



Briefsheet

Lake Chelan TMDL -- a plan for keeping it clean

What is a TMDL?

Federal law requires states to identify sources of pollution in waters not meeting water quality standards, and to determine how much pollution the waters can receive and still maintain the uses we enjoy. This limit is called its "loading capacity."

A set of pollutant limits for that waterbody, based on sampling data and computer modeling, is called a Total Maximum Daily Load (TMDL), or water cleanup plan.

Why Lake Chelan?

This lake is a unique state resource that was threatened with becoming polluted. The Lake Chelan TMDL is a good example of how the process can help *prevent degradation* of the high quality of water, and of how a locally-driven initiative can use federal law to attain a community goal of clean water.

Lake Chelan is a pristine lake in north central Washington. It's more than 50 miles long with an average width of one mile and a maximum depth of 1,486 feet. Its volume is so great, it takes almost 11 years for all the water to be replaced. The watershed covers 924 square miles, mostly in national forest and park lands. It is an important



Today finds more people living at Lake Chelan year-round than 10 years ago.

destination for recreation and tourism, which is key to the economy. The southern shore is experiencing rapid growth of new year-round residents.

In 1989, Ecology completed an intensive water quality assessment of the lake. The study had three main purposes:

- To provide baseline water quality data;
- To evaluate on-site septic disposal systems within the developing watershed; and
- To estimate the potential sources and harm from nutrients, bacteria, and other chemicals.

What did the TMDL find?

The assessment found that phosphorus was the principal nutrient controlling algal growth in Lake Chelan. Between 75 and 90 percent came from natural sources, largely forest runoff and direct precipitation. Of the remaining, 10 to 25 percent came from septic systems and agriculture (primarily orchards). Chinook salmon net peris contributed less than a tenth of a percent of the phosphorus.



How did the TMDL help water quality?

In 1990, several local groups formed the Lake Chelan Water Quality Committee, which prepared the Lake Chelan Water Quality Plan. As part of the TMDL, the plan specifies steps to ensure the lake maintains its pristine condition. Its first recommendation was to expand existing sewer facilities and extend services to unsewered areas.

Ecology provided the technical analysis that formed the basis of the TMDL. Total phosphorus loading capacity was set at 112 pounds per day, allocated among the existing sources. Using water quality modeling based on the expected growth in the watershed, this allows for a maximum increase of 1.1 pounds (about 1 percent) of phosphorus per day to the entire lake. This can be projected to about 35 years of allowable increased nonpoint pollution, if the recommendations of the plan are followed. The plan limits the net pens to their existing level of phosphorus input.

Ecology needs to be able to show that a TMDL will work - in other words, that it will clean up a polluted waterbody or keep it clean. EPA approved the Lake Chelan TMDL because it was backed by an interlocal approval signed by five local agencies agreeing to carry out the water quality plan. This action demonstrated that local groups have a major commitment in protecting the pristine conditions of the water.

How will the environment be affected?

Specific control measures are assigned to each of the groups who signed the interlocal approval. These include extending sewage facilities into the watershed and developing stormwater plans, farm plans, boat waste plans, and the accompanying implementation ordinances. Also included are assurances that agriculture and net pen activities will not increase.

How will we know if it's working?

Because TMDLs require monitoring to assure the effectiveness of the control measures in meeting the limits, Ecology has developed protocols for evaluating success. The Lake Chelan water quality plan includes a long-term monitoring strategy, dividing responsibility among the partners.

If the health of Lake Chelan continues, it will benefit residents and visitors, as well as aquatic life, for now and for the future.

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The north end of the lake, accessible to humans only by boats and hiking trails, forms a gateway to high alpine passes and hanging valleys.

Most of the population and summer activities cluster around the south end.

