



February 12, 2013

Lower Boise Watershed Council &  
Technical Advisory Committee

Subject: Proposal to Modify the Benthic Chlorophyll-a Target Period for the Lower Boise River  
Total Phosphorus TMDL: July 1 – November 30 with additional modeling

Dear Council and Committee Members:

On January 10, 2013, the Lower Boise Watershed Council (LBWC) voted to support (2 opposed, 1 abstained) a modified version of the Idaho Department of Environmental Quality's (DEQ) proposed impairment target to be used in the lower Boise River Total Phosphorus (TP) Total Maximum Daily Load (TMDL). Specifically, the LBWC voted to support:

- A mean benthic chlorophyll-a biomass target of  $\leq 150 \text{ mg/m}^2$ 
  - July 1 – September 30 (as a placeholder in lieu of the proposed year-round target)
  - In the impaired Assessment Units of the lower Boise River
    - Tributaries not included
  - In "wadeable" portions of the river (areas with flow and depth, typically  $< 1 \text{ m}$ , that can be safely sampled)

### **Recommended Target**

DEQ appreciates the support and feedback for this target recommendation. However, as discussed during the January 10 and January 24 meetings, and based on data from the lower Boise River, benthic algae appears to continue growing and/or sustaining beyond September 30. Therefore, DEQ recommends the LBWC consider supporting:

- Modifying the mean benthic chlorophyll-a biomass target to encompass the July 1 – November 30 time period, and
- Acknowledge that through the TMDL development process, modeling efforts, in consultation with the LBWC, may lead to further adjusting the appropriate target timeframe.

### **Rationale**

Based on current evidence, DEQ believes a mean benthic chlorophyll-a biomass target  $\leq 150 \text{ mg/m}^2$ , comprising the apparent periphyton growing season of July 1 – November 30 on the lower Boise River, will fully support Primary/Secondary Contact Recreation and Cold Water Aquatic Life beneficial uses. However, DEQ also recognizes that modeling efforts, conducted as part of the TMDL development process, may provide additional insight toward refining the periphyton target timeframe.

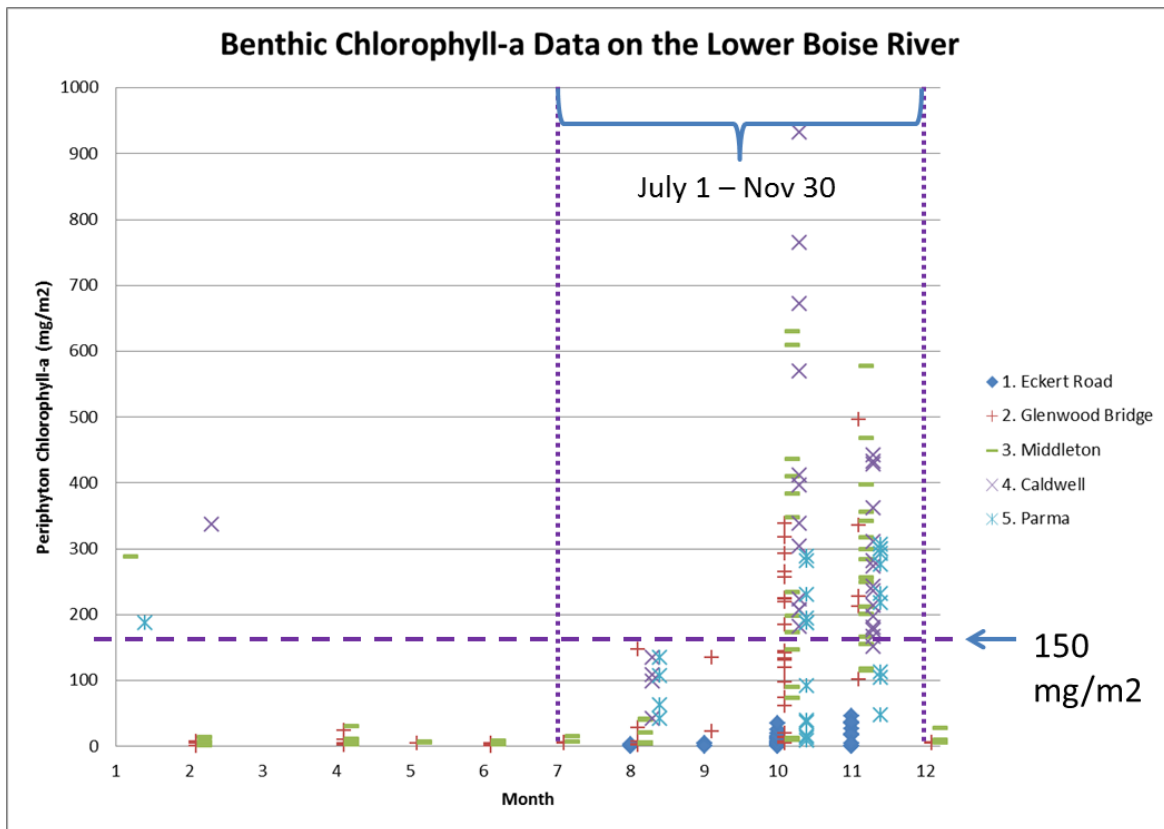
This seasonal target is based on a combination of scientific and technical literature, along with LBWC, TAC, and public feedback. Research suggests secondary responses related to elevated algae levels, such as Dissolved Oxygen fluctuations, super-saturation, and pH extremes can often occur during peak periphyton growing seasons. However, some research, including data specific to the lower Boise River, suggests benthic algae may continue growing, sustaining, and senescing beyond the period typically expected, potentially resulting in negative impacts to aquatic life and recreation beneficial uses (USGS data 1995 – 2012, Lee et al. 2012, Chris Mebane pers. comm. 2013).

**Literature Cited**

DEQ’s presentations, scientific and technical literature sources, and written input from LBWC and others used in this analysis can be found on the DEQ Lower Boise River Watershed Advisory Group webpage at: <http://www.deq.idaho.gov/regional-offices-issues/boise/basin-watershed-advisory-groups/lower-boise-river-wag.aspx>.

Lee, K.E., D.L. Lorenz, J.C. Petersen, and J.B. Greene. 2012. Seasonal patterns in nutrients, carbon, and algal responses in wadeable streams within three geographically distinct areas of the United States, 2007-08: U.S. Geological Survey Scientific Investigations Report 2012-5086, 55p.

USGS. 2013. Graph and data of chlorophyll a, periphyton, milligrams per square meter at various locations along the Lower Boise River (*Provisional Interpretation – Subject to Peer Review*). Distributed to the Lower Boise Watershed Council on January 9, 2013.



USGS Data from 1995 - 2012