



# Revised Fact Sheet

**The U.S. Environmental Protection Agency (EPA)  
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to  
Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:**

**City of Sandpoint  
Wastewater Treatment Plant**

Public Comment Start Date: April 19, 2016  
Public Comment Expiration Date: May 19, 2016

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## **The EPA Proposes To Reissue an NPDES Permit**

The EPA proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

## **State Certification**

The EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Idaho Department of Environmental Quality  
2110 Ironwood Parkway  
Coeur d'Alene, ID 83814  
(208) 769-1422

**ATTACHMENT 3**

## Appendix E: Reasonable Potential and Effluent Limit Calculations for Total Phosphorus

EPA has determined that the discharge of total phosphorus from the City of Sandpoint wastewater treatment plant has the reasonable potential to cause or contribute to violations of Idaho's water quality criteria for nutrients. Therefore, effluent limits for phosphorus are required. The basis for the phosphorus limits in the draft permit is described in detail below.

### A. Applicable Water Quality Criteria

#### *Narrative Water Quality Criterion*

The State of Idaho has a narrative water quality criterion which reads “surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses” (IDAPA 58.01.02.200.06).

#### *Limiting Nutrient*

Several studies have concluded that phosphorus is the nutrient most likely limiting algae growth in Lake Pend Oreille, upstream from the discharge (Tetra Tech 2002). Phosphorus is generally the limiting nutrient in freshwaters. This is because blue-green algae can “fix” elemental nitrogen from the air as a nutrient source or utilize nitrogen in the water column at very low concentrations and thereby grow in a low-nitrogen environment (EPA 1999). Therefore, phosphorus is the most likely limiting nutrient in the Pend Oreille River.

#### *Interpretation of the Narrative Criterion for Nutrients*

Permitting authorities may establish effluent limits based on narrative criteria, as provided for in 40 CFR 122.44(d)(1)(vi). This regulation allows permitting authorities to “(e)stablish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use” (40 CFR 122.44(d)(1)(vi)(A)), or to “(e)stablish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under section 304(a) of the CWA, supplemented where necessary by other relevant information” (40 CFR 122.44(d)(1)(vi)(B)). Where appropriate, permitting authorities may also establish effluent limits for an indicator parameter (40 CFR 122.44(d)(1)(vi)(C)).

In this case, the EPA proposes to interpret Idaho's narrative criterion for nutrients consistent with the EPA's Clean Water Act Section 304(a) criteria, consistent with 40 CFR 122.44(d)(1)(vi)(B), and specifically the total phosphorus (TP) criterion recommended in *Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria: Rivers and Streams in Nutrient Ecoregion II* (“Ecoregion II River Nutrient Criteria”). The recommended TP criterion for aggregate ecoregion II is 10.0 µg/L TP.

The recommended TP criterion from the Ecoregion II River Nutrient Criteria is close to the average TP target for the nearshore waters of Lake Pend Oreille that was selected by IDEQ in the *Total Maximum Daily Load (TMDL) for Nutrients for the Nearshore Waters of Pend Oreille Lake, Idaho*, (“Nearshore TMDL”) which is 9 µg/L, and it is higher than the average euphotic zone TP target for Lake Pend Oreille in the Montana and Idaho Border nutrient load agreement (7.3 µg/L). Rivers generally have a higher capacity to assimilate nutrients than lakes. For

example, the EPA-recommended criterion for TP in lakes in this same aggregate ecoregion is 8.8 µg/L, as opposed to 10.0 µg/L for rivers and streams. Thus, it is reasonable that the interpretation of the narrative nutrient criterion for TP, for the Pend Oreille River (10.0 µg/L), is a somewhat higher concentration than the TP targets for the lake (7.3 – 9 µg/L).

### ***Duration, Frequency and Basis for Seasonal Limits***

In addition to the magnitude (numeric value) of the criterion, water quality criteria may include an averaging period and an allowable excursion frequency as well. The Ecoregion II River Nutrient Criteria state the following:

“EPA does not recommend identifying nutrient concentrations that must be met at all times, rather a seasonal or annual averaging period...is considered appropriate. However, these seasonal or annual central tendency measures should apply each season or each year, except under the most extraordinary of conditions (Page 6).”

A ten-year average excursion frequency or a 10% probability of an excursion in any given year is typical for water quality-based permitting (e.g. the use of 1-in-10 year low flows for toxics permitting) and is consistent with the criteria document’s recommendation that nutrient targets be achieved each year, except under extraordinary conditions.

Therefore, the numeric interpretation of Idaho’s narrative nutrient criterion, for TP, in this case, is an seasonal average total phosphorus concentration of 10.0 µg/L (0.0100 mg/L), which is not to be exceeded more than once every ten years.

### **B. Reasonable Potential to Cause or Contribute to WQS Violations**

Federal regulations require that effluent limitations in NPDES permits “must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which...are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality (40 CFR 122.44(d)(1)(i)).”

To determine reasonable potential for TP, the EPA used a mass balance to determine whether the discharge would cause the TP concentration in the Pend Oreille River, downstream from the discharge, to exceed the criterion. The EPA also considered the magnitude of the effluent TP loading relative to the TP loading in the Pend Oreille River.

### ***Critical Low Flow Condition***

The critical low river flow condition used in reasonable potential and effluent limit calculations should be consistent with the averaging period and excursion frequency associated with the numeric interpretation of Idaho’s narrative nutrient criterion. As explained above, the averaging period for the interpreted narrative criterion is seasonal, and the excursion frequency is once every 10 years.

In the October 2014 draft permit, the EPA had proposed TP effluent limits that were the same year-round and that were based on interpreting the narrative nutrient criterion as an annual average value. The EPA had proposed to use the 10<sup>th</sup> percentile 365-day rolling harmonic mean flow, which is consistent with an annual averaging period and an excursion frequency of once every 10 years. The 10<sup>th</sup> percentile 365-day average harmonic mean flow for the Pend Oreille River upstream from the Priest River is 10,259 CFS.

The Kalispel Tribe stated in comments filed during the initial public comment period that the effluent limits for phosphorus should be based on seasonal 30-day, 10 year low flow rates (30Q10) instead of the 10th percentile 365-day rolling harmonic mean flow.

Although it is somewhat conservative to use a 30-day low flow to calculate water quality-based effluent limits for a criterion which is averaged over a season lasting several months, the EPA believes it is reasonable to use the 30Q10 low flow rates for this purpose. Mixing calculations for phosphorus now use the seasonal 30Q10 flow rates. The seasonal 30Q10 flow rates are 6,640 CFS for June – September and 8,260 CFS for October – May.

### ***Upstream Concentration***

NPDES regulations require EPA to consider existing controls on point and non-point sources of pollution when performing a reasonable potential analysis (40 CFR 122.44(d)(1)(ii)). This is accomplished by considering the upstream concentration of the pollutant of concern in the reasonable potential analysis. EPA has assumed an upstream TP concentration of 7.3 µg/L, which is the area-weighted euphotic-zone average TP target for Lake Pend Oreille in the *Montana and Idaho Border Nutrient Load Memorandum of Agreement*.

The EPA believes this is a reasonable estimate of the upstream TP concentration because the Lake Pend Oreille Waterkeeper measured an average TP concentration of 6.8 µg/L at City Beach, upstream from the discharge, in the summer of 2013 (July – October) and because the Idaho Department of Environmental Quality measured an average TP concentration of 7.2 µg/L at the railroad bridge, upstream from the discharge, during the summer of 2009 (June – September) (IDEQ 2009).

### ***Effluent Concentration***

The effluent concentration used in the reasonable potential analysis was the maximum effluent concentration reported by the City on its DMRs between June 2010 and August 2015, which was 5.33 mg/L.

### ***Projected Downstream Concentration***

The projected downstream concentration of TP was calculated as follows:

$$C_d = \frac{C_e - C_u}{D} + C_u$$

Where:

$C_d$  = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)

$C_e$  = Maximum projected effluent concentration

$C_u$  = Measured upstream receiving water concentration

$D$  = Dilution Factor

Reasonable potential analyses may consider the dilution of the effluent in the receiving water where appropriate (40 CFR 122.44(d)(1)(ii)). The EPA believes it is appropriate to consider the dilution of the effluent in the receiving water in this case. The effluent flow rate is very small relative to the river flow and there is no indication that the central tendency of the upstream concentration of TP currently exceeds the criterion. The dilution factors for the reasonable potential analysis were calculated using the mixing zones authorized by IDEQ, as follows: