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DEC: Lake Source Cooling may hurt Cayuga

Cornell questions validity of state analysis

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ITHACA - Lake Source Cooling may be negatively impacting water quality in southern Cayuga Lake, the New York State Department of Environmental Conservation said in a letter to Cornell University this week.

"The NYSDEC believes the weight of evidence suggests that (a) there has likely been an adverse change in water quality conditions in portions of the (south) Shelf since start-up of the LSC facility, and (b) it is possible/probable that the LSC facility has been contributory to the decline in water quality," DEC regional water engineer James Burke wrote in a letter dated May 26. Cornell provided a copy of the letter to The Journal.

Cornell officials and a scientist on Tompkins County's Water Resources Council said they were disappointed with the DEC's analysis, while environmental activists said they felt vindicated by it.

Cornell and the DEC have been going back and forth discussing how to measure Lake Source Cooling's impact on the lake for roughly a decade. But the conversation ramped up in the last year when Cornell sought permission to stop in-lake monitoring entirely and the DEC required Cornell to include a controversial analysis in its impact study.

Cornell brought its $55-60 million Lake Source Cooling project online in 2000. Lake Source Cooling works by pulling frigid water from the bottom of Cayuga Lake, pumping it into a heat exchanger where it cools other water that is sent by pipes up to the campus for use in air conditioning. The lake water is returned to the shallow southern end of Cayuga Lake.

Lake Source Cooling requires 86 percent less electricity to operate than traditional cooling systems and since coming online, Cornell has reduced its carbon dioxide emissions by 20.6 million pounds per year, according to the university's Lake Source Cooling Web site.

Activist concerns

The concern raised by environmental activists - and now by the DEC - is that by pumping phosphorus-rich deep water into the shallow southern end of the lake, Lake Source Cooling could be contributing to algal blooms and un-rooted weed growth.

Phosphorus, in the form of dead aquatic life and vegetation, naturally sinks to the bottom of the lake. When Cornell pulls water out of the bottom of the lake, 250 feet deep, it pulls this phosphorus with it. The water is returned to the shallow southern edge of the lake, about 10 feet deep, where it can be exposed to sunlight and used as natural fertilizer for algae.

In their letter, the DEC cites conservative statistical analyses, increases in deep-water phosphorus, changes in the zebra and dreissenid mussel populations, and the controversial analysis of sites 7 and 4 as reasons for closer scrutiny of Lake Source Cooling.

Cornell monitors 8 locations in the lake as part of its DEC discharge permit. Site 7 is south of, and closest to, the lake source cooling discharge, which is near the eastern edge of the lake. Site 4 is approximately the same distance from the shore on the western side.

Cornell has long argued that it shouldn't be held responsible for changes at site 7 because that area is also impacted by the two municipal wastewater treatment plants, a large storm sewer runoff drain, and even Stewart Park's goose population. Also, their discharge pipes face north, toward site 1. Sites 1 and 4 showed no statistically significant impact from Lake Source Cooling.

The DEC, however, argued that because Cornell's discharge sometimes move south, and because the southeast quadrant of the lake is the most impaired, the comparison should be included.

Lake Source Cooling is certainly not the only, or even the major, contributor of phosphorus to the southern end of the lake - tributaries and the wastewater treatment plants contribute more. In August, when weeds and algae are worst, Lake Source Cooling contributes approximately 10 percent of the total phosphorus to the southern shelf, according to yearly reports.

Walter Hang, president of Toxics Targeting, is one of the environmental activists who have repeatedly called on Cornell to either remove phosphorus from its outfall pipe or discharge its water below the zone where sunlight can make it usable.

"I do feel vindicated, but I feel deep regret that Cayuga Lake's current pollution problems could have been averted if only Cornell had listened to the public's concerns," Hang said. "How Cornell responds now will be a test of President (David) Skorton's environmental leadership."

Cornell's take

Todd Cowen, associate professor of Civil & Environmental Engineering at Cornell said the DEC has ignored the science that shows Lake Source Cooling has had no impact.

"I've got to say as a taxpayer and as a citizen, I was pretty disappointed," Cowen said. "Basically it's a non-scientific letter. It reads to me like, 'We've received your (analysis), we've looked at it, we understand your perspective and that's a valid perspective but our gut is something has happened in the lake and we think there's a chance LSC is responsible so we're concerned.' Despite the fact that the science says there hasn't."

Roxy Johnston, lab director for the City of Ithaca water treatment plant and a member of the county's Water Resources Council (WRC), said she was disappointed the DEC hasn't considered the collaborative monitoring effort supported by Cornell and municipal scientists.

That proposal would have reduced Cornell's Lake Source Cooling monitoring, with Cornell promising to re-invest money saved into other lake and watershed research.

"The Monitoring Plan the WRC and (Cornell) developed calls for more investigation of aquatic plants, algae, circulation patterns, stream inputs and maintaining some in-lake water quality monitoring locations. It's frustrating that this collaborative approach has not received more support from DEC," Johnston said by e-mail. "The (lake source cooling) data alone will never be able to answer all our lake questions. The same can be said of any of the monitoring efforts. Working together, we could get so much farther and develop appropriate management approaches."

The DEC's letter does not require Cornell to make any changes in its permit or in the functioning of Lake Source Cooling at this time; it only requires the university to respond to the DEC's comments by July 1.

DEC Engineer Cliff Callinan said future conversations with Cornell could include the possibility of permit changes, such as requiring Cornell to remove phosphorus from their discharge or move their outfall pipe, but that no decisions have yet been made.
