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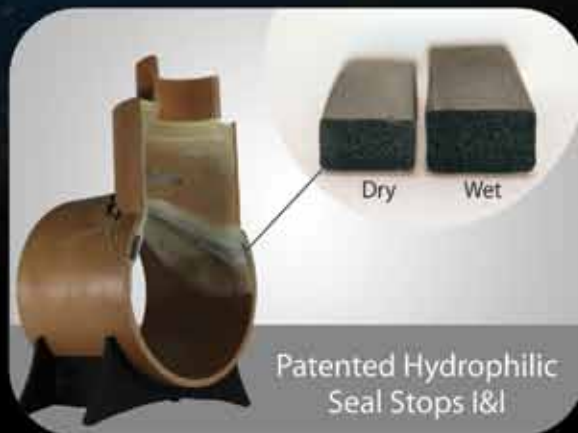
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## water's next awards 2017

### SPECIAL FEATURE

Water Canada  
proudly profiles  
the twelve  
Water's Next  
2017 winners.

**PAGE 21**

## WATER RESOURCES

### 16 Health Check

Years of research lay bare the need for a national freshwater monitoring system.

BY **ELIZABETH HENDRIKS**

## WASTEWATER

### 18 Turning Brown Into Green

Wastewater treatment plants—part of the climate problem or part of the solution?

BY **DIANNE SAXE**

## FEATURES

### 10 Artful Response

Imbedding art in watershed management.

BY **TRISTAN SIMPSON**



10



16



18



35



42

### 12 Canadian Water 150

A vision for Canada as a leader on the global water stage.

BY **R.W. SANDFORD**

## COLUMNS

### 8 Groundbreakers

How artificial intelligence will transform the water industry.

BY **AHMED BADRUDDIN**

### 34 Rules & Regs

How to integrate innovation in water and wastewater infrastructure.

BY **ROBERT HALLER**

### 35 Ask the Expert

Top four trends to transform the industry

BY **KATHERINE BALPATAKY**

### 42 H2Opinion

Water, Peace, Security.

BY **THOMAS S. AXWORTHY**

## DEPARTMENTS

### 5 Editor's Note

A Smart and Caring Nation

### 6 Front

A groundbreaking grain and futuristic story.

### 36 People & Events

Jobs, awards, contracts, and the latest event coverage.





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# A Smart and Caring Nation

BY KATHERINE BALPATAKY

**ON A STICKY**, rainy Sunday afternoon in June, I was listening to CBC Radio 1. Matt Galloway was interviewing Governor General David Johnston about his new book *Ingenious: How Canadian Innovators Made the World*, co-written with Tom Jenkins. Johnston said, "Innovation is about doing things better." Elegant in its simplicity, his comment was stuck in my head all week, and eventually led me to run out and buy the book.

The narrative thread of *Ingenious* is that Canadians have been forced to adapt and be innovative, because of our climate, our history, our diversity, and the desire to make the world a better place. Even knowing Canada's history, when Johnston and Jenkins embarked on the project, they said that they were flabbergasted to learn just how many notable innovations are attributable to Canadians. "We have so many stories that are untold," said Johnston.

Innovation takes many forms. It is technology that allows us to optimize resource use, as Dianne Saxe and Debra Coy point out (page 18 and page 35); it could be new manners of collaboration (see Tristan Simpson's story on water management employing art); or success in creating a movement to motivate others to change, as many of our Water's Next winners have achieved (see pages 21-33).

So many people working in the

water sector are innovating in their own way, many for the same reasons that the G.G. cited. Yet, I think the "desire to make the world a better place" grows more visceral each day. There are now 65 million refugees globally, and managing water in innovative ways will be wholly necessary if we want to maintain our current lifestyle as the climate changes—especially if at the same time we want to help others find peace and security in their daily lives.

For this reason, on the 150th anniversary of Confederation, we are sharing the stories of a group of Canadians who are creating change in innovative ways. We also present a framework (as our cover suggests) to pool our collective water aspirations and expertise to demonstrate global leadership on water issues. This is only the first of a series that Water Canada will contribute on these efforts.

Canada has a long history of demonstrating global leadership on water issues. On June 17, I attended the Canadian Centre for Inland Waters' open house—the first one in 20 years. The event made me feel wistful, thinking of the time when Canada was known as a freshwater science powerhouse. I don't believe that it would be a big leap to reclaim that status. The building blocks are there.

To echo David Johnston: "It's important that we are not complacent about improving the world around us." WC



All back issues of Water Canada are available for download at [library.actualmedia.ca](http://library.actualmedia.ca)

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of WatrHub Inc.  
**PG 8**

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**PG 12**

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**PG 25**

## ABOUT THE COVER



Leaf Radiant (2015)  
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Pachter. Born in Toronto, Pachter  
studied art history at the University  
of Toronto, French literature  
at the Sorbonne, and painting  
and graphics at the Cranbrook  
Academy of Art in Michigan. His  
images of the queen, moose,  
and maple leaf flag are icons of  
Canadian contemporary art. He is  
an Officer of the Order of Canada,  
a Chevalier of France's Order of  
Arts and Letters, and a member of  
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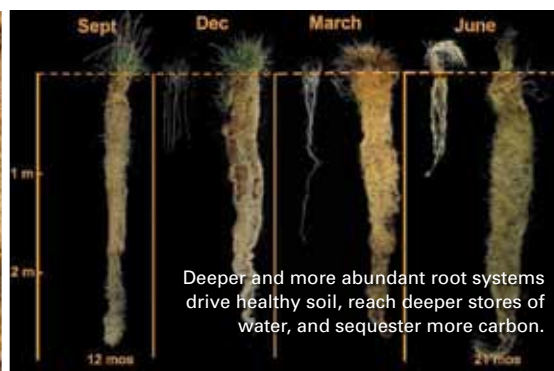
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# With the Grain

## Will Kernza be the next quinoa?

By Katherine Balpataky

**WHEN THE MAKERS OF CHEERIOS** get behind a new grain, touted to build healthier soils, sequester carbon, improve water quality, and be drought resistant: take notice.

In March 2017, Cascadian Farm, part of General Mills, announced a partnership with The Land Institute in Kansas, U.S. to commercialize a new perennial grain called Kernza. The grain is the poster child for a new model of farming called Natural Systems Agriculture that promises numerous ecosystem and water benefits. It is being introduced into agriculture and food markets across the U.S., and now, Canadian officials are testing its potential in Canada.

Doug Cattani, a plant breeder at the University of Manitoba, is working on developing a perennial intermediate wheat grass version of the Kernza grain in partnership with Manitoba's Ministry of Agriculture.

Cattani said, "With perennials, you have the advantage of a much more extensive root system, so they can get mineral, nutrients, and water in areas of the soil that annual crops are not able to tap into. [Kernza] also sequesters carbon, because it has more biomass beneath the ground." He explained that the plant continues to sequester carbon, provide green ground, and hold water through the winter and spring seasons, which helps with flood management.

"When you have water on the soil, as we do in the spring in the Red River Valley, they are utilizing that water."

While a more water-tolerant and resilient grain seems like a no-brainer

for agriculture, traditionally, the limiting factor with perennials relates to seed yield.

Dr. Neil Emery, vice president of research and innovation for Trent University, is a plant physiologist who studies the control of plant hormones to improve crop yield. Emery said, "It's really unusual to have a perennial crop. It takes away a lot of concerns, but then, it adds a few."

Emery said that perennials are not shaped in such a way that they reap the same yield as annual crops. "Perennials have to invest a lot in roots and defensive mechanisms. So you're probably not going to get the huge yields like you get with these annual crops. The closer you are to wild plants, the lower yielding they are. But maybe the tradeoff is more sustainable farming. If it's a high value grain, then, a big price can make up for a low yield."

After seven years of research developing a new cool season strain of the Kernza grass, Cattani is optimistic. "Even though the harvest index is a third of what wheat is, it is still producing at approximately 60 per cent of what wheat is. I think we have potential to have economic yield. We now have materials that will survive western Manitoba winters, and they are far more reliable than our winter wheat."

Emery said, "The lesson of quinoa is one to look to. Who was eating quinoa ten years ago? Almost nobody. But now it's everywhere, and it's a very high value crop." **wc**

Katherine Balpataky is  
Water Canada's editor.





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## Dispatches from Water Town

Looking twenty years in the future, **Andrew Hellebust** shares his futuristic, fictional vision for a wholly sustainable community called Water Town.

**WELCOME TO WATER TOWN, 2037.** Twenty years ago, headlines spoke of energy efficient central treatment facilities, net-zero houses with small natural gas boilers, and the self-sufficient Water House that collected rainwater and utilized composting toilets. Infrastructure design was mostly linear, flowing from central plants to individual consumers and back. Much would change when Water Town started talking to Water House.

Water House in 2037 is part of a distributed water, energy, and organics network and offers dispatchable water and energy generation. The building acts as a cell within an organism, connected by a central nervous system of communication. For example, based on a directive to minimize the greenhouse gas impact of the entire system, a central command system can interrupt connections to buildings for short periods, vary the supply rate, or draw water back to the grid. Storage tanks attached to buildings deliver water at pressure using bladders of compressed air, height, or pumping. Water uses are prioritized. The direction and speed of flow is determined by uses with the highest priority, for example,

for fire-fighting—all tanks push water in the direction to a single building on fire.

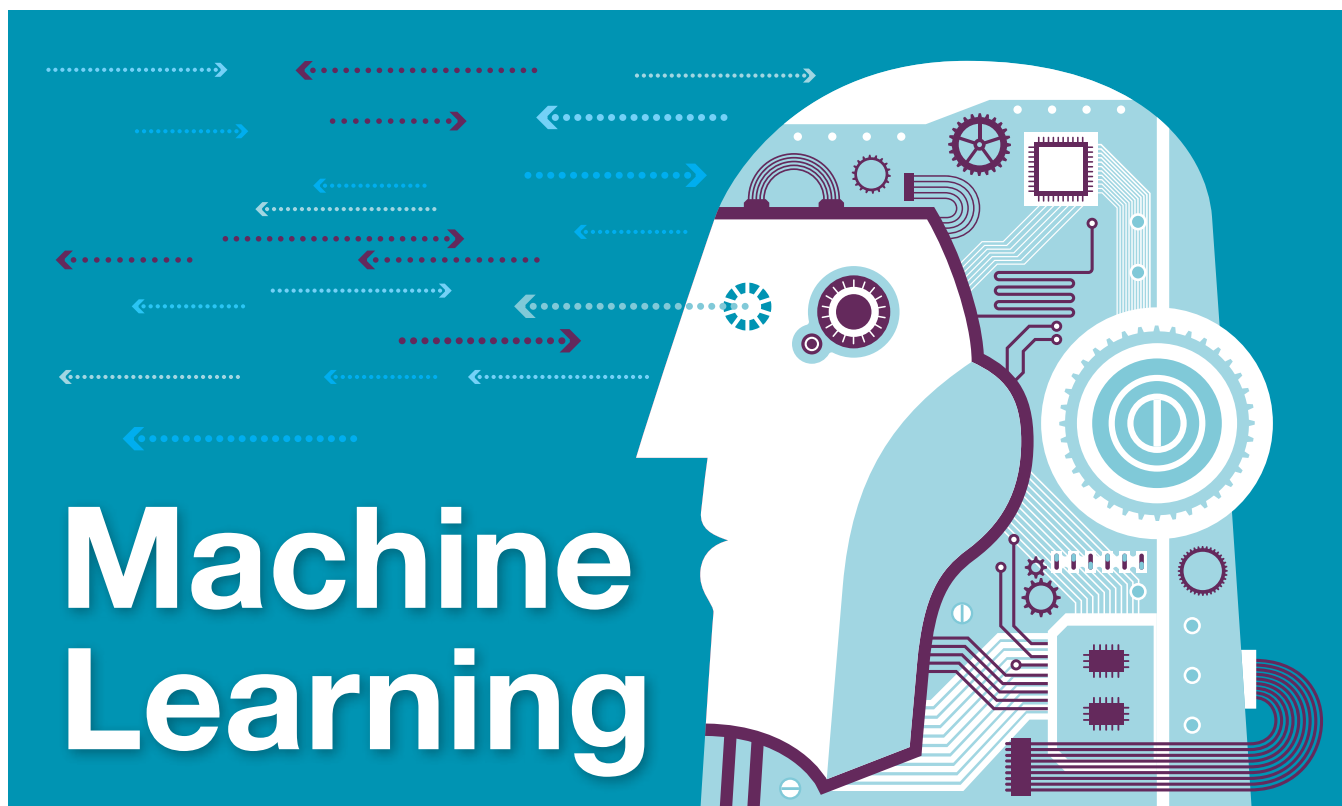
Limited fossil fuels were becoming too valuable to burn when they were required as chemical feedstocks. Agriculture had been reliant on ammonia fertilizer produced using natural gas and on limited and distant supplies of phosphorus and potassium. Over time, humanure became a significant source of nitrogen (N), phosphorus (P), potassium (K) fertilizer, and organics, supplying half of inputs to local food production. **wc**



Andrew Hellebust, M.S.E., P.Eng. is the president of Rivercourt Engineering, a collaborative engineering company offering integrated design services for a post-carbon economy. He is a recognized expert in the reuse of wastewater effluent, natural biological treatments, and constructed wetland design in small, communal systems.



To read more of Hellebust's Dispatches from the Water House, visit [bit.ly/WaterHouse2037](http://bit.ly/WaterHouse2037)



## How artificial intelligence will transform the water industry.

BY AHMED BADRUDDIN

**BIG DATA**, internet of things (IoT) and Artificial Intelligence (AI) are rapidly making their way into the water industry. A plethora of organizations in the water sector are pushing the envelope and taking us into the digital water future. Coupled with the right business models, these technologies are bringing new capabilities for managing water systems that will have an unprecedented impact in reducing costs, optimizing capital investments, and increasing revenue for water utilities.

Here's how to look at it: meters and sensors generate data that gives us a granular and real-time view into assets within a water system. Think of Advanced Metering Infrastructure (AMI) companies, such as Neptune or Aclara, and IoT companies like Echologics that are deploying the latest generation of meters and sensors to unlock real-time data in our water infrastructure. All this data is then stored in data systems so software applications can turn it into useful information that can be actioned

on. For example, cloud-based software platform companies like FATHOM or Optimatics are using this data to re-imagine how water utilities do billing and capital planning.

changing the paradigm in how water utilities manage their water systems.

Here are a few of my reflections on what all of this means for our industry, and the future that these technologies

I believe that with all this data and AI capabilities, we can finally be more proactive, with the capability to predict these infrastructure issues before they happen.

AI algorithms are then automating actions and create predictions based on the vast amounts of data created. This is one of the most recent trends, but we're seeing AI companies such as EMAGIN delivering predictive analytics to help utilities save on operational costs and reduce risks through real-time optimization of assets.

Each of these technologies serve a specific function, and together are

will enable. Firstly, historically we have always operated as a reactive industry; reacting to infrastructure breaks, equipment breakdowns, or water quality issues. I believe that with all this data and AI capabilities, we can finally be more proactive, with the capability to predict these infrastructure issues before they happen. This also means that we will be able to address issues when



they are less costly to solve. Take for example the identification of a potential water leak at its earliest stages. Repairing the pipe at the earliest stages of a leak is much less costly than the loss of millions of gallons of water and repair of larger pipe sections further down the road.

Secondly, water utility day-to-day operations can be transformed by data. Data collection that used to occur on a monthly or weekly basis for operations such as meter reading or water quality reporting can now be done in real-time and at significantly lower costs. Utility assets that used to be siloed can now be connected into a single smart grid so infrastructure can be managed and operated more holistically. This will bring step function increases in operational efficiency for water utilities.

In the past, the only interaction that the ratepayers have had with their water infrastructure is turning on their tap and receiving their water bills. With the deluge of data coming from utility assets, water utilities now have the tools and capabilities to improve engagement with the public. DC Water is at the forefront of this trend and has recently launched an open data portal where they are sharing information on the utility's operations and projects. This gives the ratepayers more visibility into the current state of the water systems and the upcoming water infrastructure upgrades. A more engaged ratepayers base will be critical to funding and supporting the necessary capital programs.

There is a long-held perception that things don't change in the water industry but this is simply not the case. I believe the adoption of these digital technologies is happening at an accelerated rate, and will change the paradigm for the water industry in the near future—and this is an exciting future to be a part of. *WC*

Ahmed Badruddin is the CEO of WatrHub Inc.



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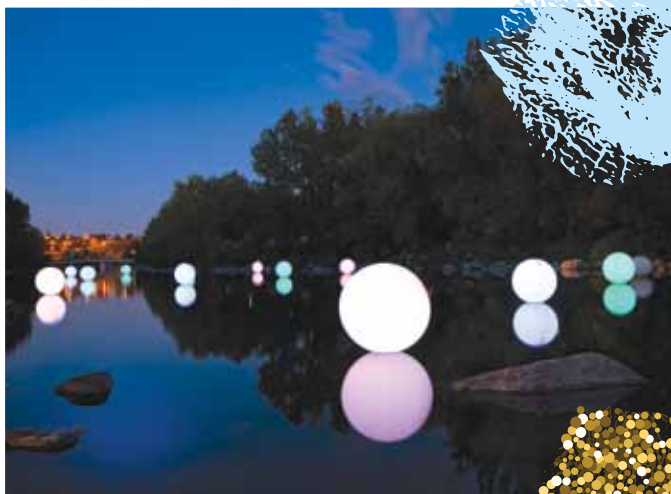
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Calgary's River of Light project used balloons to illuminate the Bow River to encourage Calgarians to reconnect and celebrate the river.



Courtesy: City of Calgary



# Artful Response

Imbedding art in watershed management. BY TRISTAN SIMPSON

**WATER IS TAUGHT BY THIRST** is the title and opening line of a poem by Emily Dickinson. Although Dickinson's poem isn't about Canada's water systems, its sentiment is often reflected among countless Canadians: we don't cherish what we have until it's gone.

Many Canadians don't appreciate their watersheds or the infrastructure keeping clean water running through their cities or whisking away the wastewater. In response, there is a growing movement of artists across Canada who use their discipline to connect, educate, and create new perspectives on water systems.

In 2007, City of Calgary launched the Utilities & Environmental Protection (UEP) Public Art Plan. The plan is dedicated to using public art, in collaboration with other disciplines, to create remarkable places that encourage sustainability and stewardship, and it continues the city's custom of connecting citizens to their watershed through art.

"There's a cultural acceptance of artists and the value everyone brings to the table," said Heather Aitken, program coordinator for the City of Calgary's Public Art Program. Art plays an integral role in celebrating the city's

watershed, she added.

During the summer of 2010, Calgary celebrated the Bow River with several art projects that paid homage to the river. Aitken estimates roughly 20,000 Calgarians lined the banks of the Bow River for the River of Light project. The artists' ideas aren't separate from the municipality's plans but embedded in them. The city's art and water management departments worked together to foster an appreciation for the environment.

Last year, Watershed+: Dynamic Environment Lab, another UEP public



art initiative, connected artists to experts in Calgary's water management system. Together artists and water systems experts travelled upstream and downstream on the Bow River, participated in presentations, and visited essential water infrastructure sites.

Originally from Edmonton, Lane Shordee is a Calgary-based sculptor who took part in the Watershed+ program.

"[Water] feeds the environment, and therefore, it's our social responsibility to understand how we manage it. It is no longer okay to blindly accept that it is being taken care of, because an understanding of water can change how individuals build connections between the water that they use and the watershed that it is connected to," Shordee said.

Watershed+ introduced him to the infrastructure and staff behind Calgary's water system. It also proved the value artists can bring to communicating with the work of city and systems experts to the public.

"Art can use science as a methodology to understand the world and help build those connections to what we see and what we have learned about the environment," Shordee said.

Art has a valuable perspective on the world, because it can use a universal language of visuals to explain complex emotions, scientific terms, or new ideas, he said.

Wyandot multimedia artist Catherine Tammaro shares Shordee's attitude. Water and art have always been an integral part of her art practice and life.

"[Art] is an excellent medium to transfer, relay, and share ideas about water," Tammaro said. However, the audience has to be sensitive and open to viewing the ideas artists convey, she added.

Reflections on Indigenous lifeways and motifs, including the spirits in the land and water, comprise Tammaro's work, but she wasn't always aware of her Wyandot and Algonquin Ancestry. It was

water that bridged the connection.

Tammaro recalls an experience when canoeing in a lake in the Sydenham area of Ontario just outside Kingston, Ont. She said that resonance with a sense of place, what she explains as a blood memory, surfaced during her time on the water. "There was a deep sense of familiarity with being in a canoe," said Tammaro, "and the other feeling states it conveyed, a kind of timeless connection with the land and water there."

Her work often portrays the connection of water, land, and all life, which she calls biological intersectionality—in that sense she is on the water. "iyátō? yōtarawáhstih," Tammaro said in Wyandot. It means, "The water is beautiful!" WC



Tristan Simpson is a freelance writer in Toronto.

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# Canadian Water 150

A vision for Canada as a leader on the global water stage.

BY R.W. SANDFORD

**ON THIS MOST IMPORTANT** anniversary for our country, we have opportunity to reflect upon the role water has played in shaping our identity. When people think of Canada, they think of water—in all its forms. Falling snow, dazzling ice, sparkling rivers, and more than two million lakes. Canada is the heaven to which the world's water gravitates when it needs to be reminded of its purpose and its power.

But over the last 150 years our world has changed. There are more of us, and our impact on the world is greater. We find that we need a new water ethic,

one that dispels the national myth of limitless abundance and connects us again with the sinuous, sensuous nature of our water courses. As part of that new ethic, we have to solve the problems that we have created with respect to the impact of our numbers and our needs on Canadian waters. In other words, we must get our water house in order for the next 150 years.

Francis Scarpallegia, the Member of Parliament for Lac-Saint-Louis in Montreal, has offered such a vision. Drawing on our existing strengths, Scarpallegia has proposed that Canada

distinguish itself on the world stage by offering foreign aid to support initiatives abroad related to the United Nations global sustainability goals related to water and peace. He also argued that we have the knowledge and experience to collaborate with other nations that wish to manage water in an integrated and sustainable way. By doing so, we can create a new water ethic in Canada—we only need to put all the pieces together.

**Sustainable Development  
Goal policy support**

The United Nations University Institute

Canada is the heaven  
to which the world's  
water gravitates  
when it needs  
to be reminded  
of its purpose  
and its power.

a policy support system to allow governments to measure and report on the progress of six policy critical sustainable development components. The aim is to enable governments to accelerate the sustainability process by supporting cross-sector, evidence-based policy and planning with respect to water-related SDGs. Such a framework would assist in making Scarpalleggia's vision a reality.

This Policy Support System is export-ready. It is presently undergoing trials in five countries: Republic of Korea, Costa Rica, Tunisia, Pakistan, and Ghana. Canada must also consider using this process.

### Citizen science and community-based monitoring

One the best potential exports for improved integrated watershed management has been the movement toward citizen science and community-based monitoring. Climate change is rapidly imposing new paradigms for water management as the direct and indirect costs of managing extreme weather events continues to rise. These rising costs impact the economic and social stability of communities. Informed decisions regarding the allocation of water, water conservation, source water protection, and watershed ecosystem health need to be made based on sound scientific data. But, unfortunately, even in tandem, governments at all levels do not have the resources to address all water data deficiencies.

If done correctly and based on recognized standard protocols, citizen science and community-based water monitoring have been proven to provide cost effective, accurate scientific data to decision-makers. These approaches have the added benefit of increasing water literacy and empowering citizen engagement to help steward local watersheds. The pioneering work of Living Lakes Canada, Living Lakes International, and the Global Nature Fund, and pilot projects in the Northwest Territories have demonstrated the potential to inform decisions at multiple scales while building the country's water stewardship culture.

### Restoration hydrology

The UN's 2030 *Transforming Our World Agenda* makes it very clear that sustainable development can no longer simply aim for environmentally neutral solutions. If we are to achieve any meaningful level of sustainability, all development must also be restorative.

Canadians are at the leading edge of the entirely new field of restoration hydrology or what is also known applied regenerative hydrology. We are increasing our understanding of landforms and how they are influenced by precipitation, increasing soil moisture and health while at the same time providing free water storage. Through productive ecological succession, we unlock ecosystems as disaster risk reduction tools and bolster their role in carbon sequestration, and while creating healthier, safer, and more pleasant and productive places to live.

As a result, we are shifting investment in Canada toward restoration of upland watersheds with the goal of viewing water infrastructure not just in terms of hard engineering but as a combination of both natural and engineering elements. Canadian expertise in mine water reclamation, as exhibited at an INCO site in Sudbury, Ont., and the Britannia mine site in British Columbia are examples of this.

### Urban water infrastructure and asset management

In the face of more extreme weather events in the future, we need rain gardens, green roofs, stormwater parks, cisterns, and solutions that in addition to their ecological role can function as public art; this is already done in some cities. We are getting better and better at utilizing restoration hydrology as a critical element of urban adaptation to climate disruption; we have much to export to low income countries/the world majority who want to leapfrog outdated approaches and adopt new and more sustainable technologies and practices.

### Water governance

Approximately half of the some-250 transboundary basins around the world lack multi-lateral agreements for managing shared water resources.

for Water, Environment and Health (UNU IWEH) has created a framework for meeting the targets of sustainable development goals on water and water-related goals in the UN's *Transforming Our World Agenda*.

National policy makers responsible for water from environmental and socio-economic perspectives face the challenge of putting the UN's Sustainable Development Goal (SDG) 6 into action and of measuring and reporting on their policy and implementation progress. The UNU IWEH, located in Hamilton, Ontario, and its partners have developed

Canada's Forum for Leadership on Water (FLOW) is comprised of some of the world's leading experts on water policy. With a century of experience with the International Joint Commission and the Boundary Waters Treaty to the Columbia River Treaty and institutions developed to manage waters that cross provincial and territorial borders, Canada has substantial, exportable experience developing and sustaining robust mechanisms for governing shared waters. Canada can also build upon breakthroughs that have been made here in crafting ground-breaking transboundary water agreements and treaties, such as the 2015 transboundary water agreements between Northwest Territories and the governments of Alberta and B.C..

### Canadian freshwater science

The Canada First Research Excellent Fund has invested heavily in initiatives like the Global Water Futures Research Program.

Presently, this program is the largest university-based water research program in the world. The partnership-based, seven-year science initiative aims to transform the way communities, governments, and industries in Canada and other cold regions of the world prepare for and manage an increasing number of water-related threats. An integrated flood and drought prediction system, which the network has promised to deliver, would be a highly-prized export product.

### Canada 150 vision

On December 21, 2016, the UN General Assembly unanimously adopted a resolution entitled International Decade for Action Water for Sustainable Development, 2018-2028. Sponsored by 177 member states, the Decade aims to promote sustainable development and integrated water resources management, as well as increased cooperation and partnerships to support the implementation of the UN's 2030

Sustainable Development Goals with respect to water.

The declaration of the United Nations on the global water crisis presents Canada a nested win-win-win opportunity. By actively participating in this Decade of Action, Canada can improve its own water management, while simultaneously helping others abroad do the same.

Canada provides its best policies, practices, and technologies to others. Through this, we advance the water sector and our country in the direction of a new national water ethic. And as we do so, we not only get our own house in order, we help create a better, more just, equitable, and sustainable world for others. On the country's 150th birthday, this would be a fitting gift. WC

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R.W. Sandford is the EPCOR Chair of Water & Climate Security with the United Nations University Institute for Water, Environment and Health.



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# Weathering the Storms:

## Ontario Municipalities Plead for Stormwater Infrastructure Funding

Stormwater infrastructure in Ontario is in poor condition and under tremendous strain as the number of severe flood events increase. The Ontario Society of Professional Engineers (OSPE), the Residential & Civil Construction Alliance of Ontario (RCCAO), and the Ontario Sewer & Watermain Construction Association (OSWCA) partnered in 2017 to better assess the province's ability to cope with the impending impacts of climate change and severe weather patterns.

A study on the condition of stormwater infrastructure and the type of asset management planning that is done in municipalities across Ontario found that resources and funding are extremely limited.

**It is estimated that \$1.2 billion would be needed to replace stormwater infrastructure in six focus municipalities alone, with populations ranging from under 50,000 to more than 750,000. As this funding gap increases across Ontario, so will the economic and environmental impacts caused by deficient stormwater management systems.**

In an era of more intense weather, OSPE, RCCAO, and OSWCA believe that this matter must be addressed on an urgent basis to protect property and public health and safety. Stormwater infrastructure is extremely complicated and is significantly different from water and wastewater. In order to weather this storm, municipalities need to prepare stand-alone Stormwater Infrastructure Asset Management Plans that include details of both engineered and natural structures, including their replacement as well as operational and maintenance costs.

**To view the full findings of the report, visit [bit.ly/StormwaterReport2017](http://bit.ly/StormwaterReport2017)**



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# Health Check

Years of research by WWF-Canada lay bare the need for a national freshwater monitoring system. BY ELIZABETH HENDRIKS

**EVERY SUMMER**, as we head out in canoes, jig fishing lines, and dive off rocky outposts, we think of Canada as a nation brimming with rivers and lakes of cool, clean water. But findings from four years of twin health and threat assessments by WWF-Canada paint a vastly different picture of our most valuable resource: Canada's freshwater ecosystems are at risk.

Watershed Reports found significant disturbances to Canada's 25 watersheds (made up of 167 sub-watersheds) from municipal and industrial pollution, urbanization, agricultural runoff, loss of forest, climate change, hydropower dams, pipeline and transportation incidents, and other human activities.

Consider this:

- Pollution is a serious concern in 60 of 167 sub-watersheds.
- Climate change is already affecting every sub-watershed in Canada, with 21 experiencing a high level of impact.
- Habitat loss from agriculture, urbanization, and forest loss is significant in 93 sub-watersheds.

These are staggering results. Perhaps even more alarming however, is the dearth of data about watershed health.

- Though robust data for stressors is available, sufficient data for all the key indicators used to measure stress and the resulting health impacts are available in

only 14 of 167 sub-watersheds.

- Of the 167 sub-watersheds, 110 are lacking the data necessary to paint a baseline picture of watershed health.

And when we do have health data—on water quality, flow, fish populations, and the presence of flies, beetles, worms, snails, and leeches (benthic invertebrates) that make an aquatic system healthy—there is even more cause for concern.

- Water quality is poor or merely fair in 42 of 67 sub-watersheds with data.
- Flow is sub-standard in 37 of the 129 sub-watersheds with data.
- Benthic health fails to reach a good threshold in 20 of 55 sub-watersheds with data.

Human activity is putting unprecedented strain on ecosystems. Yet as a nation we are failing to collect the information necessary to understand to what extent these stressors are harming freshwater across the country. As a consequence, Canada is unable to make evidence-based decisions about our most valuable resource. Canada urgently needs to invest in a national, standardized freshwater monitoring system that tracks the state of our water now and in years to come as climate change and increased population put more and new pressures on this resource.

Indeed, it's shocking to most Canadians to learn that Canada doesn't already track freshwater health on a national scale. Even Prime Minister Justin Trudeau, a self-described map and data geek, expressed concern at the struggle to collect information about Canada's freshwater.

"Hearing about what WWF-Canada had to go through over the past four

years—collect and collate data from so many different sources to try and get a picture of something that, quite frankly, Canadians take for granted and we should know much more about—is a real challenge," Trudeau said at WWF-Canada's Healthy Waters Summit in Ottawa in June. He noted that the public sector, different levels of government, and private partners must step up to ensure data is aligned, collated, and shared.

"We need to know the extraordinary resources we have—not just surface water, but aquifers, as well. We need to understand what's happening to it over time. We need to understand the impacts of climate change, extreme weather events, deforestation, shifts in population patterns, challenges of eutrophication, issues around concentration of waste through cities—there's so much we need to know and so little time in which to gather it, to understand it, and to act to protect what we have for future generations," Trudeau said.

A national, standardized freshwater monitoring system is an essential first step. Another is national recognition that as a public resource, freshwater data should be open, publicly available, and accessible, regardless of whether its collected by government, academia, or industry. Canada now has a baseline assessment of disturbances to freshwater and new awareness of just how little is known about watershed health. The Watershed Reports serve as a wakeup call. It's time for action on a national scale to improve freshwater ecosystems for communities and wildlife, now. **WC**



Elizabeth Hendriks is WWF-Canada's vice-president of freshwater conservation.



The latest WWF-C Watersheds Report is online at [wwf.ca](http://wwf.ca)



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# Turning Brown Into Green

Wastewater treatment plants—part of the climate problem or part of the solution?

BY DIANNE SAXE

**THERE'S AN OLD YORKSHIRE SAYING THAT GOES,** “Where there’s muck, there’s money.” The phrase means there’s a lot of money in dealing with dirty materials. The same can be said for wastewater treatment plants: Where there is organic waste, there is also money to be made or saved through the capture and use of biogas. Policy developments are making energy recovery from wastewater more attractive in Ontario and are likely to do the same in other provinces, as my team and I at the office of the Environmental Commissioner of Ontario recently reported in, *Every Drop Counts: Reducing the Energy and Climate Footprint of Ontario’s Water Use*.

## An underutilized resource

Anaerobic digestion is used in some wastewater plants to reduce the volume of treated sludge and the cost of its disposal. It also creates opportunities to recover energy, through the production and capture of biogas from sewage sludge. Captured biogas can displace fossil fuels as an energy source for onsite heating, electricity generation, injection into the natural gas network (after cleanup to meet pipeline quality standards), and in natural gas vehicles.

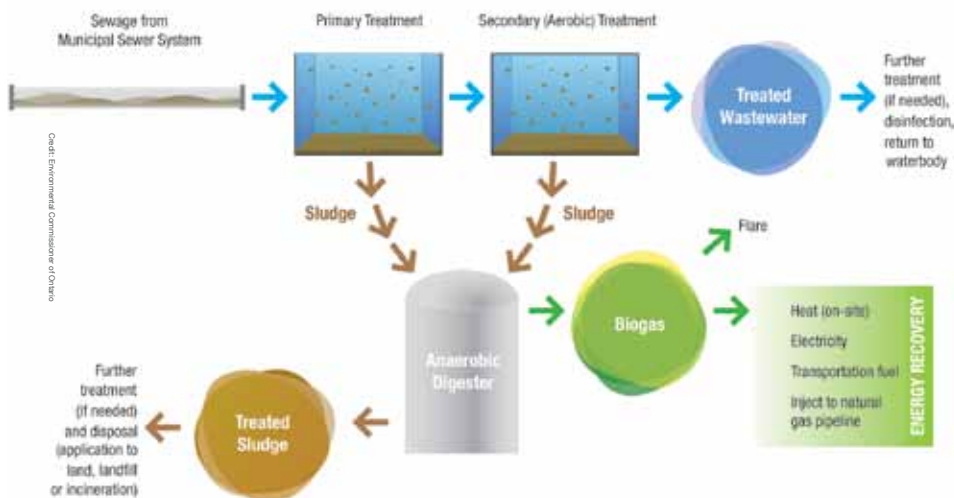
The full potential for anaerobic digestion with energy recovery in the wastewater sector is just starting to

be realized. Our survey of Ontario municipalities showed that only about 30 per cent of responding municipalities use anaerobic digestion. Of these, only about a dozen—generally large—wastewater treatment plants capture and use the resulting biogas for combined heat and power. Only one municipality, Hamilton, also cleans up the captured biogas for injection into the natural gas distribution system. The remaining plants with anaerobic digesters may use some of the biogas for onsite heating. Sadly, when there is no use for this heat, particularly in the summer months, the biogas is flared, wasting valuable energy.

Why don’t more municipalities capture

Credit: City of Hamilton

Hamilton biogas storage sphere and co-generation equipment.



Credit: Environmental Commissioner of Ontario

Anaerobic digestion and energy recovery from wastewater treatment.

and use biogas from sewage? Reasons include an onerous environmental approvals process and insufficient space at some facilities. However, the two most important factors have been uncertainty about the economic value of renewable natural gas and insufficient economies of scale.

### Making the case for biogas

① The low price of natural gas in recent years has weakened the economic case for capturing and using biogas. This will change as the greenhouse gas reduction benefit of using biogas over fossil fuels is recognized and credited. Ontario has introduced carbon pricing

through cap and trade and has also committed to establish a low-carbon content requirement for natural gas. As a consequence, the Ontario Energy Board is currently reviewing how to include renewable natural gas in the supply portfolios of gas distributors. This should lead to opportunities for wastewater plants connected to the gas grid to sell any biogas they produce at a predictable price on a long-term contract.

② Even when there is certainty about the financial value of biogas, smaller wastewater plants may not handle enough sewage to make biogas recovery worthwhile. Policy changes underway for

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waste management may help. Ontario's new Strategy for a Waste-Free Ontario commits to reducing the amount of food and organic waste going to landfill with the possibility of a complete ban on food waste in landfill by 2022. Ontario is also reviewing whether to continue allowing land application of untreated septage (waste from septic systems and portable toilets). If these organic materials can no longer be cheaply disposed of on land, they could be diverted to and used in anaerobic digestion and energy recovery at smaller facilities to enhance the biogas business case.

### Wastewater energy hubs

Co-digestion—the anaerobic digestion of wastewater sludge combined with other organic materials like food waste and septage—can divert organic waste from land and increase biogas production. Ontario wastewater could produce up to 68 million cubic metres of biogas per year. The potential from all organic sources is

twenty times larger, up to approximately six per cent of the natural gas delivered to customers in Ontario. Capturing and using this energy could reduce Ontario's greenhouse gas emissions by up to two per cent—it's a start!

Instead of wastewater facilities staying out of sight, out of mind, they can become renewable energy hubs. A model for this is Saint-Hyacinthe, Quebec, where organic waste from 23 municipalities and other local sources, such as greenhouses and farms, is treated at the wastewater plant to produce pipeline-quality biogas. Stratford, Ont., has recently announced a similar pilot project to integrate digestion of household organic waste at its wastewater plant. Collaboration is key to securing success for this new energy vision. Concerns with increased truck traffic and technical issues with treatment of different feedstocks in the digester may need to be addressed, but efficient solutions exist.

### The time is now


A second phase of federal-provincial infrastructure funding is expected in the next few years. Water and wastewater systems are likely to be areas of focus, as they were in phase one through the Clean Water and Wastewater Fund. The Environmental Commissioner of Ontario believes municipalities should consider using these funding opportunities to invest in anaerobic digestion and energy recovery, among other climate-wise solutions.

The time has come to remove the word waste from our wastewater and recognize it for the valuable energy resource that it is. Let's not miss this opportunity. WC



Dianne Saxe is the Environmental Commissioner of Ontario.

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# water's next awards 2017

Celebrating Canadian water leaders and champions



Water's Next winners received a plaque and an individually hand crafted glass pin by artisan glassblower Aaron Calenda of Guelph, Ont.



## Welcome to Water's Next 2017.

**WATER CANADA** magazine's Water's Next Award program is the only national awards program to honour leadership across the entire water sector—including public servants, non-governmental groups, researchers, municipalities, and technology providers. Since 2010, Water Canada has hosted the awards to help strengthen and celebrate this national community of water leaders, champions, and innovators.

We believe that it is important to showcase these accomplishments, because so many of the accomplishment

that our finalists and winners have achieved go unrecognized by the broader public. And yet, our community knows that clean drinking water, healthy rivers, safe wastewater discharge, and tools to help communities understand water are precious gifts to society. Our hope is that their stories will inspire the next generation of water leaders and innovators.

This year, we owe the success of the program to the 14 outstanding and respected water leaders who participated on our selection committee.

Their guidance in the selection of our 40 finalists and 14 winners demonstrates some great breadth of knowledge and experience.

We were pleased to celebrate their success during our 2017 Water's Next Gala on June 22 at the Sheraton Hotel in Toronto, held in conjunction with the 8th annual Canadian Water Summit.

Thank you to the nominees, winners, and finalists for what you bring to the sector, for your vision, and persistence to protect our most precious resource. We proudly celebrate you in these pages.



[watersnext.ca](http://watersnext.ca)



(L-R) Katherine Balpataky,  
Cameron Manners, and  
Kevin Jones.

## Business: Cameron Manners, Aquam Corporation

**AGEING AND FAILING** water infrastructure is a defining issue of this era. The lead disaster in Flint has created wider public awareness of water infrastructure issues. Cameron Manners, chief technology officer of Aquam Corp., is building a global cleantech firm that is providing the analytic tools to address pipeline rehabilitation.

A homegrown Canadian talent, Manners is a graduate of George Brown College. He founded a company, Nu Flow Technologies Inc., that did small diameter pipe liner manufacturing and installation. Today he brings his twenty years of experience to a much larger organization.

Searching the globe for important technology, he found a system in the U.K. that assesses the conditions of watermain under live pressure. Cameron introduced that company, JD7, and its technology, to North America.

The company's LDS1000 system uses state-of-the-art high definition CCTV technology and ultra-high response hydrophone technology to do leak detection on main trunk mains. The system can travel up to one kilometre in a watermain. It is expected the technology will evolve so that it can do surveys over five kilometres. A key benefit is the ability to launch the system through small pressure fittings, air valves, gate valves, and pillar-style fire hydrants.

"We expect to see positive growth within our company by continuing to offer an array of solutions for infrastructural renewal around the world," said Manners. "Operators are faced with ageing infrastructures. Growing populations, funding gaps, and increasing regulatory requirements

are putting pressure on pipeline systems. Our technology addresses these issues." And then there's that large outstanding issue, lead. "It's a pretty pressing issue. When it comes to the lead issue, not only is there lead in service lines but in schools as well. And we have the technologies to handle these issues. We're poised to be doing a lot of the work as that issue is addressed. And we're going to do it at a cost that is 50 to 60 per cent cheaper than competitors. When you're talking about municipal budgets [...] this technology allows municipalities to achieve more with less," said Manners.

Today, Aquam is headquartered in San Diego. The company is now the parent of Nu Flow Technologies and JD7. There are 20 locations in Canada, the United States, the U.K., and Ireland, as well as 250 employees. The company has been backed by a series of venture financings to this point, most recently through a USD \$13 million debt deal worked out by Wellington Financial LP, a privately-held specialty finance firm. "Aquam is building a world-class specialty infrastructure company. They are a leader and innovator in a number of water-related services businesses around the world," said Mark Usher, a partner at Wellington.

This spring the company took a couple of important steps to get ready for a new round of global growth. The company just appointed a new chairman and a new chief executive officer. Earlier this month the JT7 subsidiary was rebranded as Aquam Pipe Diagnostics. "These are very exciting times at Aquam," according to Manners. — Jeff Sanford

Edmund  
Molyneux



## Academia: Edmund “Ted” Molyneux, P.Eng, Indigenous and Northern Affairs Canada with University of British Columbia & RES’EAU-WaterNET

**AS SENIOR WATER ENGINEER** in the community infrastructure directorate at Indigenous and Northern Affairs Canada (INAC), Ted Molyneux works in the most remote settlements across the land. In ways few others do, he is working on the frontlines to fulfill the Government of Canada’s goal to end boil water advisories in First Nations communities.

In British Columbia, Molyneux is known for attending to issues on very small, off-grid reserves, some so tiny the settlements are not on national registries. An avid and early supporter of the RES’EAU-WaterNET’s Community Circles approach to water purification, Molyneux has applied community-centric, impact-focused research programs through the fourth quarter of 2016. These have led to the installation of two point-of-entry systems in IR3 Spintlum and IR11 Yawaucht of the Lytton First Nations, both of which have recently celebrated the lift of long-standing boil water advisories.

According to the nominator, “long-term drinking water advisories in the B.C. Region, which numbered over 50 several years ago, are now down to less than 10 because of Ted’s efforts. Ted’s impact on the success of these community engagement projects cannot be measured with a monetary value, but he is indispensable to the process of innovation toward improving community health in these settings.”

Madjid Mohseni is a professor in the department of chemical and biological engineering at the University of British Columbia. He has worked with Molyneux professionally, using

approaches adapted from First Nations’ traditional approaches and academia in community settings.

Mohseni said, “He has been the senior engineer for 12 and 13 years, so in the industry he has quite a lot of experience. But what people should know, is that he’s really an amazing individual in terms of his commitment to First Nations communities and their water issues.” He added, “For the past eight years, particularly in the last six, I’ve seen the level of commitment and dedication he brings to the issue of First Nations water. His attitude is really quite exemplary.”

Molyneux is known for championing local, practical, and sustainable solutions. He donates time to the industry and has been a member of the BC Water and Waste Association for 25 years, including 10 years on the Small Water System committee, eight years on the board, and a term as president in 2010. He has also been a board member with the American Water Works Association. “He has done a lot for the professional community,” said Mohseni. He is also helping to prepare and train the next generation of public health and environmental health practitioners by mentoring students.

“He always has an interest in finding ways to address the problem in constructive ways, despite the limitations that exist within the ministry [...] He is really trying to get their perspective and to respect the communities in which he works. In government, the approach is often ‘top down.’ But that’s not how Ted operates,” said Mohseni. — Jeff Sanford





Katrina Hartwig and Prime Minister Justin Trudeau at the WWF-Canada Healthy Waters Summit.



Katrina Hartwig

## Non-Government Organization: Katrina Hartwig, Living Lakes Canada

**GROWING UP** on her family's cattle ranch in the Southern Rockies of B.C., Kat Hartwig developed a strong sense of belonging to and responsibility for the land, which has driven her environmental advocacy efforts for over thirty years. But about twenty years ago, she shifted her focus to water.

"I felt that water was a tangible way for people to understand the impacts of climate change," she explained.

As executive director of Living Lakes Canada, Hartwig works at empowering communities to look after their source water and build resilience. "We're trying to normalize water stewardship," she said.

One way is through community-based monitoring (CBM) of freshwater resources. In collaboration with researchers from Simon Fraser and Acadia universities, Hartwig recently led a nation-wide survey of CBM organizations in Canada. The study found that CBM programs are filling information gaps on watershed health, informing decision-making at various levels of government, and fostering environmental stewardship in communities across the country. The researchers also found that most CBM programs are following scientifically rigorous protocols and having their data analyzed by professionals.

Under Hartwig's leadership, Living Lakes Canada hosted the first-ever national dialogue on community-based monitoring at the North American Lake Management Society Symposium in Banff in 2016. The event connected indigenous and non-indigenous citizen scientists with some of the world's leading water scientists.

"It's about getting boots on the ground," said Hartwig. Given the dearth of data for many of Canada's watersheds and the challenges that climate change will pose for water management, these types of collaborative models are becoming essential to gather information and provide support "in order to make really important decisions around water allocation for both human communities and healthy ecosystems."

Heather Leschied, program director for Living Lakes Canada, was just out of university when she started working with Hartwig in 2005. "She's an incredible leader and mentor who genuinely cares about the people she works with and who cares deeply about the health of the environment," she said.

And she's not afraid of tackling big issues. Leschied noted that Hartwig has played an instrumental role in many large-scale, long-term environmental conservation initiatives in the Columbia Basin and beyond—from starting the first recycling depot in the valley thirty years ago, to helping the Columbia Wetlands obtain its designation as a Ramsar Site (a wetland of international importance under UNESCO's Ramsar Convention), to rallying shareholders to convince a major oil and gas company to pull out of a mining project that would have affected grizzly bear habitat.

"She takes on these programs with grace, commitment and leadership," said Leschied. "She's the catalyst. She understands who should be involved and is highly collaborative, working with government, industry, community groups, academic institutions [...] empowering all those people to work collectively to move the vision forward." — Eve Krakow



Zoe Kirk



## Government:

### Zoe Kirk, Regional District of Okanagan-Similkameen

**THE WORD PASSION** comes up a lot when people talk about Zoe Kirk. Kirk conducts water conservation outreach events for the Regional District of Okanagan-Similkameen (RDOS), and by any measure, she does it extremely well. Tasked with finding resourceful and innovative ways to raise awareness of water protection, conservation, and wise water use among all categories of water users, Kirk has managed to leverage a modest budget into significant community engagement. She has led community members through countless workshops, has executed a wide variety of water-wise and water protection campaigns, and spreads the water conservation message at local and regional events.

Kirk admits that there are challenges promoting water conservation in one of the driest parts of Canada, where the population is small and somewhat transient. "Visitors are not always mindful of conservation," said Kirk, "And we don't have a big tax base for campaigns." She has, however, managed to obtain substantial grant funding to stretch her department budget and implement projects.

Central to Kirk's success is that she absolutely radiates enthusiasm. "Zoe communicates very effectively with the staff, politicians, and the public in a dynamic and enthusiastic style, which pulls you in and keeps your attention," said Liisa

Bloomfield, engineering supervisor at RDOS and one of Kirk's colleagues. "Her passion for sharing what she has learned and developed is poured into every workshop or event she is present at or hosting. Her down to earth and helpful attitude makes her very successful when working with a diverse audience."

Kirk is most proud of her involvement in the West Bench Leak Detection Program, citing measurable results of saving over 400 litres of water per hour. Kirk was involved in every facet of the program, from identifying leaks in the system and holding workshops to designing and distributing a leak detection package for high-consumption residential water users. Leaks were identified before metering went into effect, and residents appreciated that the program was initiated before they became responsible for paying for water consumption under a new rate structure.

Kirk credits her passion for environmental action to a variety of influences, including David Suzuki and Anna Warwick Sears, the executive director of the Okanagan Basin Water Board. Kirk also mentioned Jason McLennan, "one of the world's most influential individuals in the field of architecture and the green building movement." But the best advice Kirk ever received? "My Dad always told me not to let anyone tell me something can't be done." — Maggie Romuld



(L-R) Stefanie Recollet and Ann Langelier.



## Young Professional:

### Stefanie Recollet & Josie Ann Langelier, Water Keepers Journey

**A FEW YEARS AGO**, while Stefanie Recollet was working as an intern for the Wahnapiatae First Nation and going through land claims, she discovered an important ancestral canoe route. She traced it from her home to Lake Huron.

From that moment on, she wanted to paddle in the wake of her ancestors.

So last summer, Recollet and her colleague Josie-Ann Langelier organized the Water Keepers' Journey. They embarked on a 458-kilometre canoe trek beginning at Lake Wahnapiatae, just north of Sudbury, and ending at the Great Lakes Water Gathering in Garden River First Nation, near Sault Ste. Marie.

The journey sought to unify First Nations communities that have been divided since colonial times. "I wanted to show that we're still all connected, and that by working together, we'd be able to have a stronger voice in our work with water and other resources," said Recollet, now an environmental coordinator for the Wahnapiatae First Nation.

Over 19 days, the two women passed through seven First Nation communities. People came out to paddle with them part of the way, welcomed them into their homes and joined in water ceremonies. Because women are traditionally known as the water carriers, Recollet and Langelier carried a symbolic copper

vessel filled with waters collected from each place they stopped.

Their second goal was to assess the current health of the area's water systems, for example by monitoring invasive species and observing how water flows have been disrupted by hydroelectric developments. They met with industry representatives to discuss these issues. "We were able to open up a dialogue with the companies operating on our territory," said Recollet.

For Josie-Ann Langelier, the journey was also an opportunity "to reconnect with my ancestors and with who I am." Langelier was born in Chapleau, Ont., and she is registered as Cree. She moved to Sault Ste. Marie when she was eight years old, and later to Sudbury to study forestry technology. She has been working at Wahnapiatae First Nation as an environmental field technician since 2015. The ceremonial canoe trip strengthened her connection with water. "It's one with me now," she said.

Recollet, who has an honours degree in Law and Justice from Laurentian University, continues to build on the relationships forged during the journey to discuss water and resource management with other communities and agencies. This summer, she is organizing smaller-scale canoe trips to involve youth and foster a sense of understanding and responsibility for the environment. — Eve Krakow





LuminUltra's Jeremy Duguay, R&D manager and his colleague Line Albert, R&D scientist with the PhotonMaster.

## Drinking Water: LuminUltra Technologies

**THE NAME LUMINULTRA** might sound familiar to Water's Next readers: the winner of last year's Water's Next award in the People/Business category was Pat Whalen, the president and CEO of the company. While last year's award was for the man behind the technology, this year the technology itself is being recognized—with good reason.

According to Jeremy Duguay, manager of research and development at LuminUltra, getting accurate and real-time information on the microbial quality of drinking water is still a major challenge at municipal drinking water plants. Microbiological threats are best addressed in their early stages of growth, but it can take days or weeks to get test results using traditional monitoring tools, during which time contamination problems can get worse. LuminUltra's technology reduces that wait time from days to minutes. Real-time identification means that issues can be dealt with before they get out of hand, and it allows water utilities to target the exact cause of problems, saving both time and money.

By any measure, the company has enjoyed significant success since its modest beginning in 2003. The staff has almost doubled in the past two years; LuminUltra test kits, equipment and software are now being used globally by thousands of customers; and sales continue to grow. Duguay believes that some of that success is based on their commitment to providing the industry with the knowledge

and education that's needed to get the most value from the data they are collecting. The LuminUltra Academy, a "foundational piece" of their educational initiatives, is one example. The new, on-demand training platform helps support customers with the information they need when they need it.

Duguay was enthusiastic about LuminUltra Cloud, their latest software application. It's now possible for customers to collect relevant microbiological data, instantly share it with colleagues (wherever they may be) and benefit from immediate collaboration and automated analysis. Duguay said that this capability "represents a huge leap forward in how data from water systems is collected and used," and that it has "the potential to be a game-changer when it comes to better and more proactive use of water quality data."

The company demonstrates leadership by continuously improving its own product line. LuminUltra has also just recommitted to sponsoring the NSERC Industrial Research Chair in Water Quality and Treatment at Dalhousie University for another five years. "We're celebrating a few things around here right now," said Duguay. "The staff is delighted to win the Water's Next award, and the business is expanding so we will soon be moving our operations into a bigger space. And we're already planning for phase two of the expansion—more room for research and development." — Maggie Romuld



## Wastewater: Lystek International Inc.

**ONE MAN'S TRASH IS ANOTHER MAN'S TREASURE.** The waste that's flushed away each day—once a disposal challenge for municipalities—has become an important part of the circular, green economy thanks to emerging technologies like the ones produced by Cambridge, Ont.-based Lystek International.

The Southgate Organic Materials Recovery Centre (OMRC) facility in the Township of Southgate, in the heart of Ontario's farm country, is removing thousands of tonnes of biosolids from the landfill and, instead, turning them into a saleable biofertilizer product. The commercially funded facility has been in operation since 2012. The biosolids that the facility receives, from communities throughout a 120-kilometre radius including Toronto, are converted into a Canadian Food Inspection Agency-registered fertilizer sold as LysteGro.

"Before we had Lystek come in, biosolids were thought of as a waste to get rid of in our landfill pit," said Stewart Schafer, director of operations for the City of North Battleford. "Now we have people thinking of it as a raw resource to be refined and sold as a finished product. It just didn't make sense for us to fill our landfill with something that farmers are willing pay for to grow crops."

North Battleford is one of a growing list of communities across Canada that has adopted the municipal wastewater treatment plant deployment of Lystek's technology, alongside communities like Centre-Wellington, St. Mary's and Guelph to name a few.

Part of the company's recent success has resulted from the flexibility of its technology. The same system that produces biofertilizer can also be used to transform a wastewater

treatment plant into a resource recovery centre. By introducing a recirculation loop back to a plant's anaerobic digester, a portion of the treated or "LysteMized" material is re-introduced back into the digester, making it work more efficient. This approach reduces overall volumes of end material to be managed while substantially increasing the production of biogas that can then be converted into as clean energy to power the plant.

"The amount of nutrients and organic material that are available in biosolids are quite valuable both financially and environmentally, and there is a definite benefit in providing these to the agriculture industry," said John den Hoed, wastewater services supervisor for the Township of Centre Wellington. "The re-use of biosolids provides a cyclical and holistic approach to nutrient management."

Nutrient management has become the newest evolution of Lystek's technology, providing an alternative to traditional carbon sources to keep nutrients out of waterways.

"We've discovered that our material also makes a safe and cost-effective alternative carbon source for Biological Nutrient Removal (BNR) systems," said Kevin Litwiller, director of marketing and business development at Lystek.

Instead of using traditional carbon sources like glycerol or methanol, municipalities are looking to LysteCarb to assist in the removal of phosphorous and nitrogen in a more cost-effective manner.

With a suite of solutions available, all from a simple, affordable system, Lystek is helping communities across Canada and the United States turn waste into treasure. — Andrew Macklin



Michael Fagan, left, and Kevin Jones, right, are transforming the craft beer sector's relationship with water.

## Water Resources: The Bloom Centre for Sustainability (BLOOM)

**BLOOM CENTRE'S WATER & BEER PROJECT** set a goal to make water and resource management a decisive business issue and key factor for the success and sustainability of Ontario's growing craft beer industry.

"I think of our role as an enabler—a catalyst," said Kevin Jones, president and CEO of BLOOM, "because many of the craft brewers or food and beverage companies we work with are focused on making a product first and foremost and getting that product out the door to maximize sales."

Most craft brewers don't think about water and wastewater management as a challenge. As such, BLOOM has to define the problem criteria and open pathways to solutions. "We're talking to them, and many of them are hearing about it for the first time," said Jones. "So, our role, in part, is to raise awareness of the issue and help them understand what the issue is, before we can develop practical, pragmatic information tools that they can use to make changes to their operations."

Through its own research, BLOOM has discovered that if Ontario's craft beer industry could establish an industry-wide water-use-to-beer ratio of 5:1 and reduce the strength of discharged wastewater to 300 milligrams per litre, they would eliminate about 97.5 per cent of CO<sub>2</sub> emitted by the industry.

To Michael Fagan, senior vice president at BLOOM, "These are absolutely legitimate business opportunities for companies." Jones said that craft brewers, "tend to look at end-of-pipe wastewater treatment, but they don't need end-of-pipe wastewater treatment. What they need is a better way to manage their operations and businesses. If they do that, like Haliburton Highlands Brewery has done, they basically have no wastewater—they have the equivalence of residential household, and they can discharge directly into a septic."

By investing internally in process control, the owner also lowers his or her costs. "Now the opportunity exists for sensors and meters, practice improvements and behavioral change, things that might not be considered traditional approaches to wastewater," said Fagan. To push the technological landscape of craft brewing forward and provide water and wastewater resource management solutions to breweries, BLOOM has facilitated industry partnerships with cleantech companies, such as Bishop Water Technologies, MANTECH, Eco-Ethic/BioGill, and ECONSE Water Purification Systems.

Changing water use habits in the industry will have a huge impact. As Fagan said, "If you change the mindset from end-of-pipe treatment to prevention within the system, you actually open the door to a lot of other innovations." — Todd Westcott





The City of Guelph, Ont. captures rainwater to wash municipal busses.

## Stormwater: City of Guelph

**IT TAKES A LOT OF WATER** to wash a bus, which is why it became the City of Guelph's focus as it searched for ways to reduce water use throughout the municipality.

"The City of Guelph has a very aggressive water conservation program," said Emily Stahl, the city's manager of technical services for water services and environmental services. "In this program, one of the goals is to produce water supply to meet the needs of our long-term water supply master plan."

Situated among the mineral rich soils of Southwestern Ontario, Guelph takes 100 per cent of its municipal water supply from below ground sources, and the calcium throughout the supply can make the hard water difficult to work with, especially when it comes to tasks like cleaning municipal equipment, like buses.

With guidance from the consultancy Enviro-Stewards Inc. and thanks to funding from Ontario's Showcasing Water Innovation program, Guelph was able to implement a rainwater harvesting system into its existing bus wash process.

"Not everybody has the same impetus as Guelph to save water," said Alicia Wind, resource conservation specialist for Enviro-Stewards. "But because they are 100 per cent groundwater, there's more value in capturing rainwater."

Using a rooftop collection system, the water travels into the first of four tanks, which have an overall capacity of 13,500 litres. The first tank acts as a settling pond, removing much of the solids from the rainwater. The water is then stored in one of the three additional tanks before being pumped through cartridge filters and a UV disinfection system and finally sent to a day tank for use in the final rinse stage of the bus washing process.

The rainwater capture system is already showing positive results. Based on monitoring during 2016, the rainwater use offset around 548 cubic metres of municipal water demand, for a cost savings of over \$1,800. In addition, stormwater surges at local intake ponds and hard water stains on buses have been significantly reduced, and due to a municipal stormwater fee, the outflow generates utility credits.

The system was purpose-built to allow for expansion, something Guelph can look to do once it has a full appreciation for the benefits that the system has created. An expansion could include revisiting the volume of chemicals needed in the overall wash process, as well as improvements to the system design. — Andrew Macklin



## Conveyance: Liquiforce

**KIM K. LEWIS SR.**, founder and CEO of LiquiForce, found his way into the pipe remediation sector ‘innocently’, way back in 1987. “I was working as a technical inspector. Municipal officials were constantly asking, ‘Can you fix this?’”

Decades on the company that grew out of those conversations is celebrating its thirtieth anniversary at a time the company’s business is rapidly growing out at unexpected new levels.

LiquiForce began doing repair on residential lateral pipelines. How it is the company does this without digging trenches in residential yards is a brilliant one: A felt-type fabric similar to an inverted sock is permeated with resin. Blowing air or water through the fabric see the sock unfold in the pipeline. After a few minutes the polyester resin hardens. The new impermeable layer takes the shape of the existing sewer. Leaks are repaired without a trench or hole having to be excavated.

“We lift a manhole cover off and then fix up the lateral pipe at less than half the cost to dig and replace. The new impermeable pipeline takes the form of the sewer. Its fitted and tight in the pipeline being repaired,” said Lewis.

Lewis first picked up on the idea as it was being developed across the ocean. “There was nothing like this in North America. We looked to Europe. That’s where this started.

We’ve brought the process here and have patented some of the improvements we’ve made concerning materials and techniques. It’s been a process of evolution,” said Lewis.

The company took an important step forward when they developed a trenchless method for their repair process. “A Hamilton official asked if we could get rid of that hole in front of the house. Cities like to stay off private property. Keep it out of sight and out of mind. We looked at it and came up with an idea,” said Lewis. The process of trial and error rang up as solid \$2.5 million in development costs. But the company’s process is minimally invasive, and that’s been key to the service. “Taxpayers appreciate that,” said Lewis. The early up-front investment is now paying off, big time.

“In the mid-90s we were just taking off. Now we’re growing across across Canada and into the U.S. We’re growing exponentially.” This spring the company is at work in Calgary, York Region, Hamilton, and Halifax. Recent major projects include a job at Pearson airport in Toronto as well as a current project involving a 17,000-foot (5,000-metre) pipeline at Midway airport in Chicago. “Way back at the start the jobs were small. Now the jobs are \$50 million at a time. It’s crazy growth. But that’s the way we like it,” he said. — Jeff Sanford



## Early Adoption: Eddy Home Inc – Eddy IQ

**THE INTERNET OF THINGS** is rapidly emerging as the next big economic boom. Today, eighty devices a second are being hooked up to the internet. Eddy Home is surfing this wave with its next generation smart home water monitoring product, Eddy IQ.

According to Nadine Evans, director of marketing, the device is a water metering solution that measures readings of water consumption in real-time. The product monitors for leaks and allows users to remotely shut off their water using an app on their smartphone or email.

“We install the device on the water main line. When it’s first installed, we track usage to find out what is normal,” said Evans. The systems are also monitored remotely by a based-in-Canada customer service team, making it an attractive risk management tool for homeowners and insurance companies.

“Water damage is the number one risk to homeowners today, and there were billions of dollars spent on insurance claims on water in Canada this year. So, when you think of it from a conservation perspective, and water loss from burst pipes, it’s an amazing opportunity.”

Applying behavioural learning insights to the data, the company also forwards daily, weekly, and monthly water usage statistics and conservation challenges to the client. “We can set different standards and set challenges for the homeowner around conservation and usage,” said Evans. According to Evans, the technology can save a household three million litres of water over a lifetime.

“One of the ways we save homeowners money is through leak detection. It’s all of those little leaks. That’s where Eddy suite of products shines. We can tell you are using 40 per cent more than your neighbours. That indicates you’ve got a leak here you don’t know it. Let’s get that fixed. Our customer data has demonstrated that we save them over \$200 a year on leak detection and water and water waste reduction through education and awareness,” said Evans.

Shawn Dym, president of Eddy Home said, “Our interest in this arose from our history in the real estate development business in Ontario. It was through our understanding of how water infrastructure can be a limiting factor in development—this was the impetus for developing the product.”

The company now has 4,000 customers across Canada and California. “These early adopters have been higher-end homeowners who have experienced a leak and are very interested in not having that happening again,” said Evans.

Dym said that they have a number of competitors in the United States and Australia, but they don’t offer the sensors with the shutoff capacity, with the monitoring capability, together with the conservation feedback. Dym said, “We have the most comprehensive water management system out there.” “Water management is a huge industry,” said Evans. “There’s a \$16 billion market there.” She added, “It’s the next essential home service.” — Jeff Sanford



# water's next awards



## Water Steward of the Year

**Katrina Hartwig,**  
Living Lakes Canada

(L-R) Nelson  
Switzer, Nestlé  
Water North  
America  
(presenter);  
Caroline  
Dubois, The  
Gordon  
Foundation  
(accepting  
on Katrina's  
behalf);  
Katherine  
Balpataky,  
Water Canada.



(L-R) Kurt Meyer, Jacqueline Ho, Kevin Litwiller, Jim Belcastro,  
Rick Mosher, Ward Janssens, Katherine Balpataky (host),  
Irene Hassas (presenter)



## Company of the Year

**Lystek  
International Inc.**

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## RULES & REGS



# Future Consideration

## How to integrate innovation in water and wastewater infrastructure.

BY ROBERT HALLER

**EARLIER THIS YEAR** I had the tremendous honour of representing the water sector at the Natural Sciences and Engineering Research Council of Canada (NSERC) Awards, a spectacular evening hosted at Rideau Hall. I stood in line waiting to meet the Governor General, David Johnston, and saw him cordially greet each guest one at a time. When I told him that I work with the Canadian Water and Wastewater Association (CWWA), a genuine expression of excitement lit his face. He said, "You must be so excited to be working in the water sector right now!" We spoke for several minutes about the federal government's infrastructure investments, the need to tackle climate change, and innovation.

While there are still many questions about how future funding may roll out, good things are about to happen. The big question on my mind is: How can the federal government encourage or enforce considerations of innovation in infrastructure?

I often tell the story of how my town of Prescott, Ont., replaced its 40-year-old wastewater plant with a brand new 40-year-old wastewater plant. The replacement of aging infrastructure was made with no consideration for factors like operating costs, waste reduction, energy reduction, energy production, or climate change impacts. As new federal infrastructure is delivered, we expect that these factors will be mandatory.

My sense is that the federal government will encourage new technologies by opening up design and procurement processes. CWWA has stated repeatedly that to be eligible for grant funding, you must have a proper asset management plan in place and that any consideration

of solutions must be based on a full life-cycle analysis. Moving beyond the design and capital costs to the long-term operating costs can only demand the reduction of waste, the reduction of energy, and opportunities for energy revenues. Future climate change incentives and penalties will force the reduction of GHGs.

Another key to innovation is a more open, output-based procurement and design process. There has been a trend toward pre-qualification and pre-selection of solutions, but this falls short of being truly innovative. We need to be more open to the notion of federally- or provincially-approved outcomes. Announce the results you are seeking and see what you get.

Before we look at new innovative treatment methods, we must find innovative ways to optimize the assets that we already have. There are logical approaches to analyzing our current systems to maximize their efficiency and prolong their useful life. Then, as we look to replacement and the optimal solutions, we must have a better sense of what we expect to be facing in both the distant and not-so-distant future.

Finally, we need climate change models, flood mapping, and risk management tools for floods and droughts to inform our decisions. This must be supported by research that is readily accessible. In the future, innovative thinking will be required in every aspect of what we do. **wc**



Robert Haller is the executive director of the Canadian Water and Wastewater Association.





Debra Coy

# New Water

Top four trends to transform the industry. BY KATHERINE BALPATAKY

**DEBRA COY** has been an advisor to XPV Water Partners since 2010 and joined the firm full time in 2015. Based in the Washington, D.C. area, Coy has created a unique franchise and expertise in covering the global water sector for investors. She was named a Financial Times/Starmine Best Brokerage Analyst in 2008 and 2009 and a Forbes Best Brokerage Analyst in 2010.

Water Canada caught up with Coy at the Canadian Water Network's Blue Cities to discuss market trends most likely to transform the industry.

## How did you get into water capital investment?

**DC:** I got hired for my language background, as a double English major. I worked as an editorial manager for this little Wall Street research firm, and I decided that I wanted to do water.

My firm was acquired by a British bank, just when Maggie Thatcher privatized that water industry, in like 1989. In the early 90s, U.K. water utilities were rolling in cash, because the privatizations had been so successful, and they were looking to do a lot of cross-border acquisitions. So, the bankers in London were saying, "You gotta figure out this water stuff."

## What are the top four trends or areas of innovation that you think will most impact our sector?

### The digital transformation

What we call the digital transformation is impacting industry and society broadly. Data analytics, sensors, decision support

tools, drones and robotics, sources of data collection, as well as artificial intelligence, which is part of data analytics and controls.

The digital technologies include physical technologies, such as sensors, or software technologies and communications technologies. Fifth-generation mobile networks [5G] are really going to make a huge difference. I think we are still in the very early stages.

### The generational transformation

We are seeing a bit of a rough transition in the water sector right now. The digitally savvy millennials don't have the experience or the historical knowledge of how these systems work. We are in that difficult period of trying to translate that knowledge into experience, or trying to translate the experience into new knowledge. The brain trust is retiring; and yes, they were old fashioned in their way of doing things, but they knew the history of this system for 30 or 40 years.

### Decentralization

There are many people who are very opposed to the notion of decentralization. It doesn't make sense everywhere, but outside of urban centers it makes a huge amount of sense. Historically, it has been a people issue. You have a lot of decentralized systems that haven't been maintained and developers who have abandoned these systems after they were installed. I think that technology is making decentralization, not only possible, but safe and reliable.

I used to hear pushback from the big utilities. They would say, "How am I going to keep track of what's going on out there?" You don't need to keep track anymore. Nothing is so remote that you can't get data back from a satellite. You can also remotely transmit operational controls—there are self-cleaning membranes, self-correcting pumps—it can all be done with remote sensing, remote control, and remote operations. Decentralization is very closely tied to automation.

### Resource recovery

Water efficiency, energy efficiency, reuse and recycling, and also recovering nutrients and energy from wastewater; things that—when you think about them—seem so logical, and yet, we are really not doing them enough. It's kind of crazy how little we're doing. Even in desert areas, like California, they are just starting to think about rainwater capture—it's astonishing.

It's still quite new to think that a wastewater treatment plant can actually be energy neutral. As energy prices go up, we are starting to think about how we can operate more efficiently.

*This interview has been edited for length and clarity. wc*

Katherine Balpataky is Water Canada's editor.

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## APPOINTED



JANE  
BUCKLAND

Water Canada welcomed **Jane Buckland** as associate publisher in March of 2017. Previously a sales manager at Marketing magazine, Buckland is a 15-year veteran of the Canadian media industry, with extensive experience in sales and account management roles. Since March, Buckland has been busy immersing herself in all events and organizations dealing with water. Instrumental in executing the 2017 Water's Next awards, Buckland has brought unique market insights and dynamic partner engagement opportunities to Water Canada magazine and parent company Actual Media Inc.



DEIRDRE  
LAFRAMBOISE

Canadian Water Resources Association (CWRA) has hired **Deirdre Laframboise** BES, MES as executive director. Laframboise has worked for over 25 years in the not-for-profit sector in the areas of sustainability, climate change, health, and related policy work. She serves on several national advisory committees related to climate change science and knowledge mobilization. In 2013, Laframboise was awarded Alumni of the Year from the Faculty of Environment, University of Waterloo. Laframboise holds an undergraduate degree in Environmental Studies, University of Waterloo, and a Master's degree in Environmental Resources Management, York University.



ELLIOTT  
CAPPELL

The City of Toronto has appointed **Elliott Cappell** as chief resilience officer (CRO), a new position created to lead city-wide resilience-building efforts. As CRO, Cappell reports to city manager **Peter Wallace** and will oversee the development and implementation of a comprehensive Resilience Strategy for the city. Cappell, a Toronto native, is an international climate resilience strategy

specialist with experience in over 20 countries. He has more than 12 years of strategic policy experience, most recently at Adam Smith International (ASI), a policy development and project management firm, where he served as head of climate change strategy.



NEVIN  
MCKEOWN

The Ontario Clean Water Agency (OCWA) has announced its new president, **Nevin McKeown**, as of June 6, 2017. McKeown has been with OCWA since its inception in 1993. He brings a wealth of operational expertise and experience to the role. McKeown previously held the position of vice president, Operations, prior to taking on the role of president following the retirement of former president **Rob Andrews**. Over the years, McKeown has led a number of significant initiatives, including the operational integration of \$350 million in capital expansion projects at the wastewater facilities for OCWA's largest client, the Region of Peel.



GORD  
JOHNSTON

Stantec has announced that president and chief executive officer, **Bob Gomes** will retire effective December 31, 2017. **Gord Johnston**, executive vice president of Stantec's infrastructure business, was selected to assume the role of president and chief executive officer, effective January 1, 2018. Johnston has more than 30 years of industry leadership experience, including more than 20 years with Stantec. He has also played an active role in helping guide the company's strategic plan over the past nine years. During his Stantec career, Johnston has progressed in various leadership roles after joining the firm's Water practice in 1990. He later served as the regional business leader for Stantec's Water group in Western Canada before assuming the role of business leader for Stantec's Water business line in 2010.

## RE-APPOINTED



BENOÎT  
BOUCHARD

The International Joint Commission (IJC) announced that effective June 21, 2017, the Hon. **Benoît Bouchard** has been re-appointed by the Government of Canada to serve as part-time commissioner of the IJC's Canadian Section for a one-year term. Bouchard has served with the IJC since June 6th, 2013. In 1984, Bouchard was elected Member of Parliament for Roberval and served in the federal cabinet from 1986 to 1993 as Minister of Transport, Minister of Industry, Science and Technology, and Minister of Health and Welfare variously. Between 2004 and 2010 Bouchard served as the Federal Chief Negotiator with the Mamuitun Corporation representing the Innu Nation of Mashteuiatsh, Natashquan, and Essipit.

## AWARDED

The CWRA Student and Young Professional (SYP) Award recognizes exemplary contributions to CWRA by a student or young professional. This award is intended to honour the individuals who:

- contribute to the accomplishments of SYP groups/chapters;
- contribute to CWRA in general; and
- recognize the value of SYP contributions to CWRA.



CODY  
KUPFERSCHMIDT

**Cody Kupferschmidt** was awarded the Canadian Water Resources Association Young Professional Award at the CWRA Annual Conference. Kupferschmidt is a water resources engineering EIT with Northwest Hydraulic Consultants in Edmonton, Alta. Since moving to Edmonton four years ago he has been involved in a variety of roles with the Canadian Water Resources Association at the student and young professional level. Cody is currently finishing a two-year term as the co-president of the Edmonton SYP chapter.



More news items can be found at [watercanada.net/topics/news](http://watercanada.net/topics/news)

## ONEIA's Business and Policy Forum Toronto, ON

ONEIA's fifth annual business and policy forum drew on May 30, 2017, drew more than 150 environment and cleantech executives along with investment and finance professionals to discuss trends and challenges facing the cleantech sector and to share policy and investment expertise.

**Linda Gowman** of Trojan Technologies and **Tom Kaszas** of the Environmental Innovations Branch, Ontario Ministry of Environment and Climate Change, led roundtable discussions on how regulations could improve the marketplace for Ontario water cleantech companies.

The day concluded with a lively gala dinner celebrating ONEIA's 25th anniversary, which was attended by many current and past board members and featuring a colourful and humorous keynote by Minister **Glen Murray**. A highpoint came in the form of a heartfelt speech by **Alex Gill** acknowledging ONEIA's operations manager, **Marjan Lahuis**, who is leaving after eight years with the organization. ONEIA chair **Grant Walsom** closed the evening by reinforcing the many reasons why ONEIA continues to thrive as a volunteer-based, industry-led organization that connects Ontario's growing cleantech sector with regulators.

## Anishinaabe Water Gathering Whiteshell Provincial Park, MB

Law student Rayanna Seymour and professors Katherine Starzyk and Karen Busby (left to right) are studying which strategies work best when advocating for drinking water rights.



Nearly 150 water protectors and their allies gathered in late May in Manitoba's Whiteshell region to learn from a team of Elders, working with law Professor **Aimée Craft**, about Indigenous perspectives on water. The Nibi onje biimaadiiwiwin (water is life) gathering included medicine teachings, clay workshops, and water ceremonies. The event was the culmination of a five-year University of Manitoba research project funded by the Social Sciences and Humanities Research Council. Participants at the Anishinaabe Water Gathering took home clay water bowls to remember lessons learned, including muskrat's role in creating Turtle Island.

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U.S. Consul General Juan Alsace.



D. Zafar Adeel speaking as part of the Outside the Water Box plenary panel.



The Hon. Glen Murray.



(L-R) Kerry Freek, Tony Vanbommel, George Tsintzouras, Linda Gowman.



Kevin Wong and Aysha Muzaffar.

## Canadian Water Summit Toronto, ON

Collaboration to Action—Leadership and Investment in Canada's Blue Economy was the theme of the 8th annual Canadian Water Summit, which took place over two days on June 21–22. Bringing together over 240 leaders from government, energy, finance, cleantech, academia, conservation, agri-food, and beverage, as well as Indigenous Canadians, CWS 2017 facilitated conversations about how organizations of varied interests can work together to improve water management.

The event kicked off on Wednesday with an experts' panel on stormwater finance, co-hosted by the University of Toronto, School of the Environment's Environmental Finance Advisory Committee in the offices of Bennett Jones, LLP. The panel included **Helge Daebel**, Emerald Technology Ventures; **Phil James**, Credit Valley Conservation Authority; **Victoria Kramkowski**, City of Mississauga; **Tracy Patterson**, Principal Freeman Associates; and moderated by **Katherine Balpataky**, Water Canada/CWS.

Later that evening, dozens of students and young professionals convened at the Merchant Tavern to engage in a speed mentoring session that featured **The Water Brothers** and water experts from a variety of disciplines coordinated by

Toronto Region Conservation Authority. They were joined later by a much larger crowd of delegates for the CWS Ice Breaker networking reception.

In the early morning hours of June 22, for the first time ever, CWS hosted a networking event to discuss trends in workplace innovation, diversity, and prosperity—the Women in Water Networking Breakfast. Dr. **Imogen Coe** of Ryerson University led and panel while breakout discussions focused on gender equality and how diversity leads to innovation in the sector.

CWS emcee **Fred Keating** and chair **Hank Venema** of the International Institute of Sustainable Development welcomed participants to the main event. Minister **Glen Murray** delivered a charged opening keynote on the realities of climate change. Murray was followed by an inspired plenary panel led by Ivey School's **Tima Bansal**, featuring **Nelson Switzer** of Nestlé Waters; **Jon Radtke** of Coca-Cola; **Dan Kraus** of The Nature Conservancy of Canada; and **Chris Godwaldt** of COSIA, speaking about how diverse corporations are partnering to deliver solutions for drought response, groundwater recharge, and data gaps at the watershed scale.

Ontario Environment Commissioner **Dianne Saxe** led a panel on trends

driving non-typical water actors to examine their relationship with water that included **Hank Venema**, **Eric Meliton** of TRCA, **Helge Daebel**, and Dr. **Zafar Adeel** of the Pacific Water Institute. Participants networked with exhibitors and found their lunch before an inspiring presentation by the Honourable **Elizabeth Dowdeswell**, Lieutenant Governor of Ontario, introduced Canada C3 expedition leader **Geoff Green** who skyped in from aboard the C3 vessel in the St. Lawrence River.

Afternoon breakouts included two participatory policy pitch sessions from leading Canadian industry associations who shared their best-bet solutions for climate resilience via procurement and design standards for water infrastructure. The afternoon also included sessions on Canada's brand in the global marketplace and ways to address the infrastructure gap in Indigenous communities.

CWS 2017 closed with a networking reception in an outdoor courtyard followed by the annual Water's Next Awards Gala (winners featured on pages 21–33) where 160 water leaders celebrated the accomplishments of this year's finalists and award winners. The organizers are already working on the 9th annual Summit in June 2018 to be held in Western Canada. [watersummit.ca](http://watersummit.ca)



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The Hon. Elizabeth Dowdeswell greets student essay content winners.



(L-R) Kerry Black, Mary Jane Loustel, Wesley Bova, John Kingsbury.



(L-R) Darko Joksimovic, Robert Haller, and another water friend meet in the Waterfall Garden.



Terry Reese and Hank Venema.

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The Canadian Centre for Inland Waters.



Gerald Tetrault, right, and an electrofishing crew.



Inside DFO's mobile invasive species lab.



Inside CCIW people speak to biologists about waterfowl.

## Canada Centre for Inland Waters Open House Burlington, ON

When the Canada Centre for Inland Waters (CCIW) officially opened in May 1972, it was described as the “finest of its kind in North America, maybe in the world,” by then federal environment minister, Hon. **Jack Davis**, P.C. The building, located under the Skyway Bridge, last opened its doors to the public in 1992—until this summer. On June 16 and 17, the CCIW hosted an open house in celebration of National Public Service Week and the 150th anniversary of Canada. Volunteering their time, government science experts, members of the Coast Guard, and enforcement officers with Environment and Climate Change Canada and the Department of

Fisheries and Oceans Canada manned 50 exhibits inside and outside the building. Over 2,200 attended, showering staff with questions about fisheries, hydrology, invasive species, illegal dumping, and Great Lakes cooperation.

The champion of this event was **Sandra Weston**, director of the Aquatic Contaminant Research Division (ACRD) of the Water Technology and Science Directorate (WSTD) at the Department of the Environment. The organizing committee included Weston, **Quintin Rochton**, **Mitra Brown**, **Bob Rowsell**, **Richard Frank** (all EC), **Drew Stonehouse** (DFO), **Joshua Stacey** (DFO), and **Gerald Tetrault**

## CWWA Window on Ottawa Ottawa, ON

From June 4–6 federal regulators joined leaders of Canadian water utilities to discuss Strategic Visioning of Urban Water Management—Where Canada will be in 2050? The event featured presentations and panel discussions on federal and national policies from the federal departments and national organizations making policy decisions.

**Nancy Kodousek**, CWWA president, along with **David Chernushenko**,

councilor for Capital Ward, City of Ottawa, and **Francis Scarpaleggia**, Liberal MP for Lac-Saint-Louis, delivered opening remarks. The 2017 event also engaged members in a unique strategic visioning exercise to identify gaps and challenges under the guidance of **Xavier Leflaive** of the Organisation for Economic Co-operation and Development (OECD) and **Hiran Sandanayake**, P.Eng., City of Ottawa Asset Management, CWWA

## Blue Cities Toronto, ON

Water utility leaders, academic experts, and consultants from across Canada, the U.S., and internationally (Singapore and the Netherlands) came together on May 17 and 18 to discuss the knowledge and actions needed to create Blue Cities. The flagship event of the Canadian Water Network (CWN), and its municipal consortium members, Blue Cities is a forum for senior water executives to exchange insights and shape transformative actions for municipal water management.

**Edgar Westerhof**, national director for flood risk and resiliency with ARCADIS North America, discussed flood proofing and water resilience projects in the Greater New York City area, sparking a lively discussion.

Concurrent session topics included financing, resilience, data-driven decision-making, and innovation. Speakers included: **Cathy Bailey**, City of Cincinnati; **Monica Emelko**, University of Waterloo; **Carl Yates**, Halifax Water; **Maureen Holman**, DC Water; as well as Toronto Mayor **John Tory**, who delivered a determined speech, acknowledging the importance of climate change resilience planning and municipal leadership.

Representatives of the Association of Metropolitan Water Agencies from Atlanta, Cincinnati, Texas, Washington D.C., and Nashville were also present.

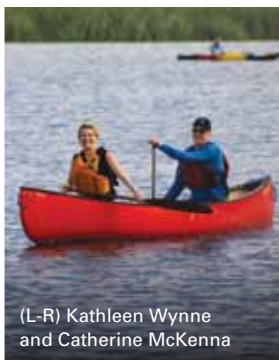
“We are designing for what we don’t know—that’s what resiliency is about; moving to adaptive management,” said CWN CEO **Bernadette Conant**.

National Committee on Climate Change.

CWWA executive director **Robert Haller** noted that, “There’s a lot going on federally right now, especially with the budget and the infrastructure plan.” The event also highlighted the new federal lead guidelines for drinking water and a new memorandum of understanding regarding international standards by the International Water Services Flushability Group. “It’s a big day for the flushables people today,” Haller said.



Credits: Michael Rogan, CPAWS Wildlands League.



(L-R) Kathleen Wynne and Catherine McKenna

## Paddle the Rouge Toronto, ON

On Sunday June 18th, CPAWS Wildlands League delivered free paddling lessons to more than 130 youth at Rouge Beach Park in Toronto. They were joined by premier **Kathleen Wynne** and federal minister of the environment and climate change, **Catherine McKenna**.

Paddle the Rouge is a charity event intended to inspire the next generation of champions for the Rouge Park and all of Canada's irreplaceable wilderness areas.

This year's event included activities designed to connect participants to nature, both on land and in the water.



Seventeen teams of the AquaHacking Challenge.



Credits: Aquahacking

## AquaHacking Challenge: United for Lake Erie Waterloo, ON

On June 26, the de Gaspé Beaubien Foundation, in collaboration with the Water Institute at the University of Waterloo, announced the 2017 finalists of the AquaHacking Challenge: United for Lake Erie.

Over three months, students in technology, water management, engineering, and entrepreneurship took part in five challenge days to create technology solutions to address environmental challenges affecting Lake Erie.

On June 21st, seventeen teams competed in the semi-final at the Centre for International Governance Innovation (CIGI) in Waterloo, where a jury of experts and key players in the local technology industry selected the five finalists. Each team will be awarded \$2,000 in funding from the Region of Waterloo and will join and guided tour of the region to engage with relevant stakeholders. The teams will compete in the AquaHacking Summit on September 13, 2017, to receive up to \$25,000 in support of developing and marketing their solution.

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Axworthy is pictured here with his grandchildren at Victoria Beach, Lake Winnipeg.



Thomas Axworthy gives a lecture at Zhejiang University in the city of Hangzhou.

# Water, Peace, Security

Celebrate 150 by working on water. BY THOMAS S. AXWORTHY

**CANADIANS VALUE WATER** more than any other of our natural resources, including oil and gas. A January 2017 survey on attitudes about water by the Royal Bank, for example, found 45 per cent viewed freshwater as Canada's most important resource compared to 25 per cent who chose petroleum. But you would never know this by our public policy priorities.

While Canadians are consumed by debates about pipelines, Lake Winnipeg is dying, boil water advisories continue to plague remote communities, and we have not even mapped our groundwater aquifers, yet we allow companies to withdraw vast amounts of freshwater for a pittance. On sensible water policies and priorities, Canadians are sleepwalking into the 21st century.

We are not alone in ignoring the centrality of water. Four billion people or 66 per cent of the world's population lives without sufficient access to freshwater for at least one month a year, according to the journal *Science Advances*. This is because both India and China are suffering severe shortages. For that reason, the World Economic Forum places water risk in

the top three global problems along with climate change and terrorism. But water rarely makes it onto the agenda of the G20, and leaders like Donald Trump are making their own water problems worse rather than helping the world cope with the growing crises.

This is a global leadership vacuum that Canada could and should fill. Domestically, a Minister for Water should be appointed to Cabinet to galvanize action as Catherine McKenna has done on climate change. In international development policy, Canada should make water risk the central organizational focus, because water is critical to the United Nations Sustainable Development Goals, as it is a connector between health, food, and the environment.

There is another international dimension to water that the world is starting to realize: In 2012, the InterAction Council of former world leaders led by Jean Chretien declared that water scarcity was a threat to peace and recommended that the UN Security Council take up the issue. In November 2016, for the first time, the Security

Council did indeed debate the topic of water, peace, and security. If Canada hopes to win election to the Security Council, what better platform than leading the world to realize that water is connected to peace?

Canada's 150th anniversary is a time to celebrate the past but more importantly a time to look forward to new goals and priorities. Jahmai Moskotaywenene, an elementary student at St. Pius X in Thunder Bay, did this recently in writing the prime minister. He wrote, "Dear Mr. Trudeau, my class and I want to make Canada's people equal. We also want to make everybody's amount of water equal. Everybody should have the same amount of water to drink, bath, and wash their hands without getting rashes". Amen to that for Canada and the world! wc



Thomas S. Axworthy is public policy chair at Massey College, University of Toronto and secretary-general of the InterAction Council.

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To participate next year, please contact **Jane Buckland** at 416-444-5842x115 or [jane@actualmedia.ca](mailto:jane@actualmedia.ca)

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