

# World's first fully integrated research facility opens in Calgary wastewater plant

March 17 2015

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On March 17, 2015, the University of Calgary and The City of Calgary unveiled the \$38.5 million Advancing Canadian Wastewater Assets (ACWA) facility at the Pine Creek Wastewater Treatment Plant. Credit: University of Calgary

For the first time, university researchers are working side-by-side with municipal operators to advance wastewater treatment technologies and knowledge that will lead to cleaner water, a better protected ecosystem and improved public health.

Today, the University of Calgary and The City of Calgary unveiled the

\$38.5 million Advancing Canadian Wastewater Assets (ACWA) facility at the Pine Creek Wastewater Treatment Plant. An idea conceived more than 15 years ago through the vision of a group of world-class scholars, ACWA is the only fully integrated, fully contained university research facility located within an operating industrial [wastewater treatment](#) plant in the world.

"There is no other facility like this and we expect it to offer groundbreaking water research with global impact," said Elizabeth Cannon, president of the University of Calgary. "It is a place where researchers, practitioners and industry can work together to solve important problems facing cities everywhere. It represents a new way of doing basic and applied science; a way that results in true discovery and innovation that benefits society as a whole. Research of this magnitude would not have been possible without our partnership with The City of Calgary and the support of the provincial and federal governments."

ACWA was awarded \$10.4 million in funding from the Canada Foundation for Innovation and a matching amount from Alberta Innovation and Advanced Education.

It's fitting that this launch coincides with World Water Day 2015 on March 22 as ACWA's purpose is closely tied to this year's theme of Water and Sustainable Development. Research done at ACWA will result in wastewater treatment technologies that remove existing and emerging contaminants to improve ecosystem and human health, creating clean, sustainable sources of water locally and globally.

Unique in the world, the ACWA site includes 3.8 kilometres of naturalized, experimental streams that replicate real-life water situations and enable research that cannot currently be performed anywhere else. Their size (320 metres each), number (12), and connectivity to the city plant allow researchers and trainees to study the effects of actual

wastewater effluent on living ecosystems in real time and to influence decision-making for The City of Calgary's operational infrastructure improvements.

"Water is our most precious resource," said Mayor Naheed Nenshi. "Every community along the Bow River is responsible for keeping it healthy. That means being a good neighbour to municipalities downstream from us. But developing wastewater treatment technologies that can improve the ecosystem and protect human health is not just important for Albertans - it's also a global issue. ACWA represents our commitment to be responsible stewards of the environment and demonstrates we are good custodians of the public money invested in research."

The facility consists of the streams; a dedicated experimental [wastewater treatment plant](#), where methods to remove contaminants are developed and tested; and an analytical laboratory, where the biological and chemical characteristics of wastewater and treated effluents are analyzed. Three additional labs on campus at the University of Calgary also support ACWA research.

"Our government's investment has a direct impact on the local economy, creating high-quality, high-paying jobs through the development, modernization and acquisition of research infrastructure," said the Honourable Michelle Rempel, Minister of State (Western Economic Diversification). "This world leading research facility will transform how wastewater research is conducted leading the way to cleaner water, better protected ecosystems and improved public health for Alberta and the rest of Canada."

ACWA brings together City employees and researchers from multiple disciplines to address three main themes related to water: engineering technologies, public health protection, and aquatic ecology and

ecotoxicology. City laboratory scientists are working together with the university at this location and also at the locations on the university's campus to develop new methods to test for emerging pathogens and substances of concern. In fact, some of the graduate students involved in ACWA research are also City of Calgary employees working in the wastewater system.

The ACWA partnership benefits The City of Calgary in many ways. The City monitors emerging trends and regulations as well as testing technologies to protect [public health](#) and the environment. Results from ACWA research will inform decision-making, and leverage resources, knowledge and skills. New technologies and substances could be assessed in the controlled environment, with results directly influencing policy and regulations.

"Albertans take access to safe and reliable water supplies seriously and our government has developed strategies like Water for Life and the Water Research and Innovation to guide how we use this precious resource," said Honourable Don Scott QC, Minister of Innovation and Advanced Education. "This program, at this world-class facility, will generate important new knowledge to help our province continue to grow while ensuring sustainable water supplies for municipalities, industry and recreation."

Processes refined through the ACWA initiative will have application far beyond municipal wastewater treatment, for example they could be used to monitor water activity and quality remotely in isolated communities and they could also lead to the development of "smart sewers" that live-monitor effluent before it reaches the treatment plant. In the energy industry, the technologies could be applied to test and treat wastewater at remote extraction or processing sites, for example.

All principal investigators involved in the project also have [research](#)

grants from the Natural Sciences and Engineering Research Council of Canada.

"This initiative represents an impressive synergy between a city and its university," says Gilles Patry, President and CEO of the Canada Foundation for Innovation. "Researchers, municipal employees and industry partners now have access to a state-of-the-art facility at the [treatment plant](#), where they can work together to develop new and more efficient wastewater treatment processes."

ACWA has already developed important industry partnerships. Agilent Technologies has provided comprehensive analytical tools and software designed to help researchers more fully analyse their data. "The close dialogue between Agilent and ACWA continually inspires us to develop instruments and applications to address tomorrow's analytical challenges," said Craig Marvin, Global Environmental Industry Manager at Agilent. "Our collaboration is motivated by a deep, shared commitment to something absolutely vital for everyone: clean [water](#)."

Provided by University of Calgary

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