

# Lake Ketchum

## An Innovative Approach to Address Lake Pollution



Lake Ketchum algae bloom.  
(Photo by Snohomish Surface Water Management.)

### Introduction

Lake Ketchum is a small 25.5 acre lake located in Snohomish County near the city of Stanwood. Historically, Lake Ketchum served as the drinking water supply for Stanwood. However, in recent decades the lake has experienced ever-increasing toxic algal blooms. The primary causes of the blooms are uncontrolled sources of pollution entering the lake from a nearby farm and from buildup of phosphorus in lake sediments. Lake Ketchum has been noted as the most polluted lake in Snohomish County since 1997, and is on the Department of Ecology's (Ecology) 303(d) list of polluted waterbodies for phosphorus.

### Problem

Since the early 1990s, excessive amounts of phosphorus in Lake Ketchum have led to numerous chronic blue-green (cyanobacteria) algae blooms. Results of algae testing in the lake show toxicity has been as high as 551 (ug/L) micrograms per liter. The recreational guideline for toxicity in water is 6 (ug/L) micrograms per liter. A farm in Lake Ketchum's drainage area historically received poultry waste applications. Although the farm is no longer active, its nutrient-rich soils contribute 23 percent of the annual phosphorus pollution to the lake. Phosphorus-rich lake sediments now account for 73 percent of the annual pollution in the lake. The lake experiences blue-green algal blooms leading to a decline in swimming, fishing, and aesthetic enjoyment. Snohomish Surface Water Management (SWM) determined Lake Ketchum to be their highest priority lake. In 2010, SWM applied for and received a grant from Ecology to develop a project titled the Lake Ketchum Algae Control Plan.

### Project Goals

The goal of the Lake Ketchum Algae Control Plan is to reduce algae blooms in the lake and fully restore the historical recreational and aquatic life uses in the lake. Residents who live around the lake worked with SWM to develop the following elements for the Lake Ketchum Algae Control Plan:

- A whole-lake alum treatment.
- Protection of wetlands near the inlet stream to Lake Ketchum.
- Educating residents about best management practices.
- Annual maintenance and monitoring of the lake's water quality.

### Milestones and Outcomes

In May 2014, SWM performed a whole-lake alum treatment in Lake Ketchum. Unfortunately, only 75 percent of the lake received treatment due to reports of dead-fish sightings along the lake. Nevertheless, the 2014 Lake Ketchum alum treatment was considered an overall success. Monitoring results following the alum treatment showed that total phosphorus was reduced by approximately 82 percent and chlorophyll by 60 percent. In addition to performing annual alum treatments, SWM and Ecology

recognize that alum treatments address the symptom rather than the root cause of too much phosphorus in lakes.

What causes excess phosphorus in Lake Ketchum?

- Sediment-laden runoff from phosphorus-rich soils in the watershed.
- Unmaintained septic systems.
- Runoff of excess landscape fertilizer.
- Lack of shoreline vegetation to help filter pollutants.

Future management efforts on Lake Ketchum include an education program for watershed residents on controlling the sources of phosphorus through:

- Natural lawn care.
- Septic system maintenance.
- Placement of native vegetation along shorelines.



Photo by Tricia Shoblom

## Funding

The initial alum treatment was funded in cooperation with Lake Ketchum area landowners, Snohomish County Surface Water Management, a Stillaguamish Clean Water District grant, and from a Department of Ecology Freshwater Algae grant. SWM estimates that an annual budget of \$56,000 to \$70,000 will be necessary to continue watershed and in-lake activities such as public education and outreach, installation of riparian buffers, minor maintenance, alum treatments, and monitoring. Annual funding will be provided by Lake Ketchum residents, and SWM.

## Partners

Snohomish Surface Water Management (SWM)  
Ketchum Shores Improvement Club (KSIC)  
Lake Ketchum Residents  
Stillaguamish River Clean Water District  
Washington State Department of Ecology

## For more information

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