</sup> for benthic algae chlorophyll *a* in the Klamath River downstream are unachievable,** because the TMDL does not realistically consider the upper Klamath River as naturally eutrophic, with hypereutrophic Upper Klamath Lake as its source.
8. **The Draft TMDL inappropriately assigns "zero nutrient loading from reservoir bottom" and negative nutrient allocations to Copco and Iron Gate reservoirs.** The reservoirs are not a source of nutrients, but a net sink of nutrients, and load allocations less than zero are inconsistent with the Clean Water Act.
9. **The Draft TMDL fails to accurately and realistically portray and account for the nutrient sources and dynamics in the Klamath River system.** Even the Draft TMDL's model outputs clearly show that the reservoirs substantially reduce large nutrient pulses emanating from the Klamath River upstream of the Project (in response to bloom conditions in Upper Klamath Lake). As the Draft TMDL admits, compliance with the Draft TMDL would essentially require removal of the Klamath Hydroelectric Project. However, Project removal before UKL TMDL goals are met would result in increased water quality impairment in the Klamath River. Implementation of a TMDL (in this case the Klamath River TMDL) that results in degradation to water quality is inconsistent with the Clean Water Act.

10. **The compliance lens approach for assigning allocations to Copco and Iron Gate reservoirs is inappropriate for the nature of the reservoirs.** The Draft TMDL assigns allocations to Copco and Iron Gate reservoirs in the form of a “temperature and dissolved oxygen compliance lens” for the period of May through October. This compliance lens approach is unprecedented, and would be unrealistic to actually apply in an advection-dominated, and stratified reservoir setting.

The attached comments, summarized above, identify serious flaws in the modeling used as the basis for the TMDL and other flaws in the analyses and development of the TMDL. As such, the Draft TMDL requires substantial corrections and revision. PacifiCorp respectfully requests a meeting with the Regional Board to discuss the Draft TMDL and these comments. PacifiCorp would like to work with the Regional Board to develop remedies and solutions for the Draft TMDL to ensure the accuracy, applicability, and feasibility of the TMDL and subsequent implementation actions. Given the significant public and private resources that will be expended to meet TMDL requirements, the integrity of the Draft TMDL is of utmost importance.

Sincerely,



Tim Hemstreet, P.E.  
Project Manager  
PacifiCorp Energy

Cc: Robert E. Anderson, Chair – NCRWQCB  
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