Study Published: Pumping Draws Down Lakes and Streams

A study linking groundwater pumping to lake and stream dry-ups in central Wisconsin has been accepted for publication by the international scientific journal *Ground Water*. The study, authored by George Kraft, David Mechenich, Jessica Haucke, and Katherine Clancy of the University of Wisconsin – Stevens Point College of Natural Resources, is available now online with hard copy publication due in 2012.

"We're really pleased that *Ground Water* is publishing this study," said Christine Thomas, Dean of the College of Natural Resources. "Validating research through the scientific peer review process and acceptance into a widely respected journal provides assurance that the science is strong."

The study traces groundwater pumping and its effects on lakes and streams from the 1950s to the present. "The stressed water conditions we've seen over the last few years were predicted in the 1960s and 1970s by some impressive USGS [United States Geological Survey] scientists," said Kraft, the lead author. "Much of our work just validated their predictions."

Some 78 billion gallons of groundwater are pumped annually in central Wisconsin, 84 per cent for irrigation. Portage, Waushara, and Adams Counties pump the first, third, and fourth largest amounts in Wisconsin. Kraft's study found that pumping effects were detectable in lake and stream records going back to the 1970s. Pumping impacts became clear-cut in 2000-2009, when stretches of the Little Plover and Long Lake near Plainfield dried, the beach at Wolf Lake County Park (Portage County) had to be closed, and fish kills occurred at other lakes. "Some attributed the dryups to a sort of record drought," Kraft explained, "but the weather record shows precipitation was just about average or a little dry."

The study discusses that no solutions short of reducing groundwater consumption are apparent, and quotes the conclusions of University of Wisconsin-Madison research partners that small changes like using different nozzles or drip irrigation do not reduce the amount of water used by irrigated crops.

A return to very wet conditions in 2010 has temporarily masked the effects of pumping, Kraft said. Year 2010 was the third wettest year on record in Stevens Point, and 2011 has been similarly wet. "So presently there's good flow in the Little Plover, and there's even some water in Long Lake and Boelter Lake. But without changes in how much water is consumed, we can expect dry lakes and fish kills when the weather again returns to average or slightly below average precipitation years. And we can expect more lakes and streams to be affected in the future as irrigation expands in the region."

Hard copy publication is expected in 2012. An Early Online version can be accessed from Wiley & Sons at **http://onlinelibrary.wiley.com/doi/10.1111/j.1745-6584.2011.00836.x/full** .

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Also see http://www4.uwsp.edu/cnr/watersheds/ for a summary of the study in nonscientific language.