VOLUME 20 | ISSUE 1

Onsite

Ontario Onsite Wastewater Association

ONTARIO ONSITE WASTEWATER ASSOCIATION NEWSLETTER

treatment | technology | innovation | reuse | recycle

INSIDE

Ontario Onsite Wastewater Association

Reflect on the Past, Prepare For the Future:

A Case Study on High Strength Wastewater Systems

Caitlin Larwa, WSP Canada

Have we gotten better at treating high-strength wastewater in the past ten years?

Browsing through previous versions of the OnSite newsletter, I came across a 2010 article by WSP titled "Beaverton Tim Hortons and Gas Bar Rural Service Project". The article highlighted an on-site sewage system design that WSP completed in 2009. The project was especially challenging because of the high-strength nature of the raw sewage and the requirement for de-nitrification to meet Ministry of the Environment, Conservation and Parks (MECP) objectives.

Since the article was published, WSP has designed dozens of on-site sewage systems for high-strength applications throughout Ontario. What have we learned in the ten years of designing these systems? And how have these systems evolved?

A comparison of two designs for high-strength wastewater, completed in 2009 and 2019, has been provided in Table 1. The 2009 design was the one featured in the 2010 OnSite article and the 2019 design was recently completed by WSP for a development in Champlain Township. The raw wastewater streams from the sites can be considered similar in terms of quality and quantity.

Both designs utilize a moving bed bioreactor (MBBR) process for wastewater treatment, which is a hybrid of a fixed film and suspended aeration system. Although the general treatment process is the same, there are some obvious differences between the two systems. The grease interceptor has been changed from one tank to two tanks in series, balancing capacity has been added prior to the treatment tanks, the treatment process has been customized and the controls have been upgraded. A reflection on these changes and what we have learned during the last ten years is provided on page 51.

We have refined grease management best practices for high-strength systems.
Wastewater generated from kitchen facilities will have higher concentrations of fats, oils and greases (FOG) than typical domestic strength sewage. Restaurant wastewater can have FOG concentrations of 50 to 100 mg/L, compared to 15 to 65 mg/L for typical domestic strength sewage.
(continued on page 44)

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OOWA Board of Directors

PRESIDENT'S MESSAGE

It's Convention time once again! I would like to take this opportunity to welcome all of our delegates, exhibitors, sponsors and industry stakeholders to our 20th Annual Convention & Expo. This is our industry's time to show off how far we've come over the last year and to get geared up for the year ahead by connecting with colleagues, learning from experts and strengthening our skills. In this Convention Program you can get caught up on some association news, get all the information you need about the convention, enjoy some enlightening articles and get to know some OOWA members.

By way of association updates, over the past year OOWA's Directors have continued to keep an eye on some 'bigger picture' issues that have the potential to impact our industry and our members. This is the kind of work that OOWA's volunteers do behind the scenes and that many members may not hear or know about. This is the critical work of any industry association: staying ahead of and informing its stakeholders of any regulatory changes or emerging industry trends.

In October, a task group of the External Relations committee prepared and submitted a formal response to the province's proposed changes the to the Provincial Policy Statement (PPS). The PPS is an important government document that sets out the overarching policy directives regarding land use planning and development throughout the province. OOWA was pleased to see that the new PPS has adopted a number of changes that recognize the growing importance of rural communities and their need for sustainable servicing that includes private onsite systems and options for decentralized and communal technologies.

OOWA has commented on previous versions of the PPS, and we are proud to see some of our previous suggestions being incorporated to provide clarity around the 'servicing hierarchy' for rural servicing. In the past, the 'servicing hierarchy' has been interpreted by many municipal planners to mean that onsite and communal systems are deemed to be a less preferred or a stop-gap measure to be used only until centralized water and wastewater servicing (the big pipe) arrives. The 'hierarchy' relates to the ownership/management model and not the past suggestion that communal or onsite are less technically capable. This distinction between ownership/management preferences as compared to technical performance is seen by OOWA to be critical in ensuring a proper interpretation of the PPS that supports onsite, communal and decentralized servicing.

One of OOWA's suggestions for this round of PPS changes requests that the Provincial Guideline D-5-2 Application of Municipal Responsibility for Communal Sewage and Water Services be modernized to reflect the fact that there have significant advancements and improvements to onsite and communal wastewater systems since the D-5 suite of guidelines were developed back in the mid 1990's. These D-5 guideline updates would help reduce the level of perceived risk that municipalities associate with onsite and communal servicing that would ultimately improve housing, affordability and sustainable rural infrastructure in Ontario.

Changes may also be afoot for the Ontario Building Code. This fall, the Ministry of Municipal Affairs announced to its stakeholders that it is reviewing the delivery model for building code services. OOWA participated in a stakeholder information session and we will continue to engage in the consultation process to provide our own input when appropriate. One of the potential changes may include continuing education requirements for Code practitioners with a BCIN as part of the ongoing license renewal process. In addition to the review of building services delivery, the Ministry is currently engaged with all provinces, territories and the federal government on the cross-country harmonization of construction codes. As a result, it is anticipated that the next major OBC update will not occur until after the next edition of the National Construction Codes. As many of you know, there is no Part 8 in the National Codes, so it is not clear if or how our industry may be affected by future changes. Stay tuned for any updates.

Over the course of November, OOWA delivered several Regional Round Ups in Eastern Ontario, the Peterborough

Region, Muskoka and Central Ontario. Our discussions at these events focused on sand filter beds and the challenges around ensuring proper material that meets the necessary sand specifications as per the OBC. Attendees discussed how the filter sand material is handled at pits, on the job site and the challenges of ensuring that the sand still meets spec at the time of installation. We also covered some other topics of local interest, such as how to properly size a sewage system considering the trend of adding secondary units to existing houses, as well as issues pertaining to landscaping and how to ensure final grading does not compromise the leaching bed.

I am excited about what we have in store for our convention attendees, as well as OOWA's activities in the upcoming year. I look forward to hearing from our members at our annual Town Hall meeting on Sunday evening, hearing from the Water Brothers and to connecting with everyone in the expo hall! Have a productive and enjoyable time!

Anne Egan, *President*

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To submit an article or place an advertisement contact the editor at **outeach@oowa.org**

CONVENTION SCHEDULE - DAY 1
MONDAY MARCH 2, 2020

10:30 am to 11:30 am	**OOWA Board Meeting**	Salon G
12:00 pm to 4:00 pm	**Registration Opens**	Foyer 4 & 5
12:00 pm to 6:00 pm	**Exhibitor Set-up**	Ballrooms 4 & 5 (Expo Hall)
1:00 pm to 4:00 pm	**Training Sessions** - *descriptions bon page 8*	
4:30 pm to 5:30 pm	**Annual General Meeting**	Ballrooms 1 & 2
7:00 pm to 9:00 pm	**Town Hall Meeting & Welcome Reception**	Ballrooms 4 & 5 (Expo Hall)
9:00 pm to 11:00 pm	**Bar and Trivia Night**	Ballrooms 4 & 5 (Expo Hall)

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CONVENTION SCHEDULE - DAY 2
MONDAY MARCH 2, 2020

7:30 am to 8:45 am	**Registration & Networking Breakfast**		Ballroom Foyer & Expo Hall
8:45 am to 9:00 am	**Convention Welcome & Opening Remarks** Hon. Jeff Yurek, Ministry of the Environment, Conservation and Parks		Ballrooms 1 & 2
9:00 am to 10:00 am	**BLUE IS THE NEW GREEN: SOLUTIONS FOR THE GLOBAL WATER CRISIS** The Water Brothers		Ballrooms 1 & 2
10:05 am to 10:35 am	**Session 1A: Enforcing Part 8 of the OBC: A Case Study** Brad Smale, Township of Norwich *Salon D1/D	**Session 1B: Assessment of Native Soil Conditions for Septic System Design** Kevin Warner, Cambium Inc. *Salon E/F	
10:40 am to 11:10 am	**Networking Break & Exhibit Hall**		Ballrooms 4 & 5 (Expo Hall)
11:10 am to 11:40 am	**Session 2A: Overview of Flow Balancing Best Practices** OOWA's Onsite Technical Committee *Salon D1/D	**Session 2B: Are We Running Out of Septic Sand? Issues of Quality and Quantity** Marie-Christine Belanger, Premier Tech Aqua *Salon E/F	
11:45 am to 12:15 am	**Session 3A: Applications & Examples of Flow Balancing Best Practices** OOWA's Onsite Technical Committee *Salon D1/D	**Session 3B: Quality Controls Used in the Manufacture of Specialty Sands** Eugene Trusler, Hutchenson Sand and Gravel *Salon E/F	
12:15 am to 1:30 pm	**Networking Lunch & Exhibit Hall**		Ballrooms 4 & 5 (Expo Hall)
1:30 pm to 2:10 pm	**Session 4A: OWTS: Onsite Treatment of Microbrewery Wastewaters** Chris Kinsley, University of Ottawa *Salon D1/D	**Session 4B: Process Automation in the Onsite Wastewater Industry** Lars Bergman, BNA, Inc. *Salon E/F	
2:15 pm to 2:45 pm	**Session 5A: Advanced Pre-Treatment Using an OBC Class IV Sewage System** Eric Gunnell, Gunnell Engineering & John Doner, Wescor Environmental *Salon D1/D	**Session 5B: Reasonable Suspicion of Intoxication in the Workplace** Randy Dignard, Industrial Safety Trainers *Salon E/F	
2:50 pm to 3:20 pm	**Session 6A: Toilet Paper Degradability on Septic Tanks** Dominic Mercier, Eljen *Salon D1/D	**Session 6B: Snow Removal and Insurance Rates** Scott McMullen, Verge Insurance *Salon E/F	
3:25 pm to 4:00 pm	**Networking Break & Exhibit Hall**		Ballrooms 4 & 5 (Expo Hall)
6:00 pm to 7:00 pm	**Pre-Banquet Reception**		Ballrooms 1 & 2
7:00 pm to 9:45 pm	**Annual Awards Banquet and Entertainment** Jeff West, "Hypnotic Comedy"		Ballrooms 1 & 2
9:45 Onwards	**Hospitality Suites**		

CONVENTION SCHEDULE - DAY 3
TUESDAY MARCH 3, 2020

7:30 am 8:45 am	**Registration & Networking Breakfast**		Ballroom Foyer & Expo Hall
8:45 am to 9:00 am	**Welcome & Opening Remarks** Ed Holder, Mayor, City of London		Ballrooms 1 & 2
9:00 am to 10:20 am	**KEYNOTE PANEL DISCUSSION:** **Training and Continuing Education for Onsite Wastewater Professionals** Lesley Desjardins (WCOWMA), Stefan Furey (Nova Scotia Environment), Rick Esselment (ESSE Canada) and Elizabeth Rudnicki (Wisconsin Department of Safety and Professional Services)		Ballrooms 1 & 2
10:20 am to 11:00 am	**Networking Break & Exhibit Hall**		Ballrooms 4 & 5 (Expo Hall)
11:00 am to 11:35 am	**Session 1A: The Provincial Policy Statement: Recent Changes and Impacts on our Industry** Roddy Bolivar, MakeWay Environmental *Salon D1/D	**Session 1B: Cannabis and Wastewater: Challenges in Treatment** Brenda Martinez, Infiltrator *Salon E/F	
11:40 am to 12:15 pm	**Session 2A: Communal Servicing Breakthrough in Frontenac County** Trish Johnson, Independent Consultant & Joe Gallivan, Frontenac County *Salon D1/D	**Session 2B: Bed Remediation Case Study: Retrofitting A Filter Bed** Ray Foster, ESSE Canada *Salon E/F	
12:15 pm to 1:30 am	**Networking Lunch & Exhibit Hall**		Ballrooms 4 & 5 (Expo Hall)
1:30 pm to 2:00 pm	**Session 3A: Manifold Electrocoagulation System for Enhanced Phosphorus Removal** James Hayden, James Arambarri, Bassim Abbassi, ORWC/University of Guelph *Salon D1/D	**Session 3B: Servicing a 1 million sq. ft. Distribution Warehouse in East Ottawa** Ying Zhou & Leslie Sina, Clearford Water Systems *Salon E/F	
2:05 pm to 2:35 pm	**Session 4A: Examining Microbial Populations and Metabolic Pathways in Waterloo Biofilter Anaerobic Digesters with DNA Sequencing** Herb Schellhorn, University of McMaster *Salon D1/D	**Session 4B: Case Study: Emergency Replacement of Failing Communal Leaching Beds** André Moura, Tatham Engineering *Salon E/F	
2:40 pm to 3:10 pm	**Session 5: Re-Inspection Program Research: A Jurisdictional Scan and Review** Terry Rees, Federation of Ontario Cottagers' Association		*Ballrooms 1 & 2
3:15 pm to 3:20 pm	**Thanks & Closing Remarks**		Ballrooms 1 & 2
3:20 pm to 4:00 pm	**Networking Break & Exhibit Hall; Contest Awards & Prize Draws**		Ballrooms 4 & 5 (Expo Hall)

CONFERENCE SPEAKERS

KEYNOTE SPEAKERS

Blue is the New Green: Solutions for the Global Water Crisis

Monday March 2, 9:00 a.m. –10:00 a.m., Ballrooms 1 & 2

Alex and Tyler Mifflin are the award-winning hosts and creators of the acclaimed eco-adventure documentary series The Water Brothers.

Over the past five years, they have travelled the globe from the highest peak in Africa to the world's mightiest rivers, deserts, and to the bottom of the ocean, exploring some of the most important water stories of our time. Commissioned by TVO, the series now in it's 4th season is aired in over 40 countries.

Winners of the BBC Earth Best Newcomers award at the UK's Wildscreen festival, and Best Broadcast Series at the prestigious Blue Ocean Film Festival, the Brothers' passion for environmental education and conservation has led them to become water ambassadors in Canada and around the world.

the Water Brothers

They strongly believe in ensuring that audiences and particularly young people are aware of the challenges we face in relation to our most precious resource – and understand the true economic value of water and the available and emerging solutions that their generation will be the ones to have to implement in order to harmonize our relationship with the eco-systems all life on earth depend on .

DAY 1 TRAINING SESSIONS

*TRAINING SESSION #1

Ministry of Transportation Regulatory Updates

Hank Dubee,
Ministry of Transportation

SALON D1/D

TRAINING SESSION #2

Changes to the Construction Act

Rob Kennaley,
Kannaley Construction Law

SALON E/F

TRAINING SESSION #3

Electrical Safety Awareness Training

Mike McGillis,
Grand River Occupational Health and Safety

SALON G

KEYNOTE PANEL DISCUSSION MEMBERS

Training and Continuing Education for Onsite Wastewater Professionals

Tuesday March 3, 9:00 a.m. – 10:00 a.m., Ballrooms 1 & 2

Lesley Desjardins

Lesley Desjardins is the Executive Director of the Western Canada Onsite Wastewater Management Association (WCOWMA). After beginning her work in the onsite wastewater industry with the Alberta Onsite Wastewater Management (AOWMA) in 2002, Lesley helped develop industry associations in the neighbouring provinces of Saskatchewan (SOWMA) and British Columbia (WCOWMA-BC) in 2008, at the same time developing the over-arching Western Canada Onsite Wastewater Management Association to provide needed support and infrastructure to those organizations. WCOWMA continues to grow and develop with the incorporation of Manitoba under its umbrella in 2017.With seventeen years engaged in the development and delivery of training, membership, and administrative programs for these industry associations, Lesley has gained significant insight into the onsite wastewater industry, the commonalities between the provinces and the challenges faced by this industry sector.

Rick Esselment

Rick is the President and Founder of ESSE Canada, a water resource management firm providing warranty, operation, maintenance, inspection and management services for drinking water and wastewater treatment clients in Ontario and Nova Scotia. He is a Past President of OOWA and has held a Director position with the Association for the past 8 years, serving as Chair on several committees.

Rick has a Bachelor of Science in Microbiology, Bachelor of Applied Science in Public Health, Post-graduate Diploma in Occupational Health and Safety, and is a certified public health inspector.

Stefan Furey

Stefan Furey graduated from the Technical University of Nova Scotia in 1999 with a Bachelor in Engineering. He worked as a consultant for 7 years on water and wastewater projects before starting with Nova Scotia Environment in 2007. Stefan has worked on various initiatives with Nova Scotia Environment. He has administered the Water and Wastewater Operator Certification Program, assisted with development of a National Municipal Wastewater Strategy, and assisted or lead development of various departmental policies, guidelines and standards. Currently Stefan is the lead for the province's Onsite Sewage Disposal System Program with a focus on continuous program improvement, including updates to the onsite industry's Professional Development Program.

Elizabeth Rudnicki

CeCe (Elizabeth) Rudnicki is a Wastewater Specialist for the Wisconsin Department of Safety and Professional Services. She has been involved in decentralized onsite wastewater treatment in Wisconsin for 25 years as a licensed soil tester, designer, installer, pumper and regulator.
Her current position with the State of Wisconsin is to review plans for onsite wastewater systems, assist soil testers, designers, installers, regulators and the public with onsite wastewater issues and to provide training to credential holders. As a lifelong learner, her success and passion for finding solutions for onsite wastewater treatment has been fueled by continuing education – both as a student and trainer.

CONFERENCE SPEAKERS

Bassim Abbassi

Bassim Abbassi joined the School of Engineering at the University of Guelph as a full time faculty member in 2015. Currently he is the director of the Ontario Rural wastewater centre at the University of Guelph. Bassim has a PhD of Environmental Engineering from the University of Bremen in Germany. Over the past years, he has been working on developing technologies for on-site wastewater treatment. He cooperated closely with research institutions and industrial partners in Germany to test and calibrate several technologies that are available in the market. Bassim has also participated in several workshops and international conferences, where he presented his works related to decentralized wastewater management.

Lars Bergmann

Lars Bergmann is the Co-Founder and CEO of Bergmann North America Inc. (BNA). BNA is a German-Canadian Joint Venture that designs, builds and operates advanced MBBR wastewater treatment systems for residential and commercial applications and provides control systems with remote monitoring. Prior focusing on BNA, he worked for his family-owned business, the Bergmann AG in Germany. During these 15 years, he was responsible for internationalization of their onsite wastewater products and services in more than 25 countries. Since 2005, he has been actively involved in OOWA's German counterpart – the "BDZ". Lars is member of the German DIN standardization committee NA 119-05-04 AA (CEN/TC 165/ WG 41) for residential wastewater treatment systems and serves for the Rotary Club Chemnitz-Schlossberg, Germany.

John Doner

John Doner was acting President of the association for almost 2 years and then fulfilled his role as President for 2 additional years. John has been in the industry for 20+ years, in various sales roles. John sits on three CSA technical committees and continues to contribute to the industry in his present role as Account Executive for WESCOR Wastewater & Environmental Systems, an equipment manufacturer and representative based in London Ontario. John and his wife Sherri live in St. Thomas where they are currently awaiting a wedding and post-secondary graduations from their combined 6 sons and one daughter.

SGT Hank Dubee

SGT Hank Dubee has been an Enforcement Officer for the Ministry of Transportation for 32 Years. Specializing in vehicle safety, traffic rules/regulations and the Transportation of Dangerous Goods. SGT Dubee is a Provincial trainer/instructor for both the MTO and OPP. He looks after multiple platoons for the area patrol and scale operations in Central Region, including York Region, Metro Toronto, Simcoe County and Caledon Region. SGT Dubee's dedication to the safety of Ontario highways shows by sharing his knowledge with the general public through discussions and public presentations.

Marie-Christine Bélanger

Marie-Christine Bélanger is the current Product Director and Government Relations at Premier Tech Aqua (PTA). Ms. Bélanger joined PTA in 2002. Her functions at PTA have brought her to play key roles on several steering and advisory committees throughout North America, namely with the BNQ, CSA, NOWRA, NSF, local provincial and state organizations. She has taken part in the development and advancement of industry-wide regulations and standards leading to better protection of the environment and the public's health. Ms. Bélanger holds a Physics Engineering degree from Laval University and a Master's degree in Chemical Engineering from L'École Polytechnique de Montreal.

Roddy Bolivar

Roddy Bolivar, P.Eng. has worked in the onsite wastewater and stormwater management industries for 30 years as a designer, project manager, municipal official and independent consultant. Recently, Roddy joined MakeWay Environmental and now promotes their EnviroSeptic and Graf lines of products. Roddy is a long time OOWA Board member and currently the OOWA Treasurer.

Randy Dignard

Randy is one of the senior safety consultants at Industrial Safety Trainers, a company that teaches over 35 safety training programs all over Ontario. He spends much of his time advising businesses how to comply with Ontario Safety laws. Randy has been the recipient of many awards over the years which includes his proudest, a Provincial Award of Merit, recognizing his longstanding commitment to teach safety to high school students. His true passion lies in volunteering his time to teach youth about safety and has taught over 13,000 students to date.

Ray Foster

Ray Foster is a senior Project Manager at ESSE Canada. Ray and the dedicated team at ESSE Canada believes in protecting our local and rural environments, communities and water resources. Since 2008, he has provided his inspection, operation, and maintenance talents and expertise on a wide range of residential and commercial wastewater treatment systems.

An OOWA member since he joined the on-site industry 12 years ago, Ray is now serving his first term as an OOWA Board of Director. He has a bachelor's degree in Social Science from McMaster University and a certificate in Environmental Engineering from Mohawk College. He enjoys his free time coaching wrestling and playing outdoors with his wife and kids.

Joe Gallivan

Joe Gallivan is the Director of Planning & Economic Development for Frontenac County and has led the planning program at Frontenac for the past ten years.

He has over 30-years' experience in planning with municipal, regional and provincial governments in both Nova Scotia and Ontario.

Joe has a Master's Degree in Urban and Rural Planning from Dalhousie University.

James Hayden

James Hayden is a MASc candidate who obtained his Bachelors of Environmental Engineering in 2018 at the University of Guelph. James is interested in the study of electrokinetics with applications in remediation and decentralized wastewater treatment systems. James has previously worked for OMAFRA, where he developed a manuscript related to the legislation, design and implementation of constructed wetlands to treat dairy and beef farm effluent. He also worked for Electrokinetic Solutions,a research company developing a novel technology centered around the use of electrokinetic principals to dewater oil sand tailing ponds.

Robert J. Kennaley

Robert Kennaley worked in the construction industry for 15 years before going to law school. He has practiced exclusively in the area of construction law since graduating from law school 22 years ago and is currently the principal of Kennaley Construction Law. The firm has offices in both downtown Toronto and Simcoe, Ontario.

Rob's day to day practice involves contract drafting and review, dispute resolution and negotiations, construction lien and trust claims, claims involving owners, consultants and insurers, tendering issues and claims, building code violations, claims against performance and labour and material payment bonds and Occupational Health and Safety Act issues.

Rob has acted for the Ministry of Transportation, Tarion Warranty Corporation, private and public owners, home-builders and developers, general contractors, electrical, mechanical and structural subcontractors, as well as demolition, excavation, framing, drywall, carpentry, landscaping, roofing and specialty trades, in addition to suppliers, municipalities, surety companies, architects and engineers.

Chris Kinsley

Chris Kinsley is currently an assistant professor in the Department of Civil Engineering at the University of Ottawa. Previously, Chris worked with the Ontario Rural Wastewater Centre at the University of Guelph since its inception in 1998 and was instrumental in the development of the centre. Chris has developed and delivered several training courses in the agri-food and decentralized wastewater sectors, both within Canada and overseas.

Eric Gunnell, P.Eng

Eric Gunnell is a professional engineer, specializing in the design of on-site wastewater systems. Eric is the president of Gunnell Engineering Ltd., which provides a range of rural engineering services.

Eric has extensive design experience with both Part 8 Ontario Building Code on-site sewage systems, as well as Ministry of Environment, Conservation & Parks Environmental Compliance Approvals for Sewage Works. His area of expertise includes the design of new and replacement septic systems, site investigations, troubleshooting new and existing systems, investigation of failed systems, and assessment & upgrading of distressed or undersized systems. In addition, Eric has acted as an expert witness on behalf of clients in Ontario Court of Justice, Ontario Municipal Board (OMB) and Environmental Tribunal hearings.

Eric is a past president of OOWA and served as a board member for many years. Eric also served two terms as a member of the Building Code Commission, for Part 8 sewage systems, and is a member of Professional Engineers Ontario. Eric has presented at past OOWA events, as well as at other onsite sewage system industry events.

Trish Johnson

Trish Johnson is an independent consultant with over 30 years of environmental management, policy and planning experience. She has worked for the public sector at all levels of government, with non-profits in Canada and the U.S., and spent 14 years as a Senior Environmental Consultant and Small Systems Strategic Advisor for R.V. Anderson, a private consulting engineering firm in Ottawa. While at RVA she was an environmental advisor to several small towns and also worked extensively for Indigenous and Northern Affairs Canada (INAC), including 7 years as a Senior Advisor on the National Assessment of 623 First Nations Water and Wastewater Systems in Canada and the follow-up policy recommendations.

Trish is a long-standing OOWA member and she has served multiple terms on the Board of Directors and as co-chair of the External Relations Committee. Trish is known for her knowledge and passionate promotion of decentralized systems as a means of sustainable environmental protection and affordable growth for small towns and rural areas. She is currently planning a Symposium on Communal Systems for the County of Frontenac which will be held this spring.

Jeremy Kraemer

Jeremy is a Senior Project Manager at Cambium with 20 years' experience in wastewater treatment. He has a Ph.D. in Civil Environmental Engineering from the University of Toronto, is a licenced Professional Engineer, and Part 8 qualified designer.

Jeremy started in the on-site industry with Waterloo Biofilter in 1999. He also worked 12 years designing municipal wastewater treatment plants for improved nutrient removal. Now at Cambium, Jeremy designs conventional and advanced systems for residential and commercial servicing.

He is a member of OOWA's Onsite Technical Committee and a past Director of the Water Environment Association of Ontario (WEAO).

CONFERENCE SPEAKERS

Brenda Martinz

Brenda Martinez has been the Commercial Project Manager for Delta Treatment Systems for four years. Brenda assists developers and engineers in designing commercial scale wastewater treatment systems that will optimize treatment performance for their individual site requirements. Prior to working for Delta, Brenda spent 15 years in the environmental testing industry, doing bench scale treatability studies for municipal wastewater plants as well as standard analytical testing for soils and waters under both Standard Methods and ASTM methodologies. Brenda holds a Bachelors Degree in Environmental Science from Texas A&M University, a Masters Degree in Environmental Management from the University of Maryland University College, and is currently a PhD student at Louisiana State University in the Environmental Science program studying the effects of cannabis process waster on domestic wastewater treatability.

Dominic Mercier

With a degree in Civil Engineering and a Master Degree in Environmental Engineering, Mr. Mercier has been working for more than 22 years in Onsite Wastewater Treatment design and product development. He is the founder and president of Enviro Neptune a firm dedicated to research and development of Onsite Technologies as well as Enviro-STEP Technologies a company distributing, manufacturing and commercializing wastewater treatment processes for the Canadian Onsite industry.

Terry Rees

An outspoken advocate for Canada's freshwater resources and the communities that surround them, Terry has been the Executive Director of the Federation of Ontario Cottagers' Associations (FOCA) since 2004. FOCA is the largest waterfront landowner organization in Canada, representing over 50,000 member families in 520 community associations.

Terry is FOCA's government relations spokesperson on issues ranging from the protection of water, to land use planning, to electricity pricing, and property taxes.

Terry is a member of the Trent Conservation Coalition Source Water Protection Committee, the Ontario Biodiversity Council, the Stewardship Network of Ontario, and numerous other local and provincial committees and Boards. Terry has a degree in Economics from University of Western Ontario, and a Certificate in Environmental Management from Ryerson University.

Scott McMullen

I have worked in the insurance industry for the past 18 years, specializing in commercial insurance for contractors. Which includes business insurance, fleet, bonding, pollution and professional liability. I also provide fleet management, loss control services and insurance articles that pertain to my customers specific industry.

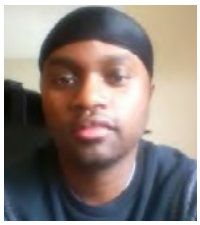
I hold a Canadian Accredited Insurance Broker designation and a Canadian Professional Insurance Broker designation. I have also worked with the Ontario Onsite Wastewater Association for the past 10 years in providing insurance solutions to members.

André Moura

André is a senior engineer and project manager with Tatham Engineering Limited in Collingwood, Ontario. He can be contacted at amoura@tathameng.com. His 23 years of experience in the engineering field encompass operation of municipal water utilities, academia, R&D, business development, people training and management, design of linear and vertical water & wastewater works, design of water reclamation and reuse works for industrial applications, leachate collection and treatment, and treatment technologies for remediation of contaminated sites. André has extensive training and practical experience in water and wastewater treatment processes, hydraulics of pressurized systems, and design of on-site sewage treatment and disposal systems.

Dr. Herb Schellhorn

Dr. Herb Schellhorn is a Professor in the Department of Biology and is a member of the Biomedical Engineering program at McMaster University. His principal interests are the study of bacterial adaptation and natural environment focusing on Escherichia coli – a pathogen that continues to be an important human health problem. His work focuses on large transcriptome studies to simultaneously examine the expression of thousands of genes that contribute bacterial adaptation and virulence. More recently, he has led a water research group, the MacWater Diagnostic Research Initiative, funded by the Ontario Ministry of Research and Innovation (MERI) to develop new environmental sensor technologies The goal of this initiative is to foster interactions between government, academia and industry that will result in development of novel technologies for comprehensive monitoring of water and wastewater in urban and rural environments including onsite waste treatment systems.



Leslie Sina

I have completed the Advanced Water Systems Operations and Management Co-op from Fleming College in Lindsay, Ontario.

I currently have 6 years of experience working in the water & wastewater industry. My range of experience goes from Shell Canada Albian oil sands tailing ponds water treatment, DeBeers Canada remote potable water & wastewater treatment, B.C Hydro site C drilling project industrial water treatment, town of Kirkland Lake & the town of Red Lake water and wastewater treatment.

I have had the opportunity operating various plants such as MBR, RBC, SBR, Lagoons, and class 4 water & water treatment plants. Currently I hold level 2 water treatment license, level 2 wastewater treatment license, and level 1's in collections and water distribution license.

I am currently the Ottawa area hub supervisor and the acting ORO for the area. My team and I operate various water treatment plants and wastewater treatment plant.

Brad Smale

After acquiring his Bachelors of Technology (Architectural Science) from Ryerson University, Brad went on to become a certified Building Code Official (CBCO) with a total of nearly 20 years of field experience. He has worked for 5 different authorities having jurisdiction throughout Southwestern Ontario. Brad also as 16 years of experience in 4 different areas of Southwestern Ontario as a Pt. 8 inspector, 10 years experience as an enforcement & compliance manager/ Chief Building Official (CBO) and 8 years as Ontario Building Officials Association (OBOA) subject matter expert (SME) in OBC Pt. 8.

In the capacity as the OBOA SME, Brad helped to write and instruct the OBOA Pt. 8 Sewage Systems training course. As an owner of a private consulting business he also provides advice to municipal clients and stakeholder agencies with respect to OBC Pt. 8 regulatory compliance and enforcement.

Brad is a former OOWA Government Relations Committee Member (2008 -2012) and a current OOWA Professional Development Committee member not to mention having designed and installed multiple systems throughout Ontario - an inspector that also walks the walk.

Eugene Trusler

Eugene Trusler Graduated from University of Toronto 1983 in Metallurgy and Materials Sciences and worked in the quality control lab space in the automotive industry before becoming a consultant to publically traded companies listed on the TSE and VSE Exchanges. In 2001, he was hired by Hutcheson Sand and Mixes to develop a new product for playground applications. CSA Compliant Granite Playground Sand was the result of a variety of scientific tests including Surface Impact and Standard Proctor Density determinations to provide Municipalities and Boards of Education with product performance assurances. Subsequently the Hospital for Sick Kids published a two year study that concluded that children falling into this protective surfacing are five times less likely to sustain injury compared to wood chip surfacing. He is the Director of the Playground Division at Hutcheson Sand and Mixes and is involved with the development of new products for other applications.

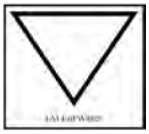
Kevin Warner

Kevin manages the Water & Wastewater Group at Cambium. He holds degrees from the University of Waterloo (B.E.S Honours) and McMaster University (M.Sc.). Kevin has been practicing as a hydrogeologist and wastewater system designer since 2000 and is a registered geoscientist with the PGO and a qualified wastewater designer and inspector through Ministry of Municipal Affairs and Housing. He has managed and directed numerous hydrogeological assessments and impact studies for various residential, industrial, commercial and municipal developments with on-site servicing for water supply and/or wastewater disposal, and in experienced obtaining Permit To Take Water (PTTWs) for water takings for water supply or dewatering as well as Ontario Building Code or Environmental Compliance Approvals (ECA's) for wastewater systems.

Ying Zhu

Ying obtained her Master's degree at University of Alberta where she gained 3 years of research experience with a focus on wastewater, and tailings treatment. She conducted equipment design and researched on polymer-assisted wastewater treatment. As an engineer in training, Ying performs process design for water/ wastewater treatment facilities, equipment sizing, commissioning, and communicates with regulatory authorities for compliance. As a member of the Clearford Engineering team, Ying has been applying her Engineering skills on several water/wastewater treatment design projects and helps provide Engineering support for Operations and Construction.

CONVENTION EXHIBITORS



OOWA'S RESPONSE TO PROPOSED CHANGES TO THE PROVINCIAL POLICY STATEMENT

A sub-task group of OOWA's External Relations Committee prepared and submitted comments on the province's review of the Provincial Policy Statement last week. The Provincial Policy Statement (PPS) is the guidance document that lays out the policies that deal with land use planning and development.
The PPS gives municipalities direction on ensuring that appropriate infrastructure can accommodate the future growth of towns and cities. It addresses how planners should provide housing for communities and also provides environmental protection for farmland, water and other natural resources.

An adopted suggestion from OOWA's previous 2014 PPS response is one that updates the 'servicing hierarchy' for rural servicing. In the past, the 'servicing hierarchy' has been interpreted by many municipal planners to mean that onsite and communal systems are deemed to be a less preferred or a stop-gap measure to be used only until centralized water and wastewater servicing arrives (read big pipe). The new clarification means that the interpretation has changed so that the 'hierarchy' relates to the ownership/management model and not the past suggestion that communal or onsite are less technically capable. This distinction between ownership/management preferences as compared to technical performance is seen by OOWA to be critical in ensuring a proper interpretation of the PPS that supports onsite, communal and decentralized servicing.

One of OOWA's suggestions for this round of PPS changes requests that the Provincial Guideline D-5-2 Application of Municipal Responsibility for Communal Sewage and Water Services be modernized to reflect the fact that there have significant advancements and improvements to onsite and communal wastewater systems since the D-5 suite of guidelines were developed back in the mid 1990's. These D-5 guideline updates would help reduce the level of perceived risk that municipalities associate with onsite and communal servicing that would ultimately improve housing, affordability and sustainable rural infrastructure in Ontario.

To check out the submission please go to the News blog on OOWA's website or contact the office directly.

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MEMBER PROFILE

Mike Fulton
Near North Supply Inc.

Name of Business: Near North Supply Inc.

Owners: Michael Fulton/Nancy McCullough

Services: Wholesale Distributor of Groundwater, Waste Water, Water Conditioning and Infrastructure Products

Service Area: Central and Northern Ontario

Number of Years in Operation: 30 years in business and my role is President

MIKE FULTON
Near North Supply Inc.

What got you started in the onsite wastewater industry?
In the mid 2000's I was researching how to grow our various product line offerings and identified the importance of the Onsite Waste Water Industry and in particular this trade association to provide managed growth in a professional and ethical manner. Conducting our day to day business transactions and relationships in a common sense and in a fair and ethical manner is a key factor in how we do business as an organization. From that point in time our business evolved from simply a waste water pump provider to a full line distributor of products specific to the waste water and infrastructure contractor.

Give us one reason/secret for your success.
We do business with people in the same manner that we hope to be treated, with mutual respect and cooperation.

What was the most challenging onsite job you worked on or participated in?
The YMCA Camp Kitchikewana advanced treatment system project on Beausoleil Island was one of the most interesting and challenging projects primarily because of the various levels of engineering that went into the project. The site location was on an island in Georgian Bay on Federally regulated land. There were various levels of approvals that had to be executed prior to the actual project start and also during the installation and up to the final system start up. Collaborating with all stakeholders was essential in making the project the success it was in the end.

If you could change one thing about the onsite/decentralized industry, what would it be?
Creating, a much clearer understanding to both the municipal and provincial regulators of the important role that this trade association plays in educating and engaging its members and also the general public with understanding the benefits of proper installation practices, system maintenance and life cycles of decentralized waste water treatment systems.

Where do you see the onsite industry going?
I believe that urban sprawl will continue within the neighboring municipalities of the GTA and the greater Ottawa region for the foreseeable future. On the positive side not everyone wants to live in a large urban community. Smaller municipalities and townships will need to organize themselves to promote the benefits of rural growth in a managed and effective way to prove to the provincial regulators that rural growth is both viable and sustainable.

JOIN AN OOWA COMMITTEE!

Want to really make an impact in the industry?

Why not contribute to our collective efforts in getting onsite and decentralized recognized as viable and critical rural infrastructure? OOWA is looking for enthusiastic and engaged individuals to help move the industry forward.

Contact Mike Gibbs to find out how to join our ranks!

outreach@oowa.org

OOWA'S REGIONAL ROUND UPS:
REFLECTING ON OUR EFFORTS

For the past several years OOWA has been delivering regional meetings or 'round ups' throughout the province. The intent of these gatherings has been to connect with our members, provide opportunities for peer to peer learning and to find clarity on code interpretive issues with the help of local onsite professionals.

These events have always been planned for the fall, and we have worked hard to promote them early, recurrently and to as many members and non-members as possible - often with the help of local regulators. We're also thankful for the generous support of our sponsors to help make the events possible.

OOWA is committed to providing regional representation and support. To ensure that the events and activities that we deliver are valuable and worthwhile we will be reviewing and discussing new ideas, formats and topics for our local outreach.

This year, the format was based on case studies that addressed issues revolving around the importance of ensuring filter sand (media) specifications, sizing systems for secondary units in existing homes, landscaping effects on leaching bed performance and other topics. There was valuable discussion amongst those in attendance, and many commented on the event being worthwhile. Though we are seeing many of the same faces in the room and are challenged to get non-members in the door, OOWA is determined to find way a way to provide insight and skills development to our members through regional engagement. If you have any ideas or suggestions, please share them with us. We value your input and strive to offer our members the chance to be heard. We look forward top developing and implementing new initiatives so stay tuned to learn more about what we will be working on for 2020-2021.

PETERBOROUGH REGIONAL ROUND UP

EASTERN ONTARIO ROUND UP IN KARS, ON

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BURGERS AND BEER EVENT SUMMARY

On Thursday, October 17th, OOWA's Central Ontario Networking Group hosted the fall edition of Burgers and Beer at Robinson Excavating. There were 25 attendees who listened to Robert Kanaley of Kannaley Constuction Law discuss the important changes coming to the Construction Act.

A big thank you to Bill and Diana Robinson and Debbie Fish who organized the event and who took a day out of their busy schedules to prepare for this gathering.

Thanks also to our sponsors and to all those who came out

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Member PROFILE

Paul Bruinsma
Bruinsma Excavating Ltd.

PAUL BRUINSMA
Bruinsma Excavating Ltd.

Name of Business: Bruinsma Excavating Ltd.

Owners: Paul Bruinsma and John Bruinsma

Services: Excavation, Demolition, Site Serving and Septic

Service Area: Huron County

Number of Years in Operation: The Company was formed in 1972 by our father. I have worked most of my life within the company and became president and 50% owner, 9 years ago

What got you started in the onsite wastewater industry?
Growing up in the company and working as a teenager, I remember many summer vacations from school helping to install septics for my father. Our company operates in a rural area so septic systems are a large part of our business.

Give us one reason/secret for your success.
"Take care of your customers, and they will take care of you". I was told this quote early on in my career and I still believe it to this day. Show your customer that you care, develop a bond and they will be a loyal customer.

What was the most challenging onsite job you worked on or participated in?
Last year we constructed a complete treatment system for a 270 unit mobile home park. Including almost 2200 meters of dispersal piping, 9 concrete treatment tanks and a control building. It was a nice change from a single residential septic, but a challenging build, with a few unforeseen obstacles.

If you could change one thing about the onsite industry, what would it be?
Educating the public of the long-term importance of properly working septic systems. This needs to become a bigger priority, especially the people that come from a centralized municipal system.

If I had a nickel for every time a potential customer has said "why do I need this when my neighbor has a barrel in the ground", I could probably retire now.

Where do you see the onsite industry going?
With a long history of what works and what doesn't, new technology coming to market, the future should be sparkling clean water. Let's hope that bureaucracy stays out.

CULTURE OF CHANGE

Changing workforce represents great opportunities for those looking to hire.

By Julie Fitz-Gerald

This article originally appeared in Winter 2020 edition of Ground Water Canada. It is reproduced with permission.

From the seaside towns of Nova Scotia to the Rocky Mountains in B.C., Canada's workforce is changing and employers are taking notice. Over the last decade, staffing has become more and complicated for businesses as they contend with candidates who see themselves in the driver's seat.

At the same time, science and technology sectors are beginning to see the benefits of STEM (science, technology, engineering, math) education with new demographics of potential employees seeking out STEM-related jobs, including drilling.

Carolyn Levy, president of Randstad Canada's Technologies division says the challenges organizations face in staffing are complex. "We have a strong economy in Canada and there's definitely a competitive job market, but what's layering into this is how employees behave and what their expectations are of employers. They're much more diverse. They're what we refer to as being 'complicated' for their set of expectations on what they feel success looks like and what they want in the role, for example, flexibility," she explains.

In years past, the interview process focused on how candidates performed: successful applicants showed the employer that they had the right stuff for the job. Not so today. "With this change in demographics from millennials up, you really need to be on point as an employer, being able to say 'this is our purpose, this is our meaningful connection, this is how we're a social enterprise, this is what we're doing to move the dial forward in our industry in a holistic way that's beneficial to humans.' As employers, you need to be thinking about how you show up just as much as the employee," says Levy.

It's an interesting flip of the traditional interview process. Levy notes that while compensation is an important piece of the equation, other factors like flexibility, benefits, career-pathing, a healthy and supportive environment, and strong training programs are all important elements for potential employees.

Despite these evolving expectations in interview etiquette, the interview process continues to be an opportunity for employers to evaluate applicants and find the perfect candidate for the job. Levy advises businesses to look from a skills perspective and find out what experience the person will bring to the team. From the company culture angle "this means not just looking for someone who's a cultural fit, but for someone who might be a cultural add to your organization."

'GOOD WORK ETHIC' IMPORTANT

Darren Juneau, chief executive officer of Aardvark Drilling Inc., based in southwestern Ontario, says his biggest challenge is finding qualified candidates, with most interested hires having no prior experience. Aardvark operates with an average of 40 employees, a number that increases during the busy summer months. They work in mostly technical and environmental drilling, but have recently forayed into domestic well supply. He says that while hiring a candidate with drilling experience is preferred, it's not always possible.

"We've found that we can take someone with a good work ethic and good head on their shoulders and develop them successfully," Juneau explains. "If you're a problem solver and can take direction well, we can turn that individual into a good helper and then a good driller."

Beginning with a detailed screening process and followed by a strong on-boarding system, Juneau has achieved a high staff retention rate. "Instead of just hiring anybody, we put a lot of effort up front into the hiring process. We take three or four months to find the right candidate, so even though it might not be a quick hire, they end up staying," he says.

Juneau looks for college or university graduates (not necessarily in drilling, although that is preferred), because it shows they can stick with a commitment and get it done. He also calls at least three references to get a good feel for the candidate and ensure they're reliable and a team player.

Once hired, the on-boarding process begins. "Our new hires do three days of in-class training in the office, learning about the health and safety programs, how to work in the field and what's expected of them. Then they go through a minimum of 40 hours as an observer – this ensures they won't hurt themselves or others. After that, they can go out as part of a two-person crew," Juneau says.

MENTORSHIP IS KEY

Mentorship is also key, although not always possible in the field. "Mentorship works well. If we can pair up a new employee with someone who's experienced in the field, we have a lot of success. It's not always possible, but if we can keep them paired the success rate is higher."

Levy agrees that mentorship is an integral part of employee satisfaction, which inevitably leads to overall success for the business. "There's this emerging piece where we're seeing the value of mentors and sponsors and the role that they play. Ensuring companies have that set up, whether formal or informal mentoring, is going to be important," she notes.

WOMEN AND VISIBLE MINORITIES IN STEM

Mentorship creates opportunities across demographics and is crucial to finding and training quality candidates that are a great fit with your business. In a recent Randstad Canada survey as part of its "Women transforming the workplace" initiative, this point was made clear. According to Levy, the survey found that four in 10 working Canadians believe that men in leadership roles in Canada should

be working to create more opportunities to help women advance, while two in 10 agreed that should extend to minority groups.

The reality is that women and visible minorities are underrepresented in certain sectors, including drilling. Juneau says that currently 10 per cent of Aardvark's employees are women, including office staff and field staff, which is a greater number than in the past. It is a number he hopes will increase in the future. "There's been a successful push of STEM in education and when we attend job fairs we're seeing more girls who have gone through the drilling and blasting course at Sir Sandford Fleming College. When I post a lead looking for people, I do see applicants from women for field positions, so that's encouraging," he says.

When Aardvark first began in 2002, Juneau says it had only one female worker in the field, but over the last eight years, seven or eight women have held field positions with the company.

Despite the strides being made, there is still much work to be done. Levy says that Randstad's survey found both men and women responded that men are more likely to excel in math, science and computers, whereas women are more likely to excel in caregiving, communications and fine arts. "This survey was done just recently, so we've got to kill these stereotypes that exist. Working to kill that will help draw more women in," Levy says.

Juneau credits a strong company culture of respect and sensitivity for the success of female employees at Aardvark. "We treat the employees with respect and we expect that back. If there's a problem, we deal with it. People can have their moments and there can be backslide, but with women in the workforce here, the workers are seeing that this isn't just a statistic. We have someone representing this demographic who's providing quality work and that raises awareness. They realize they need to be more open to it and it's not just the boys' club anymore," he explains.

Juneau is hoping to see a similar trend with visible minorities in drilling. Currently he employs two people from this demographic, noting that most of his applicants are white males. "With science and engineering, Canada has a great schooling program and people worldwide are taking courses here and getting hired by engineering firms in Canada, so I'm seeing more diversity that way, but when is it going to trickle down to skills and labour? And how will that benefit my company? For example, if a company that spoke predominantly Mandarin was looking to hire a driller and I had a driller on my team that spoke fluent mandarin, I would think that would be an asset."

For employers, a surge in STEM initiatives paired with global interest in Canadian education is sure to boost to the number of quality candidates they see in the future.

Julie Fitz-Gerald is a freelance writer based in Uxbridge, Onario and a regular contributor to Ground Water

For more on staffing, visit **groundwatercanada.com**

2020 OOWA MEMBERSHIP BENEFITS

Perkopolis is a discount program with hundreds of available discounts across the country on things like entertainment, car rentals, hotel stays, electronics, flights, food, wellness and attractions. To sign up, visit www.perkopolis.com and use your OOWA Member ID to create an account.

No reservation required! Simply use the code 1019186 at time of check out and automatically receive the discounted rates. Save $7/day and $90/week when parked in Toronto using the Park'N Fly Valet service, or $4/day and $39/week when choosing Toronto Self-Park.

The OOWA Insurance Plan is administered by SeptiGuard, a company within the Verge Group. Coverage includes: General Liability, Pollution/ Environmental, Impairment/ Underground tank policies, Contractors Equipment, Barging and Waterborne Risks, Professional Liability for inspectors, designers etc., Vehicle/ Fleet coverage and Discount Home and Auto rates. Contact Scott Mullen: 905-688-9170 ext. 132 or email at: mcmullen@vergeinsurance.com

A new CAA Plus membership is reduced to $99.00 for the first year ($39.00 savings!) or a CAA Plus Associate Membership is reduced to $75.00 for the first year. Contact CAA's Corporate Representative at 800-267-6394 ext. 6394 to sign up.

OOWA members save 10% at Mark's Work Warehouse on the following items and more; Carhart merchandise, Dakota workwear, coveralls and overalls, casual wear, work gloves, and all CSA footwear. Present your card at any location to receive your discount.

Grand & Toy is your one stop shop for all your office needs including ergonomics, furniture, computer supplies, PPE, Janitorial/Sanitary. OOWA's partnership with G & T provides preferred pricing on 240 commonly consumed essentials, plus 10% off market competitive web pricing. Each member can add a customized price list of up to 25 items reflecting your business needs. Your savings could easily offset OOWA membership dues!

ALS Laboratory Group provides a 30% discount on all your wastewater and soil testing needs. Contact Darlene Hoogenes-Stastny at 519-886-6910 or email at: Darlene.Stastny@ALSGlobal.com

Save 10% on any ORWC Course offering (cannot be used in conjunction with other discounts). See their course offerings at www.uoguelph.ca/orwc. Contact Bassim Abbassi at 519-824-4120 Ext. 52040 or via email at babbassi@uoguelph.ca

OOWA members get guaranteed and discounted rates on car and trunk rentals. Reference business Account Number LC23343 when booking a rental vehicle.

OOWA has redeveloped the Registered Professional Program (RPP) to include an 'In-Development Stream' that addresses the needs of ongoing training and continuing education demands from our members. OOWA Professional Designations include: Wastewater Service Technician, Designer, Installer, Private or Regulatory Inspector, Residuals Hauler, Project & Administrative Professional and Technical Sales Consultant.

OOWA collaborates with other associations in communicating to government with one united voice on issues that are of mutual concern to our industries. OOWA is proud to inform our members know that you can access membership rates for events and resources provided by our association partners:

- The Ontario Association of Septic Industry Service
- The Ontario Building Officials Association
- The Ontario Ground Water Association

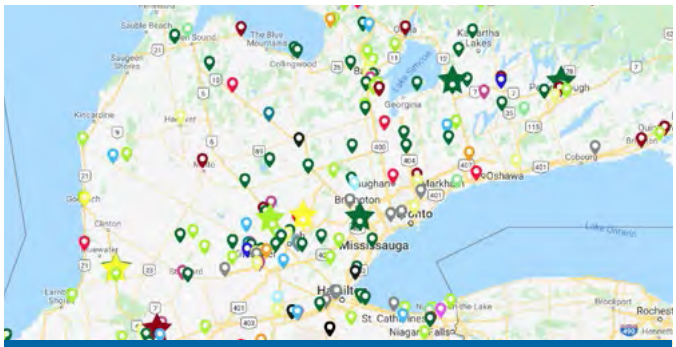
To get more information on these member benefits please visit our website at: www.oowa.org/about/join-oowa/

OOWA LAUNCHES NEW MEMBER DIRECTORY!

OOWA's Membership Committee is excited to announce that our new map-based member directory is now live! We think that you'll agree that the new directory is a significant step forward in meeting our members needs, as well as the general public. The new membership map is easily searchable by area, business category and/or by company name. The public can quickly find service providers by seeing what members are nearby and by zooming in to their own location, they can then modify their search by selecting which professional services they require.

The new directory also highlights OOWA's Registered Professionals by identifying them with special stars on the map. These stars draw the attention of users to those members who are committed to ongoing skills development.

Be sure to keep your membership current to stay on the map! The directory is linked to OOWA's internal membership data base meaning that on the date that your membership lapses, your pin on the map is automatically removed. Don't miss out on potential business and make it easy for future clients to find you. Keep your membership up to date and renew early!



Find OOWA members on our member directory at www.oowa.org/business-directory-map/

The 'The AQUA Wetland System'

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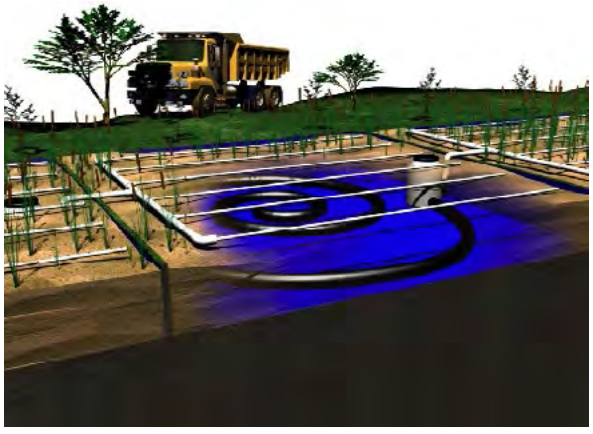

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Contact: Lloyd Rozema at 905-327-4571 or lrozema@aqua-tt.com
Aqua Treatment Technologies Inc.
4250 Fly Road, Campden, Ontario, Canada, L0R 1G0
www.aqua-tt.com

NEW & RENEWED MEMBERS LISTING

August 15th, 2019 - February 14th, 2020

NEW MEMBERS

Nick Acchione, Allto Construction Services Ltd.
Zeeshaan Ahmad ,RH2O North America
James Arambarri, University of Guelph
J.P. Babineau, Allto Construction Services Ltd.
Andrew Beck, GM BluePlan Engineering Limited
Jasper Belding, Waterloo Biofilter Systems Inc
Chris Bentham, Tyson Construction
Sean Brinston, CL Landworks Inc
Lindsay Burtt, Douro/Dummer Township
Quinn Corvino, Weber Environmental Services
Alison Cox, GM BluePlan Engineering
Natalie Curwin, Total Site Services Inc
Matt Doyle, KFLA Public Health Unit
Alex Ernst, Fleming College
Marc Ethier, E2Tech Services
Brian Fawcett, Douro/Dummer Township
Brandon Figg, CMT Engineering Inc.
Doug Godin, Town of Huntsville
Steve Greer, GB Excavating
James Hayden, University of Guelph- Student
Bruce Hietkamp, Geo Kamp Limited
Dwight Hordyk, Pinestone Engineering Ltd
Kurtis Horn, Haldimand County
David Hornblow, Township of North Kawartha
Denise Johnston, Township of Centre Wellington
Tim Kegel, Incinerating Toilets Inc.
Simon Kola, County of Lambton
Jeremy Kraemer, Cambium Inc.
Natasha Lacasse, Lafarge
Niharika Ladhawala, University of Guelph- Student
Hamed Mahdavi, Unit Precast
Matthew Malloy, Pioneer Septic Solutions Inc
John (Curtis), Martin Town of Huntsville
Brennan Mcdowell, Fleming college
Greg Miller, Town of Collingwood
Cassidy Morgan, University of Guelph
Adrian North, Gemtec Consulting Engineers and Scientists
Nathalie Osipenko, Ministry of Environment Conservation and Parks
Michael Papadacos, Cambium Inc.
Matthew Parfitt, Glenvale PDC
Robert Passmore, Pinchin Ltd.
Stacey Pennington, Township of Centre Wellington
Jim Rabe, Municipality of Grey Highlands
Scott Richardson, Township of Faraday
Carmen Staunton, WSP Canada Inc
Connor Steer, Gunnell Engineering
Gill Tarundeep, Waterloo Biofilter Systems Inc.
Acacio Tsuru, RH2O North America
Sarah Van Dyk, KFLA Public Health
Matthew Wale, Town of Gravenhurst
Lindsay Wolfenberg, Clearford Water Systems Inc
Brian Zingula, R.J. Burnside & Associates Limited

Renewed Members

Bassim Abbassi, Ontario Rural Wastewater Centre
Larry Acchione, Allto Construction Services Ltd.
David Adams, Adams Brothers Construction
Matthew Aldom, Town of Bancroft
Debbie Anderson, Municipality Of Grey Highlands
Alexandra Anderson, Camping In Ontario/OPCA
Imad Aouli, WSP Canada Inc
Felipe Araque, BNA Inc (Bergmann North America)
Randy Armstrong, Amstrong Pumping Ltd
Lorne Bagshaw, Lorne Bagshaw Excavating
Clark Ballantyne, Corporation of the City Of London
Richard Barg, Xylem Inc. - Goulds Water Technology
Dominic Bauer, Gunnell Engineering Ltd.
Andy Bauman, FlowSpec Engineering Ltd
Gord Bell, Acton Group Uxbridge Inc.
Lars Bergmann, BNA Inc (Bergmann North America)
Adam Biancaniello, Verge Insurance Group
Ella Bird, North Bay Mattawa Conservation Authority
Bruce Blackburn, B. Blackburn Ltd
Jeff Blackburn, B. Blackburn Ltd.
Jamie Blakely, Blakely Property Services
Roddy Bolivar, MakeWay Environmental
Janis Bortolotti, LaSalle Backhoe Service
Sandy Bos, Township Of Muskoka Lakes
Colin Bos, Waterloo Biofilter Systems Inc
Randy Bossence, Township of Centre Wellington
Anthony Boyko, City of Markham
Rick Brear, Burke Stonework and Excavating
Bruce Brisbois, Leroy Construction
Mark Brosowski, Weber Environmental Services
Jarett Brown, Southpaw Contracting
Paul Bruinsma, Bruinsma Excavating Ltd.
Darrell Brunton, Darrell Brunton Excavating
Teresa Buckman, MakeWay Environmental Technologies Inc.
Martin Burger, Groundwork Engineering Limited
Carl Burke, Burke Stonework and Excavating
Brenda Burrows-Rabb, Rabb Construction Ltd
Gary Cameron, Waste Water Nova Scotia
Madeline Carter, C.F. Crozier & Associates
Pat Casey, Total Site Services Inc.
Carolyn Chan, GM BluePlan Engineering
Robin Charette, Biobite
Frank Charlebois, S Charlebois Haulage And Excavating LTD
Greg Cherniak, Municipality Of Dysart Et Al
Louie Chiarappa, Hernandez Sanitation Services
Dorian Chlopas, Rowan Environmental Consulting Inc.
Stephen Cobean, Cobide Engineering Inc.
Howard Cook, Howard Cook Drainage
Kevin Cooney, Cooney Construction & Landscaping Ltd.
Greg Corman, Waterloo Biofilter Systems Inc.
Jean-Pierre Corriveau, DBO Expert
Dwayne Coulas, Town of Petawawa
Charles Courchesne, Guy Courchesne Excavation Ltd
Hillary Craggs, Waterloo Biofilter Systems Inc.
Mike Crain, Arnott Brothers Construction
Clay Crepin, Gerry Crepin Cartage
Brock Cross, Gunnell Engineering
James Cuming, Allto Construction Services Ltd.
Michelle Dada, Ortiz MNT Consulting Group Inc.
Ron Davenport, Infiltrator Water Technologies
Terry Davidson, Ottawa Septic System Office
Randy De Guire, Township Of Wainfleet

NEW & RENEWED MEMBERS LISTING

August 15th, 2019 - February 14th, 2020

Anthony DeDominicis, Roswell Concrete Products
Derek Demaine, Aqueous Operational Services
David Denstedt, Muskoka Barging & Construction
Gary Deppe, Polylok
Lesley Desjardins, Alberta Onsite Wastewater Mgement Assoc.
Joe Dibbits, Dibbits Excavating
Bob Dickie, Flue To Footing Home Inspections
Don Dillman, Dillman Sanitation
Adam Dillon, Ottawa Septic System Office
Tammy Dobie, Municipality of Meaford
Dave Dobinson, Dave Dobinson Excavating Inc
Kevin Dolderman, Pioneer Septic Solutions Inc
Lisa Dolderman, Pioneer Septic Solutions Inc
Ryan Dolderman, Pioneer Septic Solutions Inc
John Doner, Wescor Wastewater & Environmental Systems Corp.
Helena Draper, The Septic Store
Eric Draper, The Septic Store
Bill Drury, Drumax Construction
Darren Drury, Drumax Construction
Glenn Dryden, Dryden Excavation Inc
John Duffy, Van Harten Surveying Inc.
Kathryn Dukelow, Ricor Construction
Cliff Eborall, Walters Custom Works Inc
Anne Egan, R.J. Burnside & Associates Limited
Anne Elmhirst, City Of Kawartha Lakes
Fritz Enzlin, Norfolk County
Harold Erb, Rhino Excavation
John Faris, Faris Excavating Ltd
Andrew Faris, Faris Excavating
Marc Favaro CMT Engineering Inc.
Dave Fedoriw, Township Of Georgian Bay
David Finch, Wes Finch & Sons Excavating
Graham Fisher, Haddad Geotechnical
Dwaine Fisher, Fisher Excavating & Grading
David Fondevilla, III FlowSpec Engineering Ltd
Laura Freeland, Durham Region Health Department
Peter Froehlich, Brooklin Concrete
Mike Fulton, Near North Supply
Jameson Gallinger, Waterloo Biofilter Systems Inc.
Jason Ghawali, Gunnell Engineering
Nilou Ghazi, E3 Labratories Inc.
Julia Gobran, Waterloo Biofilter Systems Inc.
Bill Goodale, Tatham Engineering Ltd.
Susan Gordon, Novatech Engineering
Roger Gostlin, R. Gostlin & Son Sand & Gravel
Rene Goulet, Goulet Septic Pumping & Design
Jessica Goulet, Goulet Septic Pumping & Design
Brent Green, Township of Centre Wellington
Mark Green, The Septic Store
Stefan Gruescu, LSK Septic And Drain
Eric Gunnell, Gunnell Engineering Ltd.
Daniel Hagarty, Township of Centre Wellington
Ken Hanes, Peto MacCallum Ltd
David Harsch, K Smart Associates Limited
Rudy Hartfiel, OWSIM
Andrew Hartholt, Township of Centre Wellington
Irene Hassas, Aslan Technologies
Brandon Hastings, Waterloo Biofilter Systems Inc.
Jeremy Hein, Groundwork Engineering Limited
Scott Hetrick, Norweco Inc
Cliff Hobbs, Can-Mech Agencies
Jordan Hoekstra, Dig'R Wright Excavating Inc
Karen Holt, Municipality Of Grey Highlands
Dwight Hordyk, Pinestone Engineering Ltd
Kurtis Horn, Haldimand County
Evan Hughes, Evan Hughes Excavating
Jason Hutton, Ottawa Septic System Office
Warren Hyde, Haldimand County
Ben Hyland, Strik Baldinelli Moniz Ltd
Chris James, Waterloo Biofilter Systems Inc.
Aaron Jantzi, Rhino Excavation
Patricia Johnson, Trish Johnson, Environmental Consulting
Andy Jones, Town Of Gravenhurst
Christopher Jowett, Waterloo Biofilter Systems Inc.
Levi Junop, Town of Petawawa
Keith Karl, Caledon Excavation & Grading
Thomas Keane, Gunnell Engineering
Daniel Kern, HomeWorks Inspection Services
Willis Kerr, Willis Kerr Contracting Ltd.
Tanya Killins, Niagara Region - Planning & Development
Melissa King, Peto MacCallum Ltd
Josef Kloepper, Gunnell Engineering
James Knechte, Aqueous Operational Services
Randy Knight, J.A. Porter Holdings Ltd
Randy Knight, Glen Knight Septic Service
Bert Knip, MakeWay Environmental Technologies Inc.
Gerry Knoop, Denby Environmental Services
Eric Kohlsmith, Ottawa Septic System Office
Don Krauss, Infiltrator Water Technologies
Douglas Krysko, Gunnell Engineering
Caitlin Larwa, WSP Canada Inc
Nathan Latchford, MacGregor Concrete Products
Paul Leahy, Leahy Excavation
Kevin Lehan, Town of Gravenhurst
Perry Leifso, Interpump Supply Ltd.
Elizabeth Lew, Gunnell Engineering
Veronica Linares-Krauss, Infiltrator Water Technologies
Miles MacCormack, BNA Inc (Bergmann North America)
John MacGregor, MacGregor Concrete Products
Mat MacLean, Tatham Engineering Ltd.
Kevin MacLellan, Moose Creek Cement Products
Rob MacLellan, Moose Creek Cement Products
Andrew Maguire, L.M.Ent Water
Chad Mann, Lloyd Collins Construction Ltd.
John Martin Cromar, Advanced Septic Systems
John (Curtis) Martin, Town of Huntsville
Todd McCulloch, Town Of Innisfil
Paisley McDowell, WSP Canada Inc
Lauren McGregor, McMaster University Student
Joanne McGurn, KFLA Public Health Unit
Lynn McIlwaine, Gunnell Engineering
Charles-Edouard, McIntyre Premier Tech Aqua
Richard McKee, Vacutrux Ltd
Andy McKinlay, Waterloo Biofilter Systems Inc.
Lloyd McMillan, Lloyd McMillan Equipment Ltd
Troy McMillan, Lloyd McMillan Equipment

NEW & RENEWED MEMBERS LISTING

August 15th, 2019 - February 14th, 2020

Scott McMullen, Verge Insurance Group (OOWA Insurance)
David McPherson, Haldimand County
Ashley Metzger, Waterloo Biofilter Systems Inc.
Kim Millen, Norfolk County
Gerry Mitchell, Peto MacCallum Ltd
Gord Mitchell, KFLA Public Health Unit
Dale Moak, David Brown Construction
Adrian Molloy, Molloy Contracting Inc
Kevin Moniz, Strik Baldinelli Moniz Ltd
John Moore, Town of Bradford West Gwillimbury
Cheikh Mor, Mbacke DBO Expert Inc
David Morlock, FlowSpec Engineering Ltd
Daniel Morrison, McMaster University
John Moudakis, JM Consulting
Andre Moura, Tatham Engineering Limited
Bill Muirhead, Waterloo Biofilter Systems Inc.
Archie Mulder, The Rideau Group
Caroline Newby, Caroline's Septic Designs
Caely Nicholson, Township of Georgian Bay
Nico Nirschl, Liberty Pumps
Justin Noort, Niagara Region
Jim Oakley, Township of Severn
Irwin Osinga, D.M. Wills Associates Limited
Grant Parkinson, GM BluePlan Engineering
Gary Pearson, Pearson Engineering Ltd.
Duane Porter, J.A. Porter Holdings Ltd
Marty Price, MacGregor Concrete Products
Jami Quathamer, Brooklin Concrete Products
Michael Rahme, Home Pro Central Ont. Inc
Jason Rail, The Septic Store
Matthew Rainville, Gemtec Consulting Engineers and Scientists
Doug Rankin, Slagter Construction
Terry Rees, FOCA - Federation of Ontario Cottage Assoc.
Michael Reid, C.E. Reid & Sons
Greg Reimer, O'Hara Trucking & Excavating
Katherine Rentsch, R.J. Burnside & Associates Limited
Steve Ritsema, Liberty Pumps
Bill Robinson, SepticCheck.ca/Robinson Enterprises
Robert Robinson, Robinson Haulage Inc
Leroy Robinson, BNA Inc (Bergmann North America)
Scott Robinson, Unit Precast
Ian Robinson, BNA Inc (Bergmann North America)
Stephen Ropp, Percon Excavating Inc
Scott Roswell, Roswell Concrete Products
Will Rounds Corporation of the City Of London
Robert Rudak Rudak Excavating Inc.
Brian Rudak, Rudak Excavating Inc.
David Ruppert, Ruppert Haulage Inc.
Tim Salter, CMT Engineering Inc.
Monique Sauve, South Nation Conservation
Stuart Saville, Zoeller Canada
Brad Schildroth, FlowSpec Engineering
Mark Schroeder, Twsp of Bonnechere Valley
Doug Schultz, Township of Whitewater Region
Randall Secord, Wood Environment & Infrastructure Solutions
Glen Sharp, Francis Thomas Contracting Company Ltd
Edward Smith, Ted Smith Construction
Mike Smith, Smith Excavating, Grading & Septic Services
Charles Smith, Second to None Inspections Inc.
David Smith, Herns Sand & Gravel
Nick Snyder, Township Of Muskoka Lakes
Roger Souligny, Biobite
Brigitte South, Pinestone Engineering Ltd.
Mathew St Denis, Peto MacCallum Ltd
Craig Stainton, Ontario Ground Water Association
Carmen Staunton, WSP Canada Inc
Connor Steer, Gunnell Engineering
Jason Stephens, Stephens Excavating
Brady Straw, Waterloo Biofilter Systems Inc.
Paul Studholme, Professional Home Inspections
Andrew Sumary, Van Harten Surveying
Sandra Swanton, K Smart Associates Limited
Gill Tarundeep, Waterloo Biofilter Systems Inc.
Mac Taylor, Mac Taylor Corporation
Don Taylor, Mr. Septic
Marilyn Taylor, Mac Taylor Corporation
John Teixeira, Teixeira Construction
Keith Thomas, Francis Thomas Contracting Company Ltd
Scott Thompson, MTS Environmental Inc.
Bob Thomson, Valley Sanitation Services
Don Thomson, Valley Sanitation Services
Simon Thoume, James Thoume Construction Ltd
Michael Tinney, Tinney's Septic Service & Construction
Terry Tompkins, Township of Tay
Travis Toms, Township Of North Kawartha
Claus Trost, Laurentian Valley Twp.
Numair Uppal, OASIS
Mark Van, Alstine Herns Sand & Gravel
John Vanden, Hoven JVH Consulting
Michael Varty, WSP Canada Inc
Andrew Vitaterna, Clearford Water Systems Inc
Joseph Voisin, Pinestone Engineering Ltd.
Sam Vreugdenhil, MakeWay Environmental Technologies Inc.
Steve Walmsley, Township Of Tay
Mathew Walters, Walters Custom Works Inc
Danielle Ward, Adams Bros Construction
Eric Watkin, Tatham Engineering Ltd.
Chad Welch, Waterloo Biofilter Systems Inc.
Kyle Wetherall, Waterloo Biofilter Systems Inc.
Shawn Wheatley, CMT Engineering Inc.
Karen Wilkie, Upper Thames River Conservation
Marianne Willson Waterloo Biofilter Systems Inc.
John Winkup LaSalle Backhoe Service
Jazmyne Woolley, R.J. Burnside & Associates Limited
Ed Yohanna, Rural Water & Septic
Jennette Zimmer, Municipality of Huron East
Derek Zomer, Zomer Corporation
Geanine Zuliani, Waterloo Biofilter Systems Inc.

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MEMBER PROFILE

James Thoume
James Thoume Construction Ltd.

Name of Business: James Thoume Construction Ltd.

Owners: James Thoume

Services: Excavation & grading, aggregate supply, and onsite system installations

Service Area: Centre Wellington and surrounding area.

Number of Years in Operation: James Thoume Construction has been in operation for over 50 years. I've been involved with the company full time for the past 8 years. And a certified installer for the past 3 years.

JAMES THOUME
James Thoume Construction Ltd.

What got you started in the onsite wastewater industry?
My uncle (Brian Green Construction) used to do all our septic installations. When my uncle retired, I got my installer's certification in order to offer our customers a complete excavating service.

Give us one reason/secret for your success.
Growing up working for my dad and my uncle I learned two things. First is to pay attention to detail. This takes more time to do the job but it shows that we care about the quality of work we provide. Also, since most of our work is buried in the ground, a little extra time on the finish grade work and clean up goes a long way. Second is to continually prefect your process. This helps to ensure we are always working as efficiently as possible.

What was the most challenging onsite job you worked on or participated in?
The most challenging install in my experience was replacing a failing septic system with a raised filter bed in Fergus. The house was located near the downtown area and the backyard was fenced in and uphill from the street. Access was limited to a skidsteer and mini ex (even after removing a portion of the fence). The install occurred in November, so the site conditions were wet and muddy almost every day. We made a mess in the process, but the installation was done correctly and after some clean up and grading it all came together.

If you could change one thing about the onsite/ decentralized industry, what would it be?
I think any sale of real estate that uses an onsite system should be required to be inspected by a licensed professional. The reports from these inspections should also be kept on record by the local municipality for future use.

Where do you see the onsite industry going?
I believe there will be a continuing need to focus on fresh water and environmental conservation and protection. This will likely lead to governments changing regulations on the installation and performance of onsite systems and could also include a form of continued monitoring, to ensure systems are working properly. These potential changes to regulations, along with larger house sizes and smaller lots will continue to challenge the industry. Technology and system design will be increasingly relied upon to meet these conditions. And installations will become more technical and expensive. Public education and support will also be very important.

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INSULATING SEPTIC AND DOSING TANKS TO AVOID FREEZING DURING WINTER

By Sara Heger, Ph.D., Onsite Installer Magazine, November 28, 2019

In cold climates, insulating a septic tank may be necessary to maintain the internal tank temperatures necessary for active digestion and even to prevent freezing of the liquid. As the temperature drops in the tank, the natural bacterial activity drops as well and becomes dormant as temperatures drop below 40 degrees F. Tank walls, lids and risers may all require insulation, and a number of options are available for this purpose. All insulating materials must be resistant to water absorption.

Insulation board can be placed along the side and on top of the tank prior to backfilling. When selecting a board, keep in the mind that the higher the R-value, the better the thermal performance of the insulation. A minimum of R10 should be used over septic and dosing tanks. A flexible insulation can be wrapped around the riser.

Riser lids brought to grade can either be pre-insulated by the manufacturer or insulation can be added by the installer. Two feet of soil (although some contractors use 48 inches as the measure below the frost line) should provide enough insulation for operation in cold climates. Tanks buried at shallow depths (less than 2 feet of soil cover) may require additional insulation.

Spray-on insulation is now available and provides an additional sealant for seams coated in the insulation. In order for this option to be effective, there cannot be any loose-fitting manholes, broken inspection pipes or unsealed conduits that may allow cold air to be drawn into the tank.

Be sure that the insulation used for the tank is designed for burial. Keep in mind that insulation is not necessary for all tanks. For example, if the system is not used during colder times of the year, the tank contents may freeze because warmer water is not being added. In this case, insulation can actually delay the thawing process in the spring when active use begins again.

Insulation board can be placed along the side and on top of the tank prior to backfilling. When selecting a board, keep in the mind the higher the R-value, the better the thermal performance of the insulation.
CREDIT: ONSITE INSTALLER MAGAZINE

An insulated rise
CREDIT: ONSITE INSTALLER MAGAZINE

A REGULATOR'S PERSPECTIVE CHANGE IS THE ONLY CONSTANT

By Brad Smale, CBO, Township of Norwich

Sir Winston Churchill once said; "To improve is to change; to be perfect is to change often." If Sir Winston is correct then one could argue that the Building Code must now be quickly approaching perfection.

Bill 124 and the BRAGG Report lead to installer/designer qualification and registration requirements and performance-based alternative solutions. Subsequent legislation lead to the inclusion of requirements to regulate resource conservation and energy efficiency. Along the way a plethora of revisions and errata were implemented, all with mitigating affect upon the provisions of part 8.

No part of the Building Code has changed more in the past 20 years then Part 8. From the date of its original installation into the 97 Building Code until today, I can count some two dozen substantial changes: hydraulic loading rates and expanded contact areas, mandatory reinspection programs resulting from the Clean Water Act, the removal of the SB-5 TTU's in favour of the implementation of CAN/BNQ2680-600, the subsequent inclusion of Type A & B beds and leaching chambers into the conventional prescriptive provisions of the Code, I could go on…

That all said, much remains to be done. Many further changes still need to be made.

We are still at odds with the fractured and disjointed way that Part 8 reads today. Nearly 20 years after the previous transition fundamental discrepancies in the interpretation of the intent of the technical provisions remain. The difference between installing beds "in versus on" the soils is still not universally understood. The intent of the "75 percent" rule remains worded like a Gordian Knot. The provisions which implement the CAN/BNQ standard in the Code continue to leave room for ambiguity to the performance based intents for on-site treatment technologies. The supplemental Appendix amendment to the Building Code Compendium released by the Province 2 years ago have only made this ambiguity worse – leaving the intent of the Building Code requirements up to interpretations of individual Chief Building Officials is contrary to the very purpose of having uniform Provincial design and construction standards in the first place.

Beyond the specific issues with the changes (and lack thereof) to the Building Code Regulations are the policy and practice barriers which inhibit the use of newly approved technologies in modern developments.

One of the principle barriers is the Province's D-5-4 Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment, which was first written and implemented in the mid 80's, and hasn't been substantially amended since 1996. In its current form the D-5-4 includes virtually no regard for the technological advancements that have been made since the time of its creation. How can we move forward with substantive progressive change if we are continually tethered down by such archaic standards and practices? Why is the province so unwilling to let go of old thinking and business-as-usual practices? To date it has unfortunately been beyond our ability as individuals or groups (such as the OOWA) to motivate or affect the necessary change to advance the industry to the benefit of all.

Looking toward the future, it is undeniable that more change is coming.

Shifting focus back to the Ontario Building Code, the provincial government is currently in the midst of an endeavour to harmonize the Ontario Building Code with the provisions of the Model National Building Code of Canada (MNBCC). This means that the Code we've known for 20 plus years will be changing again in a very substantial way. It is particularly notable that the current National Building Code does not have a Part which standardizes small private sewage system design and construction in it.

It's all very uncertain at this point what the harmonization process will mean for the future of sewage system regulations in Ontario. Will it spell the end for Pt. 8 Sewage Systems tenure within the jurisdictive authority of the Ontario Building Code, or will Pt. 8 continue to be an inclusive amendment to the new model Code, post 2021?

Kathleen Shepherd, a public health inspector with Peterborough Public Health and OOWA board member, holds a copy of the ever evolving Ontario Building Code.

Beyond the Code Harmonization process, is now (finally) the time for meaningful changes to occur to provincial policy? Will action be taken to remedy past mistakes and build upon the technological advances that the industry has made over the past 25 years? Will old thinking or new thinking prevail?

In closing, and despite all of this uncertainty, I think a few things in particular have become very certain:

- the need for our expertise as professionals in the on-site septic design and construction industry will remain
- Technical innovation will not be stopped by regulatory/policy constipation (but it sure can slow down implementation)
- Practice does not necessarily beget improvement – change is also a necessary ingredient, and
- our experience with change as an industry – the manufacturers, installers, designers and inspectors - has prepared us for whatever may lie ahead

Here's hoping we all enjoy the conference while continuing to learn, change and improve!

MEMBER PROFILE

Tracey Spragg
Eisses Brothers Excavating

Name of Business: Eisses Brothers Excavating

Owners: Mike, Darren & Nick Eisses

Services: Our Company provides a wide variety of services from Excavations big and small, Demolition, all types of Site Servicing and Septic Design & Installs

Service Area: Serving Simcoe County Since 1973 (46 years)

Role: In-house Septic Designer & Administrative Assistant for over 10 years

TRACEY SPRAGG
Eisses Brothers Excavating

What got you started in the onsite wastewater industry?
As a graduate from Sir Sandford Fleming College, I have always had a passion for Natural Resources and the construction industry. Since joining Eisses Brothers I have had the opportunity to expand my knowledge of the Onsite Wastewater Industry by obtaining my BCIN number and becoming the In-House Septic Designer. I enjoy learning the new technologies within the Onsite Wastewater Industry to improve the quality of our septic installations to help improve our foot print on the Environment.

Give us one reason/secret for your success.
I really don't look at what my secret to success is because our entire team is why we are successful. From the quality of workmanship we provide to our clients to the above and beyond customer service that is pretty standard around here. Our entire team is committed to providing the best service for each specific job until the completion.

If you could change one thing about the onsite/ decentralized industry, what would it be?
If I could change one thing about Onsite/Decentralized Industry I would like to see a lot more information/knowledge be passed onto the individual home owners. The toughest thing about our business is teaching the end user (homeowner) how to use a septic system properly, the do's and don'ts of a septic to avoid the costly repair and or replacements of a very expensive part of owning a home.

Where do you see the onsite industry going?
I think the industry is moving towards trying to gathering better quality of information pertaining to individual onsite septic systems. With septic re-inspection programs being implemented in various municipalities, it is only a matter of time before each system will need to be inspected and hopefully educate the home owner on their own system. We need to make the Onsite Industry more recognizable to the General Public for a place to get great information on septic systems, not just the negative of having to get their systems replaced.

MEMBER PROFILE

Geanine Zuliani
Waterloo Biofilter Systems Inc.

Name of Business: James Thoume Construction Ltd.

Services: Manufactures and Services On-Site Wastewater Treatment Systems, Manufactures

Service Area: Ontario, multiple other provinces, states, and countries

Number of Years in Role: 9 years with the company, but I've held multiple roles within Waterloo Biofilter

GEANINE ZULIANI
Waterloo Biofilter Systems Inc.

What got you started I the onsite wastewater industry?
I have an education in Environmental Studies and Environmental Technology. My parents are friends of a former employee, and past OOWA President, John Doner. Back in the day, Robin Jowett needed some help with O&M, Customer Service, and Admin. John suggested I would be a good fit. I came in for an interview and tour, climbed the side of a Shipping Container in my heels, and the rest is history!

Give us one reason/secret for your success.
I am open-minded and welcome change with a positive attitude. I have held multiple roles and I continue to adapt, grow, and change throughout it all. Change can be scary, but it can bring opportunities for success. "If you don't like something, change it. If you can't change it, change your attitude." Maya Angelou

What was the most challenging onsite job you worked on or participated in?
In my role, I don't typically go to site. However, when I worked in the engineering department, providing design guidance, I was involved in sites from the design side. I assisted in a project where a couple SBT runs were proposed in an 'L' shape. There was some debate as to whether the inside corner of the 'L' was meeting the 2m spacing requirement. But in the end, due to extreme site constraints, it was allowed.

If you could change one thing about the onsite industry, what would it be?
If I could change something, it would be to greatly improve education across the industry. Many other areas have required annual training hours. I applaud and support OOWA for working in that direction. If I'm changing things, I think documentation and record keeping needs improvement as well.

Where so you see the onsite industry going?
Personally, I have a hunch that we are going to see an increase in OBC systems being designed by independent designers or engineering firms instead of designed by the installer. higher demand to support the speed of development.

SMALL SOLUTIONS BIG PROGRESS

Serving Indigenous communities with reliable, easy to operate small solutions.

By Trish Johnson

Water is considered sacred by Indigenous people for its interconnectedness to all life, making the stakes for wastewater treatment performance far higher than simple regulatory non-compliance. Given their unique relationship to water, any systems installed in Indigenous communities need to be capable of reliably discharging effluent quality designed to protect local fish and wildlife. With many Indigenous communities in Canada located in remote areas, some as far north as the famous 60th parallel latitude, already limited access is further restricted to certain times of the year. Inevitably, geography and cold climate conditions create major challenges for both existing and proposed wastewater treatment facilities.

Achieving a limit for ammonia in wastewater is a challenge for many technologies, especially in cold weather because the microbes that are required for nitrification slow down or even die off. Even still, system performance must meet Canada's Wastewater System Effluent Regulations (WSER, 2012), which specify that effluent un-ionized ammonia cannot exceed 1.25 mg/L. Wastewater effluent also cannot be acutely lethal to fish. WSA Saskatchewan research suggests the limit for un-ionized ammonia may be as low as 0.2 mg/L.

In addition to system performance, there are challenges with operations and maintenance (O&M) since many facilities are constrained by tight budgets for repairs and upgrades that are required to keep up with federal regulations. It may be expensive and time consuming to get parts and expertise on site if repairs are required. In remote communities, staffing issues also arise. It can be difficult to find individuals who possess the qualifications needed to run O&M intensive treatment facilities. To help Indigenous communities overcome these challenges, two Canadian companies – Nexom and Hannah Environmental Equipment Inc. – are actively providing solutions for Indigenous communities in Canada that are reliable, easy to run, and easy to maintain.

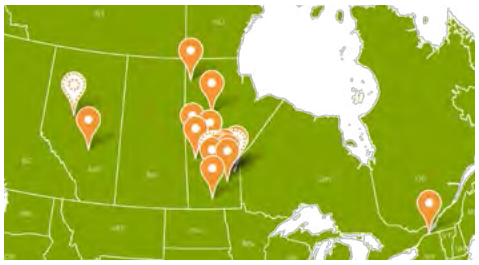
Nexom

Nexom is the new name for Nelson Environmental, a Winnipeg-based company that has had a rich history since its founding in 1997. In 2016, with the addition of filtration technologies and a broader focus designed to better serve customers, Nexom was formed. The company has pioneered SAGR post-lagoon cold water technology, a process that provides full nitrification as well as BOD and TSS polishing in cold to moderate climates. The only moving parts in this process are the blowers supplying air to the system, so the O&M requirements are similar to an aerated lagoon. Process control requirements are limited to seasonal manipulation of the influent control valves. Additional benefits of the SAGR system include low capital and operation costs, full nitrification in all seasons, compatibility with existing facultative lagoons, and fecal and total coliform removal.

Misipawistik Cree Nation

In 2012 the existing two-cell facultative lagoon at Misipawistik Cree Nation (MCN) in Manitoba was unable to meet the new regulatory requirements for wastewater. Biological wastewater treatment using lagoons has been a common answer for communities seeking low O&M solutions, but they come with significant challenges for cold climates.

The goal at MCN was to create a process that would be cost-effective and simple to operate, while also providing consistent performance in winter water temperatures that can fall below 1°C At MCN, two SAGR beds for post-lagoon secondary treatment were constructed in parallel. The water from the lagoons is divided and distributed evenly between cells before recombining for the final discharge.



The SAGR is presently installed or being installed at more than 85 locations across North America, 19 of which are on Canadian First Nations.

Pictou Wastewater Treatment Plant.

The MCN lagoon aeration upgrades and SAGR installation were commissioned by the Nexom team in the fall of 2013. Due a late season start-up date, the SAGR system was unable to produce the expected nitrification targets during the first winter of operation. Cold water temperatures during system startup prevented the SAGR system from growing enough biomass within the bed to provide full nitrification. Nexom staff and engineers worked with the team at MCN to support and overcome this challenge. Once water temperatures increased in the spring, enough biomass was established to allow the SAGR system to fully nitrify secondary treated lagoon effluent to less than 1 mg/L.

MCN's wastewater treatment plant operator Clarence Cook closes a valve used to expel condensation collected in the SAGR's aeration system over winter.

During a recent courtesy call on the Tia'amin Nation, concerns were raised about a possible mechanical issue at the community's aging sewage plant. In response, Simon Hannah, president of Hannah Environmental Equipment Inc., borrowed coveralls from the band and swapped his business casual clothes to work arm-in-arm with Tla'amin plant operators Mike George and Mary Peters to isolate the problem, make the needed repairs and keep the plant in production. According to Hannah, it's hands-on, in community, personal support like this that First Nations value.

Now MCN has a technologically advanced wastewater treatment system that is both simple to operate and maintain, while also capable of growing with the community. Since its first winter of operation, the system has reliably met federal wastewater regulations. In doing so, MCN has become an exciting example for small rural and remote Canadian communities looking to achieve full wastewater effluent quality compliance without giving up on their existing infrastructure.

Hannah Environmental Equipment Inc.

For more than three decades, Simon Hannah and his team at Hannah Environmental Equipment Inc. have manufactured dozens of wastewater treatment plants for First Nations communities across Canada. Identifying key drivers including affordability, ease of approvals, low O&M, and consistent conformance with regulations has allowed Hannah Environmental Equipment Inc. to address community needs across the country – from a growing Indigenous population at Pictou Landing, Nova Scotia to Ahousaht, British Columbia that has stringent requirements to protect a sensitive coastal shell fishing area.

The Hannah team has earned this privilege one community at a time by developing deep First Nations relationships, understanding each community's requirements, and providing appropriate solutions and support. It has built trusted relationships to achieve pragmatic progress by consistently delivering plug and play systems with proven simplicity, reliable performance, and low energy usage. In addition, an important part of what Hannah offers is ongoing, hands on, mechanical, and process support for all of its remote Canadian sites, regardless of location.

Pictou Landing First Nation, Nova Scotia
A new Hannah sewage treatment facility has been serving the community of Pictou Landing First Nation since 2012. This facility includes a biological treatment system providing advance or secondary treatment. It replaced an aging Hannah unit in the original plant that the community had outgrown. The original plant, which had performed well for decades, was reaching the end of its asset life.

Today, thanks to innovation and design ingenuity, the original plant is continuing to deliver value. It now houses a pumping station and the tanks provide storage for flows during peak demand. The new plant provides greater protection for a g rowing population and the environment by offering larger capacity. It is also highly reliable with low operation and maintenance requirements for the community.

Hannah's proven Rotating Biological Contactor systems incorporate advanced treatment technologies enabling them to meet the most stringent effluent discharge levels including BOD and TSS of 5 mg/L, total ammonia nitrogen of 1.0 mg/L, and total phosphorus 0.1 mg/L. Achieving these limits is necessary to protect FN fisheries and human health. Companies like Nexom and Hannah Environmental Equipment Inc.—among others in Canada—are offering a new way forward. They are providing sound environmental protection for Indigenous communities across Canada through reliable, easy-to-use solutions.

Trish Johnson is an environmental consultant specializing in working with communities to create wastewater solutions.

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Fleming College Now Offers Advanced Onsite Wastewater Treatment Certification Services

By Joelle Levesque, Marketing and Communications Coordinator, Office of Applied Research & Innovation at Fleming College

When Fleming College's Centre for Advancement of Water and Wastewater Technologies (CAWT) opened its doors in 2004, it was with the intention of becoming a world-class R&D facility capable of meeting the demands of the most innovative players in the water tech sector. Now, more than 15 years later, we are proud to have brought this vision to life, earning a reputation for excellence in the water sector across Canada and internationally as an NSERC Technology Access Centre. Located in Lindsay, Ontario, at Fleming College's Frost Campus, our assets include an ISO-accredited analytical laboratory, an advanced onsite wastewater treatment certification centre, two indoor research facilities for mid-scale pilot studies, an arsenal of state-of-the-art laboratory equipment and an enthusiastic team of dedicated researchers. Our primary goal is to solve innovation challenges that help companies of all sizes develop, demonstrate, optimize, test, verify and certify water and wastewater technologies in order to bring a product closer to market. To date, we have helped more than 160 industry partners on projects ranging from developing wastewater, drinking water and greywater treatment technologies, to evaluating the impacts of nutrient loading in arctic watersheds, to troubleshooting wastewater management at multiple microbreweries. This is part of what makes our work so exciting: we never know what project will come through the door next.

Recently, we have increased up our service offerings, turning our attention toward performance measurement, verification, and certification services.
Our portfolio now includes testing to ensure conformance with standards NSF/ANSI 350 and 350-1 (Onsite Water Reuse), NSF/ANSI 40 (Residential Onsite Systems), NSF/ANSI 245 (Nitrogen Reduction), CSA B128.3 (Performance of Non-potable Water Reuse Systems) and the exceptionally stringent CAN/BNQ 3680-600 (Onsite Residential Wastewater Treatment Technologies). It was no small feat to get to the place from which these services could be readily offered. For one, any facility in which NSF testing will occur must first be accredited to ISO/IEC 17025—the internationally recognized standard for testing and calibration laboratories. Usually reserved for commercial laboratories that have the means and capacity to offer analysis of accredited analytes, Fleming College is one of only a handful of colleges in Canada to operate a facility of this standard. Accreditation to ISO/IEC 17025 provides formal recognition that the laboratory maintains a quality management system that is technically competent, and guarantees that research partners will receive unbiased, reliable and credible results. For the CAWT, becoming accredited means that top quality verification and certification services can be offered to partners as a complement to the research and development efforts already afoot. This sets us apart from commercial laboratories, as the one-stop-shop services we offer are always project-related and often associated with student learning.

With water and wastewater regulations across the world becoming more stringent, our move to ramp up verification and certification services seemed a natural next step. In response to both regulatory changes and the increasing demand from industry partners, Fleming College partnered with the Township of Minden Hills to establish a satellite field-testing facility in Minden, Ontario, specializing in providing third-party certification services to manufacturers of advanced onsite residential wastewater treatment technologies.

This is an area that is currently underserved within Ontario and Canada, with very few locations across the country offering the same suite of conformance testing in spite of demand. The rationale behind the surge in demand is multipronged, but the primary driver is a shift in the regulatory framework around wastewater treatment technologies.

Most notably, the Ontario Building Code implemented changes to the minimum certification requirements for onsite residential wastewater treatment units. As of January 1, 2017, treatment technologies

Each of the equalization tanks at Fleming College's testing and certification facility is equipped with stirrers and heaters. One tank includes an ultrasonic level sensor and a TSS probe to continuously monitor the sewage level and solids content.

The facility is equipped with six dosing buckets (foreground) and a PLC system for the centrifuge (background).

must be certified to the CAN/BNQ 3680-600 standard, which guarantees that a system is robust enough to withstand the extreme climactic fluctuations associated with a four-season cycle. Additionally, the Canadian regulatory framework around wastewater effluent quality and drinking water protection has become stricter at all levels of enforcement. A system's compliance to a rigorous standard – whether NSF, CSA or BNQ – minimizes the likelihood that contaminated water will be released into the environment through technological failures and oversights in maintenance.

The growing demand for onsite residential treatment system testing and certification is also being driven by industry. Leaders in the wastewater sector have turned to the advanced onsite septic system market where there is room to look at innovative ways in which to improve the effectiveness of septic technologies. In Canada, where large segments of the population reside in rural or remote settings that are not connected to municipal sewage services, and where many properties cannot accommodate traditional septic systems, advanced onsite treatment technologies fill the gap. Relative to conventional systems, advanced units provide more reliable treatment, additional groundwater protection, and significantly reduce the need for pump-outs¬.

So what exactly does the process of certification testing entail? First, manufacturers of onsite residential wastewater treatment technologies must install their units at Minden for a period of 6 or 12 months, depending on the standard selected and the type and class of treatment in question. Similar to NSF/ANSI Standard 40, CAN/BNQ Standard 3680-600 involves a six month test period with cycles of stress and frequent sampling, followed by an additional six months of testing with less frequent sampling to verify the reliability of the treatment technology over the course of four seasons (especially in the harsh cold). If a technology is already certified to NSF/ANSI Standard 40, then only six months of reliability testing are required.

The facility can accommodate up to six technologies concurrently, as well as provide optimization and validation assistance prior to certification testing in order to ensure the technology is primed and calibrated to pass muster. At this time, we have installed our first partner technology and are ready to welcome others.

Already a go-to location for applied research support in Ontario, Fleming College's CAWT is on its way to becoming the Canadian home of water and wastewater technology verification and certification. The services it provides empower forward-thinking companies to meet international regulatory regimes and secure claims about the quality and performance of their products before they enter the world market. If your business, institute or governmental organization is interested in diving deeper into the nuts and bolts of certification and its benefits, contact Dr. Barbara Siembida-Losch, Manager and Senior Scientist at the CAWT. We look forward to working with you.

Rules for Winter Septic Tank Pumping

By Sara Heger, Ph.D.
Onsite Installer Magazine

In general, pumping septic tanks is not recommended in cold climates during the winter months. Winter's arrival can vary year to year, but a good rule of thumb in Minnesota, for example, is to avoid pumping from November to April. Below are the most common problems associated with winter pumping.

1. Depending on the size of the family living in the home, it could take days or even weeks for the septic tank(s) to fill back up. The typical person uses approximately 60 gallons per day. If two people were living in a home, it would take eight days for the tank to be full. During these eight days, no wastewater would be traveling out through to the septic tank and out to the soil treatment system. This could result in your septic soil treatment area freezing and your septic tank requiring pumping out for the rest of winter.

2. Often the lids on septic tanks are buried, and once frost gets into the soil, it's difficult to dig down to the lid. On a side note, it is recommended that these lids be extended to grade to facilitate pumping. Septic tanks can only be properly maintained by accessing the lid. Newer septic tanks have maintenance lids to grade that are insulated. Shallow tanks should be insulated too, as shown in the picture below.

3. If you pump septic tanks and typically land-apply the septage versus taking it to a wastewater treatment plant, it may be more challenging or not allowed if the soil is frozen.

4. It takes time to get the bacteria up to full speed after a tank pumping. This will happen more rapidly in warmer conditions. In addition, they do not work as well when they are cold, which is more likely after pumping.

Exceptions

Although winter pumping is not generally recommended, there are a few instances when it may be the correct course of action:

If there is an emergency related to the septic system that involves sewage backing up into the home or sewage coming to the surface in the yard, or if the septic pump needs replacement.

If a cabin or home sees limited use during the winter, the septic tank can be pumped and then gradually filled over the winter with no wastewater leaving the septic tank. If the tank is located in an area with a high water table, tank buoyancy should be evaluated prior to pumping the tank. If a septic tank is left full with low uses over the winter months, the sewage will get very cold and can even freeze.

MEMBER PROFILE

Paisley McDowell
WSP Canada Inc.

PAISLEY MCDOWELL
WSP Canada Inc.

Name of Business: WSP Canada Inc.

Services: Engineering Consult/Design

Service Area: Onatrio

Number of Years in Role: I have been with WSP for 3 years.

What got you started in the onsite wastewater industry?
WSP septic re-inspection programs! These programs are great ways to integrate young staff into the industry as they allow an opportunity to learn about the onsite world while also developing communication and coordination skills. WSP has been running these programs since 2013 and have integrated multiple engineering young professionals into the work force with these programs in that time.

Give us one reason/secret for your success.
The support around me. I have been lucky to have awesome mentors within WSP that have allowed me to grow and advance. The technical and operations support I receive on a daily basis has excelled my career and kept me engaged in the technical onsite world.

What was the most challenging onsite job you worked on or participated in?
Some of the more challenging jobs we face are the technically complicated systems due to high strength waste water. Providing a reliable system for clients that can achieve objectives over time has been a challenge the industry has faced over the years. Advancements in existing technology and new technology provide opportunities to overcome these challenges.

If you could change one thing about the onsite/ decentralized industry, what would it be?
Better public understanding of operation and maintenance of septic systems. We have seen owners unaware of the system present, how to properly use the system and what signs to watch for over time. Increased public education of onsite systems could allow systems to last longer and protect human and environmental health.

Where do you see the onsite industry going?
With the population expanding and rural areas seeing rapid growth, I see the onsite industry utilizing more communal systems. The expansion of municipal servicing networks is a long process therefore there will be more interest in onsite systems. As subdivisions are built in areas where other services are not available, I can see that communal systems will be in higher demand to support the speed of development.

Reflect on the Past, Prepare For the Future: A Case Study on High Strength

continued from page 1

Most restaurant brands/franchises will require their restaurants to have internal grease traps that are typically installed under the kitchen sinks or dishwashers. We find that maintenance of these units can be unpredictable and they do not provide sufficient FOG removal for discharge to on-site systems. External grease traps can be installed to allow for the separation of greases prior to effluent entering the later treatment stages. It has been found that two (2) external grease traps, installed in series, allows time for high-temperature wastewater to cool and improves FOG removal. Depending on store usage, external grease tanks typically need to be pumped on a bi-monthly basis and it works best if the owner signs an agreement with a hauler to ensure the tanks are pumped out on a regular schedule. Failing to adequately care for, and maintain, the grease tanks can result in premature failure of the sewage pumps, treatment equipment and leaching bed.

Flow balancing should always be considered for high-strength sewage systems.
Sites that include commercial kitchens or restaurant facilities will experience peak flows throughout the day, for example during breakfast or lunch rushes. Flow balancing in sewage systems provides usable storage to buffer the downstream treatment system from these peak flows. Flow balancing also provides a consistent flow rate over a 24-hour period to the treatment system which optimizes treatment performance. Recognizing these advantages, the flow balancing capacity was increased from 25% of the daily design sewage flow (DDSF) in the 2009 system to 75% of the DDSF in the 2019 system.

Treatment systems are not "one size fits all".
The 2009 system featured a custom MBBR treatment system designed to treat wastewater to residential strength sewage (to BOD5/TSS of 250 mg/L). This was followed by two residential treatment units installed in parallel to treat sewage for disposal (to BOD5/TSS of 10 mg/L). Although TSS is a single parameter that we measure in wastewater, the actual "type" of TSS changes from residential to commercial wastewater. Food solids, fats, oils and greases all contribute to TSS in wastewater originating from restaurant and commercial kitchen facilities. Clarifiers within residential treatment units do not have adequate retention capacity to settle out this unique TSS in high-strength wastewater. As a result of this, the clarifier capacity was increased between 2009 and 2019. The 2009 system included one operation clarified (intermediate clarifier) and the 2019 system included three clarifiers (primary, intermediate, final).

Residential units also offer little customizable control of the operations. Treatment of high-strength wastewater often requires additional processes such as alkalinity addition to maintain pH values or carbon addition to assist with nutrient removal. Having the ability to customize the treatment process allows us to optimize high-strength wastewater treatment.

High-strength sewage systems should be monitored remotely.
The 2009 system is controlled via multiple duplex control panels without GPRS capability. To compare, the 2019 system is controlled via a custom control panel with GPRS monitoring, current sensing on each output, and data logging. It is now common for on-site sewage systems to be equipped with control panels that feature remote monitoring and data logging. When an event is detected by the control panel, the on-site alarms activate and the control panel sends a signal via GPRS to a server with details of the event. Details can also be sent via email or text to the owner, engineer, or other users. Current sensors are used to notify the operator of pump or blower failure within the system without having to do a site visit.

Treatment unit manufacturers are now working to automate other processes in the treatment system. Dissolved oxygen sensors are being added to treatment tanks to automate blower times which can reduce energy costs. We can foresee a time in the future where other parameters are automatically adjusted in real time to optimize treatment performance. For example, pH meters could be added to automate alkalinity addition and optimize pH conditions within the wastewater.

Taking some time to reflect our past allows us to see how much we have learned, how treatment systems have evolved, and how we have embraced ever-changing technology. Consideration of our past challenges also allows us to prepare for the future. What will on-site sewage system designs look like in 2029?

Table 1: Comparison of High-Strength Sewage System Designs (2009 and 2019)

	2009 DESIGN	2009 DESIGN
Location	Beaverton, ON	Champlain Township, ON
Development Description	Service Station and 52-seat Restaurant (Donut Shop)	Service Station and Drive-Thru Restaurant (Donut Shop)
Daily Design Sewage Flow (DDSF)	11,385 L/day	9,650 L/day
Influent Characteristics	BOD5 500 to 2,200 mg/L TSS 400 to 1,200 mg/L TKN 20 to 85 mg/L	BOD5 500 to 1,500 mg/L TSS 200 to 500 mg/L
Effluent Objectives	CBOD5 10 mg/L TSS 10 mg/L Nitrate 10 mg/L	CBOD5 10 mg/L TSS 10 mg/L
Grease Interceptor Description	One (1) 9,000 L tank	Two (2) 3,600 L tanks in series
Balancing Tanks Description (Prior to Treatment Tanks)	Manhole pump station (approx. 3,000 L sump capacity) with grinder pumps	7,200 L Balancing Tank with sewage pumps
Treatment System Description	- 10,900 L Pre-treatment Tank - Moving Bed Bioreactor (MBBR) Treatment System with Intermediate Clarifier - 2 x Residential Units capable of treating 5,700 L/day each	- Custom Treatment System - 23,000 L Sludge Storage Tank and Primary Clarifier - Moving Bed Bioreactor (MBBR) Treatment System with Intermediate and Final Clarifiers
Controls	Multiple duplex panels (no GPRS)	Control Panel with GPRS Remote Monitoring, current sensing on each output, data logging
Picture		

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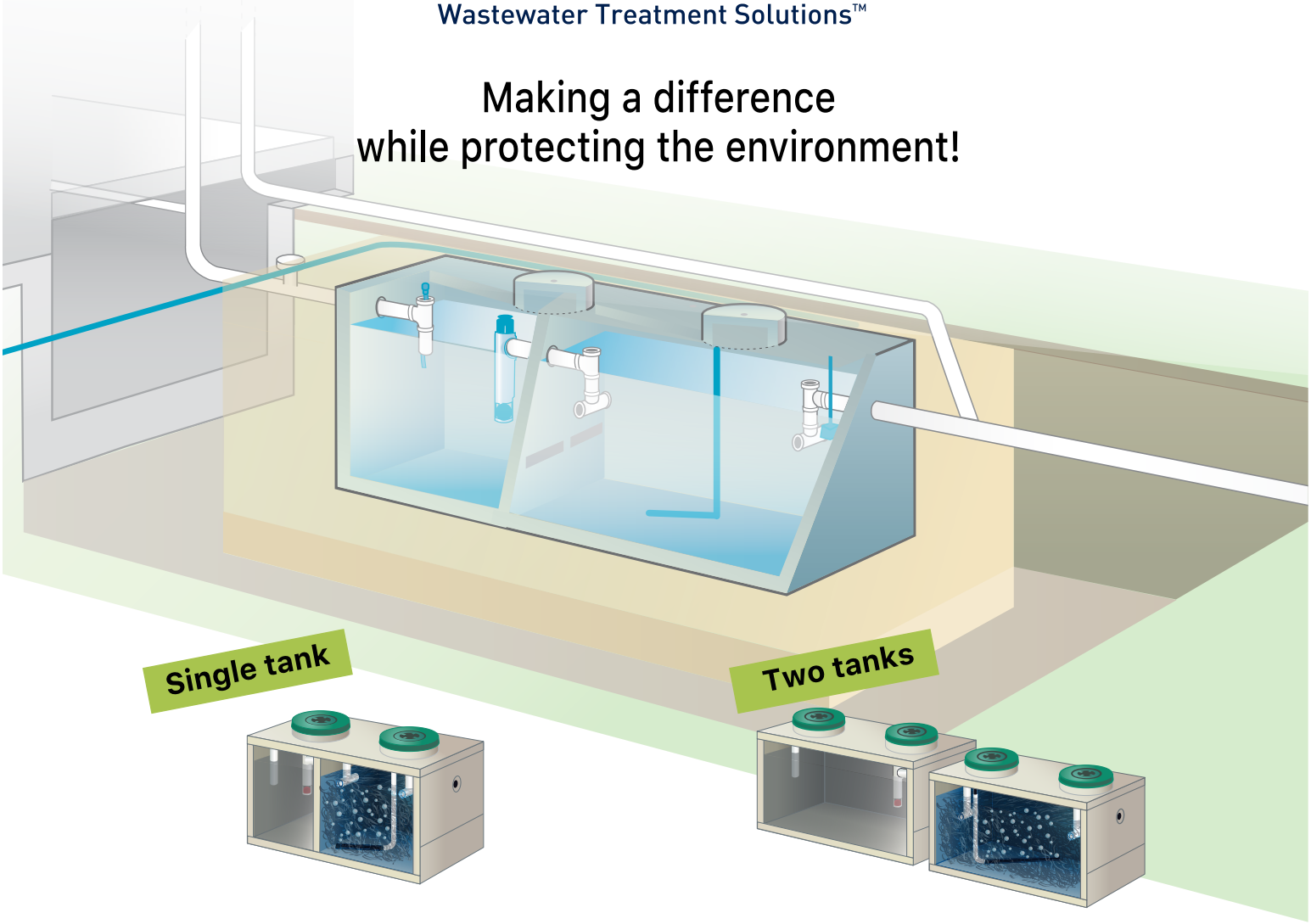

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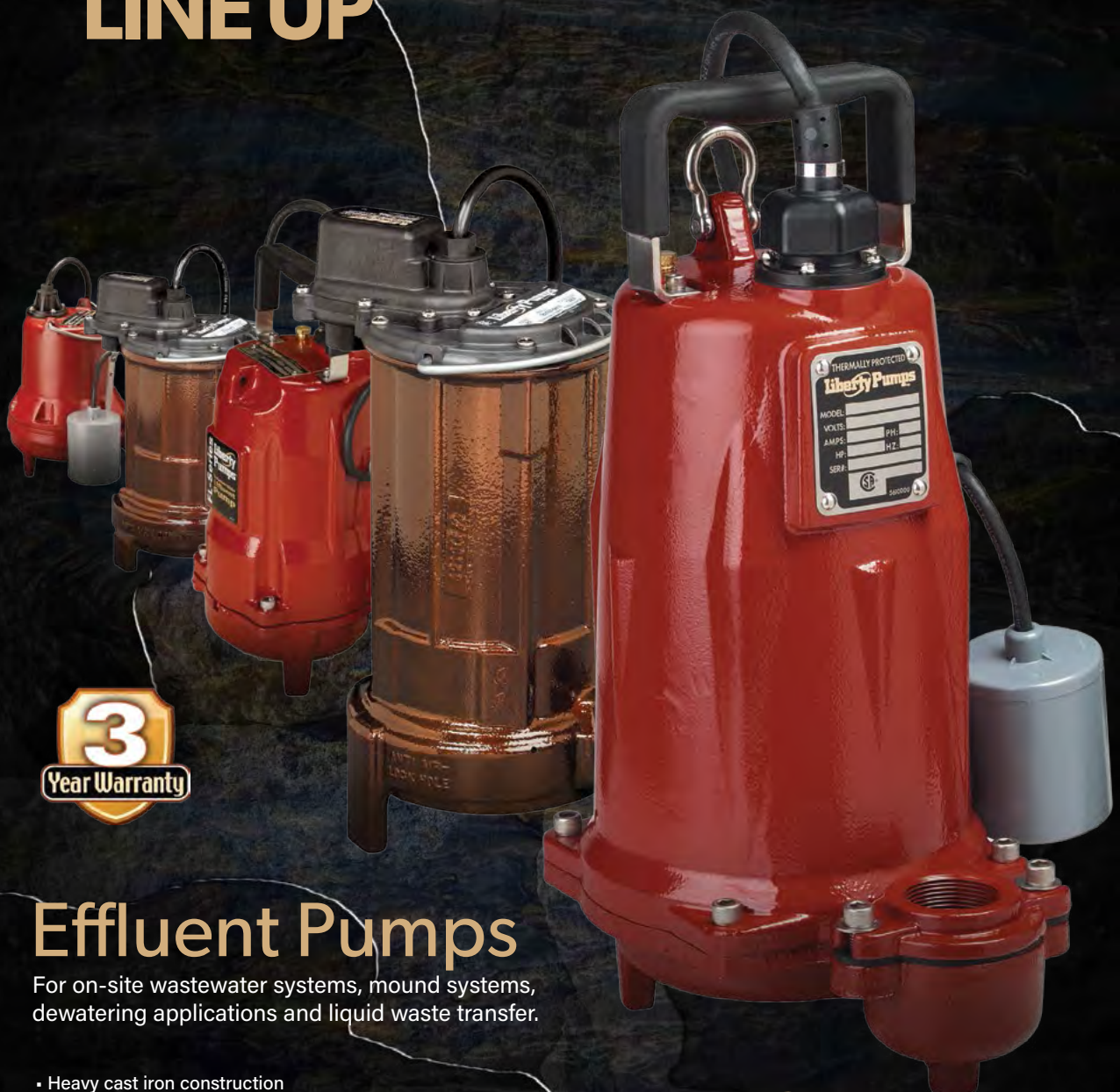

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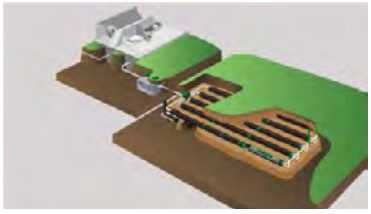

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