

# Volunteers monitor water quality

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[By JILL MOON](#)

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HIGHLAND - To most people, Silver Lake just looks like another dam-created lake. But to Highland's water plant supervisor, Bob Wittenborn, it's the city's bread and butter.

Cities that depend heavily on their lakes for revenue, such as Highland, rely on volunteers like Wittenborn, of the Illinois Environmental Protection Agency's Volunteer Lake Monitoring Program, to gather information to help the private and public sectors make better natural resource management decisions.

Wittenborn not only serves as supervisor of the plant supplied by Silver Lake but as a volunteer to monitor it. Independent residents who just want to protect the environment also can volunteer in the program.

The volunteers come in where IEPA employees and water plant operators leave off. The agency does not have enough staff to monitor Illinois' 3,041 lakes, which are water bodies more than 6 acres in size, for overall lake or pond health. Southwestern Illinois has about 10 lakes. There are about 87,000 ponds in Illinois, which includes reservoirs and water detention ponds.

"If Highland loses Silver Lake, we lose everything," said Wittenborn, the supervisor since 2003 of the Highland Water Treatment Plant and one of more than 300 volunteers for the IEPA Volunteer Lake Monitoring Program.

Highland's 550-acre Silver Lake, created in 1962, surrounded by mostly city-owned property, attracts a concentrated number of waterfowl hunters during hunting season and a steady flow of fishermen all year 'round.

The IEPA established its Volunteer Lake Monitoring program in 1981 to supplement its existing monitoring efforts. The program is the only volunteer water body monitoring program within the IEPA and one of the oldest in the nation. Volunteer monitoring programs for streams, which includes rivers, are nonexistent in the IEPA, said Sandy Nickel, the Volunteer Lake Monitoring Program coordinator in the IEPA's Lakes and Watershed Unit.

"We can only afford so many staff collecting information on lakes and ponds," Nickel said. "The program is also a way to get citizens involved and get them collecting information on their lakes. The information collected helps with better management decisions."

The IEPA has three devoted staff in its Ambient Lake Monitoring Program who collect water samples from 50 core lakes for drinking water quality; water plant operators send water samples in monthly to test for drinking water quality. There are no staff shortages for testing drinking water safety, Nickel said.

"Volunteers don't collect information to monitor public water supply, which is regulated, but for their own use and trend analysis as supplemental to the agency," Nickel explained.

The IEPA has more than 300 volunteers on about 150 lakes, and it's always looking for more volunteers. In the Alton area, no lakes are being voluntarily monitored. The nearest voluntarily monitored lake is Highland's Silver Lake at Silver Lake Park by Wittenborn, who also is on the board of the Illinois Lake Management Association.

Wittenborn monitors three sites in Silver Lake for the voluntary program, testing for transparency, dissolved oxygen and temperature, and nutrient content.

The first site tested usually is the deepest part of a lake. Silver Lake's is 10 feet deep on average, and its deepest water is 24 feet.

On Wednesday, Wittenborn lowered an 8-inch Secchi disk, named for its inventor, into the water until he could no longer see the black and white pie-sectioned, flat disk. Wittenborn lost sight of it at about 24 inches below the water's surface. Then, he brought it halfway up toward the surface to check it against a color chart developed from paint chips.

"The reason why there is limited transparency is because of algae, sediment or both," Wittenborn said.

A lake's coloring could indicate several different conditions about the health of its ecosystem and watershed. Green means a lake has a lot of algae, dark green a lot of nutrients, and dark brown means it has a lot of sediment. But a "clear" lake is not ideal, either.

"You want some color, not clear," Nickel said. "A lot of people mistake that. You have to have either algae or macrophytes putting oxygen in the water for fish to live."

Macrophytes are aquatic plants that are good for a lake. Plants are necessary for fish life, but invasive species are undesirable. A lake intended for fishing, such as Silver Lake, should contain abundant plant life. A lake used for recreation, such as water skiing, should have a clearer color.

Lakes tend to stratify into layers, which is where monitoring dissolved oxygen and temperature comes in. The dissolved oxygen and temperature meter is used to measure both at different depths to see where oxygen is in the lake and where fish presumably can be found. If there is no oxygen in a lake, fish cannot live.

To measure nutrient content of phosphorus, nitrogen, ammonia and suspended solids, among others, Wittenborn collects samples from the lake and sends them to either an IEPA lab or private lab. He also sends samples for chlorophyll testing to the EPA lab. Not all lake monitoring volunteers collect information concerning nutrients.

"Too many nutrients cause a lot of algae bloom, because algae feeds off of the nutrients, especially phosphorus," said Wittenborn, who does the highest level of monitoring in the state, which is advanced as opposed to basic monitoring.

Phosphorus is common in fertilizer and already is present in most fertile land in Illinois, one of the most fertile states in the country.

"The only reason to apply a phosphorus fertilizer is if you have a soil sample taken and don't have enough fertilizer present," Nickel said.

She said the middle number on fertilizer bags, which indicates phosphorus content, should be a number 3 or less. The state of Minnesota has banned all phosphorus content in fertilizer. Fertilizer also adds nitrogen to soil that erodes into lakes. Human waste from septic tanks and animal waste from farm fields add ammonia to lakes and ponds.

"Anything that goes on in the watershed ends up in a lake, either from humans or flocks of geese and ducks," said Wittenborn, who voluntarily monitors Silver Lake with his wife, Janet.

Highland's natural resource officer, Ryan Hummert, and water plant operator Gary Pugh also voluntarily monitored Silver Lake for almost three months this year when Wittenborn was out for shoulder surgery.

The only thing someone needs to participate in the Volunteer Lake Monitoring Program is a boat. Although Nickel does not recommend it overall, she has been on monitoring missions in a blow-up raft. Boats can vary from a canoe to a johnboat to a pontoon boat. The IEPA provides all other equipment, including the Secchi disk.

The volunteer program can be implemented on either private or public lakes and ponds.

"A lot of people interested in the program are avid fishermen, homeowners on lakes concerned with property value, and those who are interested in protecting the environment," Nickel said.

Volunteers see yearly and seasonal trends, which takes five years in the program to be really meaningful. Because of Highland's clean lake study and the Volunteer Lake Monitoring Program, Highland was able to obtain approximately \$800,000 in federal grant money to enhance lake water quality through lake improvements.

The grant pertains to Section 319 of the Clean Water Act for non-point source pollution, which means the source of pollution is unknown. Projects under way with this grant money would address issues involving non-point pollution.

Silver Lake, created in 1962 on the east fork of Silver Creek, serves a population of more than 10,000, including the city of Highland, the villages of Pierron, Grantfork and St. Jacob, and Country Hills Estates, all in Madison County. The lake is intersected by Interstate 70, with half on the north side of the highway and half to the south.

Anyone interested in a lake or its environmental protection but who does not wish to do the monitoring themselves can become involved with the Illinois Lake Management Association. The association's annual conference is Feb. 18 through 20 in Peoria.

For more information about the Volunteer Lake Monitoring Program, contact Nickel at (217) 782-3362, or to request "Lake Notes" about lake monitoring, contact IEPA, DWPC-Lake and Watershed Unit, P.O. Box 19276, Springfield, 62794-9276. Visit [www.epa.state.il.us](http://www.epa.state.il.us) and click on "water" for water quality test results for a city or [www.ilma-lakes.org](http://www.ilma-lakes.org) for more information.

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