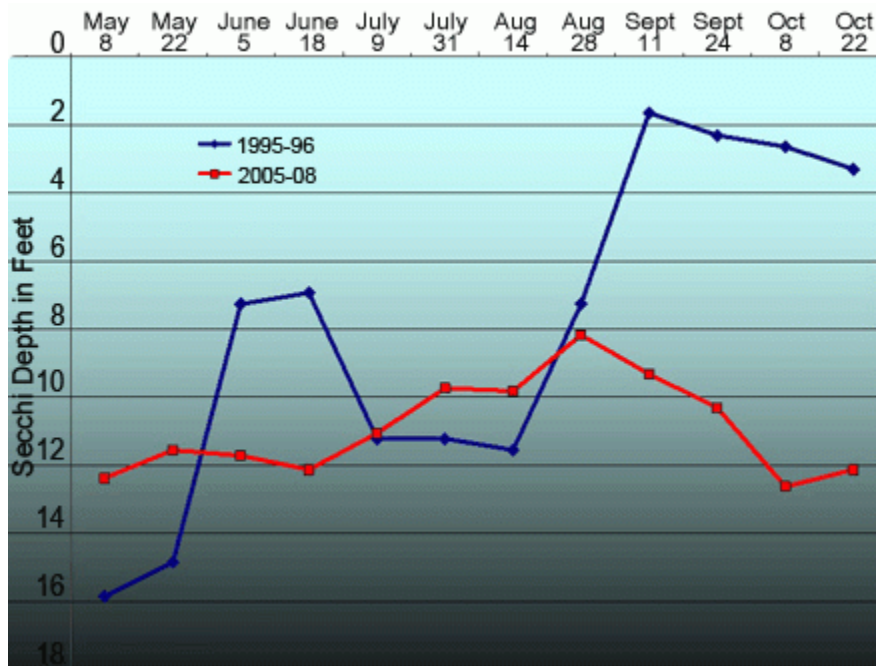


MONITORING PROGRAM

Average Green Lake Water Clarity (Secchi Disk)



To measure water clarity, a Secchi Disk about the size of a dinner plate is lowered into the water until it disappears. **Management goal is an average summer depth of 2.5 meters or 8 feet.**

Measuring Algae Growth

Green Lake water clarity varies with the amount of suspended sediment (clays and silts) and/or plankton (microscopic plants and animals also known as algae) in the water.

A Secchi Disk about the size of a dinner plate is used to measure water clarity. The disk is lowered into the water until it disappears. The distance at which it disappears is a measure of water clarity. Shallow Secchi Disk measurements indicate high levels of sediment (caused by surface runoff following storms) or high levels of phytoplankton (caused by warm water temperatures, sunlight, and nutrients). High levels of phytoplankton can lead to unpleasant odors and scum.

On occasion, blue-green algae (a type of phytoplankton) can grow to great density and may become a health risk. Blue-green algal blooms caused the City Health Department to close Green Lake to swimming and boating in 1999, 2002, and 2003.

The Secchi depth of Green Lake varies throughout the year. In the past, plankton blooms often reduced water clarity in the late summer to less than 3 feet. In 2004, the City treated the lake with alum (aluminum sulphate) to reduce the amount of phosphates in the water and hence reduce plankton blooms. Alum combines with phosphate and settles to the bottom, removing the phosphate from the water. The 2004 treatment provided excess alum and the un-reacted alum settled to the bottom of the

lake where it combines with phosphate escaping from the bottom sediments. The goal of the alum treatment is to maintain a Secchi depth at more than 2.5 meters, year round.

Click [here](#)* to see average Green Lake water clarity over the years. 1995 and 1996 data show conditions before the alum treatment in 2004, and [2005 to 2009 data](#) show conditions after the treatment. The graph shows that [water clarity improved following the alum treatment](#). The 2004 treatment continues to be effective at reducing phytoplankton blooms. Water clarity in the late summer in 2008 was exceptionally high and we wait to see if the high clarity continues throughout 2009.

Bacteria Counts

West Green Lake Beach Bacteria Levels and Water Temperature Graphs and Data

The [King County Lake Swimming Beach Monitoring Program](#) page shows [temperature and bacterial count charts](#) and [data](#) for West Green Lake Beach only. FOGL has requested monitoring of both East and West Green Lake Beach – the only public warm-water beaches in the city. FOGL also helps track the water level of the lake. A gauge on the dock near the boat rentals was installed in 2004 and helps monitor the lake's water level.



Volunteer Billings Middle School students monitor and chart water quality at dockside near the paddle boat rental (February 2010). Friends of Green Lake members Gayle Garman and Richard Fleming take water samples and collect information on water conditions from two kayaks positioned side-by-side as part of the King County Lakes and Streams Monitoring Group (formerly Lake Stewardship Program).

FOGL Monitoring Program Level I

During the spring of 2003, while trying to gather information about the condition of the lake, FOGL learned that no agency was regularly monitoring the lake's water clarity. Friends of Green Lake decided to make the standard Secchi measurements to record water clarity changes through the summer, and in the fall we also began measuring water temperature and the lake level. Gail Barker collected weather observations, secchi disk (water transparency), surface water temperature, and water surface elevation. Richard Fleming collected rainfall as part of that program. Billings Middle School students currently

collect Level I data dockside. Their data is incorporated in the Secchi depth, water level, and lake temperature charts.

FOGL Monitoring Program Level II

Beginning in 2005, Green Lake was included in the King County Lake Stewardship Program, and FOGL members collected Level II information from kayaks. Samples are taken every two weeks from mid May to mid October. FOGL volunteers Richard Fleming and Gayle Garman note general weather conditions and the number of boats and waterbirds on the lake. They take Secchi disk readings for water transparency. Water samples and temperature are taken at one meter below the surface and one meter above the bottom. Precipitation measurements are taken daily year round by Dr. Fleming.

Milfoil Explosion!

Milfoil Growth a Constant Problem and It's Increasing

Proliferation of milfoil weed in Green Lake paradoxically gets worse when lake quality improves. The alum treatment actually helps the milfoil grow and spread as sunlight penetrates deeper in the water. The introduction of non-reproducing grass carp (which eat the milfoil) failed to control milfoil growth as much as was hoped. Milfoil removal projects have been done by the Parks Department in the past, and another project is in the works. A milfoil clean-up project is organized by FOGL once or twice in the fall. Volunteers come with waders and gloves and are provided rakes by Seattle Parks & Recreation. More volunteers are always welcome!



Friends of Green Lake members Gayle Garman and Richard Fleming take water samples and collect information on water conditions from two kayaks positioned side-by-side as part of the King County Lakes and Streams Monitoring Group (formerly Lake Stewardship Program).