

WATER TECHNOLOGY

Consortium uses real-time data to study watershed

Lisa MacColl, Special to The Record

In an arena where research and grant dollars can be competitive, the Southern Ontario Water Consortium (SOWC) is a study in collaborative innovation.

The consortium, based out of a building on the University of Waterloo's north campus, near Columbia Lake, focuses on helping water technology companies develop and demonstrate innovative technology and approaches. It has eight university partners — UW, Wilfrid Laurier, McMaster, Ryerson, Guelph, Western, Toronto and the Ontario Institute of Technology — and is supported by the Federal Economic Development Agency for Southern Ontario, the Ontario Ministry of Research and Innovation and technology giant IBM.

“The goal of our organization is to help the private sector engage in new ways with academia to develop and commercialize water technology and innovation,” says Brenda Lucas, the consortium's executive director. “While our footprint is anchored in the research on the Grand River watershed, there are common watershed management issues that are applicable everywhere.”

The consortium has developed a platform that can assimilate real-time data that is collected every 15 minutes around the clock from sensors deployed the length of the Grand River watershed, the largest inland river system in southern Ontario and supplier of water for 750,000 people in Waterloo Region, Brantford and Six Nations. “We have developed a data platform with a density of information and monitoring that isn't often found in watershed management,” Lucas says. “We can use and apply the information for different end users and research questions. What kind of new information can we capture with this platform and how can it be extrapolated drives our development.”

IBM is a key partner. It supports the consortium through its Smarter Planet initiative. While the software for collecting the data was developed in-house at UW and the sensors are off-the-shelf technology, IBM provides computational power to allow the platform to capture and analyze real time data from 600 data points per hour. “IBM's assistance gave us the ability to do powerful analytics on the data that we wouldn't otherwise be able to do,” says Lucas. “IBM has been involved since the initial proposal stage. They have invested hardware, software and personnel development to allow us to develop our platform.”

Lucas is quick to point out that research for watershed monitoring in Ontario is done by various conservation authorities, including the Grand River Conservation Authority (GRCA). The GRCA has technology and systems in place to monitor the Grand River, and has been a close ally of the consortium to provide end user expertise and parameters for research.

Since the consortium was founded in 2011, more than 400 person months have been invested in the development of the platform and infrastructure. “The collaboration among the university partners



PETER LEE, RECORD STAFF

Brenda Lucas is the executive director of the Southern Ontario Water Consortium, a research partnership involving eight universities and IBM.



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Researchers with the Southern Ontario Water Consortium collect and analyze water samples in the Grand River watershed.

has worked remarkably well,” says Lucas. Each university has a niche area of specialty and “now that we can drive projects on the platform, that will create other opportunities at each university,” she says.

UW leads the research into the impact of varying degrees of urbanization and associated land use on the watershed. It gathers data on climatic, surface and subsurface conditions using sensors that are connected through wireless telemetry. Labs at UW and Guelph analyze the water samples.

Laurier leads research in the area of ecotoxicology. It uses biological and chemical analytical tools

to assess water quality and its impact on aquatic animal and plant life. For example, researchers are studying the impact of wastewater treatment and agricultural run-off on common species in the watershed.

Lucas says the consortium hopes to improve water management and build a strong water sector to drive economic benefits for the province. “How do we help companies find what they need, find the infrastructure that they need, find the academic partners that they need to drive new innovation and tools and get them deployed successfully,” she says. “All of our partner universities do that and do it well, but the challenge is for smaller or new companies to find the right kind of partnership, find the demonstration facilities they need to commercialize their product and get what they need out of the partnership.”

A strong sense of stewardship for a precious resource underlies all the work the consortium does. “Everything we do is connected to water and every interaction with water is connected to watersheds,” Lucas says. “We all need to care about how we live in the watershed context. We are all upstream or downstream of someone else. We all have a stewardship obligation. Everything we do, every action we take to use water, to remove water, to protect water or to pollute water will have an impact somewhere else. Our project uses that lens to help develop new solutions for water and water management.” ■