

Onsite

ONTARIO ONSITE WASTEWATER ASSOCIATION NEWSLETTER

treatment | technology | innovation | reuse | recycle

SUMMER 2015

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IS CANADA MISSING THE BOAT ON DECENTRALIZED SOLUTIONS?

A CALL TO ACTION TO THE WASTEWATER COMMUNITY

By Trish Johnson, R.V. Anderson Associates Limited

In a time of concern over climate change and lower capital and operating costs, of municipal belt-tightening, fewer capital grants and increasing regulatory pressures, many Canadian municipalities need more appropriate solutions than "big pipes." We in the wastewater community need to promote cost-effective, sustainable and appropriate solutions for small towns and big cities alike through onsite and decentralized wastewater systems. These systems have been shown to consistently produce more cost-effective sustainable solutions, and offer lower carbon footprints.

We must recognize that onsite services are no longer merely septic tanks. They now include Advanced Treatment Units capable of nitrogen and phosphorous removal, efficient cluster systems, and so much more. Over a decade of USEPA research has proven that decentralized alternatives are significantly more cost-effective for non-core, 'fringe', and rural areas than conventional systems. American examples of effective and cost-saving decentralized technologies and innovative systems abound and are rapidly growing, largely because their consideration is both required and promoted by policy in the United States.

In Canada, Aboriginal Affairs and Northern Development Canada's 2010

Decentralized Systems Protocol shows real promise for more cost-effective solutions for Canada's First Nations. However, now more than ever, leadership and facilitation of a clearer policy framework for decentralized solutions is needed at the Provincial level, especially in Environment and Planning, to help small Canadian municipalities fully benefit from decentralized and onsite infrastructure.

Because of the many benefits of decentralized systems such as cost-effectiveness, flexibility, ease of operation and lower life cycle costs, some examples of decentralized innovation and leadership are beginning to appear in Canada. This is happening despite the lack of momentum and a strong decentralized policy focus as they have in the United States.

It may be surprising, but innovative examples of decentralized systems can be found within the City of Ottawa itself. In a subdivision in Greely, Ontario, within the City of Ottawa boundary, a creative solution has set an exciting precedent. Its onsite treatment system uses individual settling tanks and gravity flow to a nearby peat wetland, thus allowing higher density without contributing to peak loadings nor does it necessitate costly pumping into the City's central system.

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PRESIDENT’S MESSAGE

ONLY JUST THE BEGINNING

I am proud to report that the summer of 2015 has proven to be an exciting and productive one. OOWA’s volunteers have been hard at work pursuing stakeholder-ship and relationship development with government ministries MMAH (Ministry of Municipal Affairs and Housing) and MOECC (Ministry of the Environment and Climate Change). Volunteers and committees have also continued with their efforts of collaboration and partnership development with a growing number of allied associations and organizations such as OBOA (Ontario Building Officials, Association), OASIS (Ontario Association of Sewage Industry Services), FOCA (Federation of Ontario Cottage Associations), CWQA (Canadian Water Quality Association), WaterTAP (Water Technology Acceleration Project), ONEIA (Ontario Environment Industry Association) and OSPE (Ontario Society of Professional Engineers). Although these efforts have been highly productive and progressive, these partnerships and collaborations are only just the beginning. OOWA finds itself at the center of a nexus of many related water, environment and infrastructure fields, and as such will need to continuously develop relationships, knowledge partnerships and collaborative efforts with all related agencies and sectors.

Indeed the association’s recent accomplishments, growth and strides need to be reflected upon and acknowledged, however it is nowhere near time to pause or take a proverbial break. Given provincial and national growth, environmental conscientiousness and sustainable solutions awareness, the onsite and decentralized industries are on the verge of a period of tremendous growth and development. These trends are particularly pressing when considering recent climate change and extreme weather patterns, and the necessity for infrastructure servicing that is required to be cost effective while also resilient and sustainable through adverse, and often unpredictable conditions.

Many of the required innovative solutions, technologies and strategies already exist today. It is in OOWA’s purview of initiatives and responsibilities to help create the space for this dialogue and the forums in which these solutions and strategies can be explored, shared and further developed. It is for these reasons then that OOWA’s symposiums, regional meetings and workshops are being organized at an ever-increasing rate, both in frequency and in regional distribution (OOWA’s events committee is proud to report 13 events – and counting – in this annual cycle). I encourage every one of our members to attend as many of these as they can. They are truly valuable and informative events, and are well worth the nominal investment of admission. Attending OOWA events supports your Association, but also our collective information sharing, and therefore market development. I look forward to connecting with you shortly at our forthcoming series of events.

The board of directors for OOWA is working successfully with our wonderful staff and committee volunteers to execute the vision of our strategic plan developed last summer. I am proud of the way this Association has transitioned from some uncertainty of direction, into a progressive, well organized and driven group. We are making a better future for our members through onsite and decentralized market and policy development. Happy summer to all – and see you soon!

Rick Esselment
President

Onsite
Ontario Onsite Wastewater
Association Newsletter

To submit an article or place an advertisement contact the editor at info@oowa.org. The opinions expressed in this newsletter by contributing authors are not necessarily the opinions of OOWA’s Board of Directors or the Association.

OOWA Board of Directors

Marie-Christine Belanger
Premier Tech Aqua
www.premiertechaqua.com
belm2@premiertech.com

Andy Bauman (Acting Secretary)
RH20
abauman@rh2o.com
www.rh2o.com

John Desbiens (Treasurer)
Cambium
John.Desbiens@cambium-inc.com
www.cambium-inc.com

Anne Egan (Vice President)
R.J. Burnside & Assoc.
anne.egan@rjburnside.com
www.rjburnside.com

Rick Esselment (President)
ESSE Canada
rick@essecanada.com
www.essecanada.com

Allan Hazelton
Great Lakes Clean Water
a.hazelton@waterclean.ca
www.waterclean.ca

Rick Howden
Core Earthworks Limited
rick@core-earthworks.com
www.core-earthworks.com

Trish Johnson
R.V.Anderson Associates Limited
tjohnson@rvanderson.com
www.rvanderson.com

Gerry Knoop
Denby Environmental Services
knoop1499@rogers.com
www.denbyseptic.com

Don Krauss
Infiltrator Systems
dkrauss@infiltratorsystems.net
www.infiltratorsystems.com

Rob Palin
North Bay Mattawa Conservation
robertp@nbmca.on.ca
www.nbmca.on.ca

Robert Passmore
Fieldstone Engineering Inc
robert@fieldstoneeng.com
www.fieldstoneeng.com

Bill Robinson
Robinson Enterprises
bill@robinsonenterprises.ca
www.robinsonenterprises.ca

Brady Straw
Waterloo Biofilter Systems
brady@waterloo-biofilter.com
www.waterloo-biofilter.com

Jane Zima
SimbiH2O
jane@simbih2o.com
www.simbih2o.com



Perth geotube pad construction site view from the roof of the existing water treatment plant.
CREDIT: Bishop Water Technologies

Though it took years to finalize the project, the City of Ottawa should be proud of this ground breaking example of how a small system operating within a larger one is resulting in a big win-win solution for everyone. Of course, these types of solutions are not just for small towns and rural situations. They can also result in big savings for big cities and we have a great deal to learn from them too.

There is yet another success story, again in the City of Ottawa, at the Carp Airport development. An innovative system is now being planned there as the largest modular decentralized wastewater facility in Canada, this will serve as a new model for cost-effectiveness in the future.

Wastewater professionals are fully aware that systems with short-term peak loads and few subscribers are costly and inefficient. That is why we must begin to use more onsite and decentralized systems, and the economics speak convincingly for themselves. The evidence that decentralized systems offer more cost-effective solutions is so compelling that the USEPA even provides a model and requires comparison of centralized, ‘fringe’ (peri-urban) and decentralized systems for infrastructure grant eligibility. And when it comes to value for money, the USEPA found long ago, upon proper examination, that onsite and decentralized solutions frequently offer the most cost-effective environmental protection for rural, fringe and dispersed populations.



Geotube winter operations greenhouse construction, Oct 2014.
CREDIT: Bishop Water Technologies

In Ontario we also know that, depending on local conditions, underground pipes and pumps represent about 75% of total system costs, with only 25% going towards actual treatment works. Environmental Assessment estimates for a wastewater system in the small town of Lanark, Ontario, revealed an even bigger premium for conveyance due to local bedrock. The preferred solution identified extremely high capital costs, resulting in unaffordable costs per service connection. Thus, despite the Provincial share of funding made available years ago, no solution has been implemented and Lanark remains a small town in desperate need of a cost-effective solution. With such a small population, Lanark is likely a place that could benefit from another look at today’s innovative decentralized options

On the opposite side of the spectrum is, Perth, Ontario, an example of a small town that has realized considerable savings by implementing an onsite dewatering and residue treatment system for its water treatment plant. Savings have resulted not only from lower capital and O&M costs. They have also come about because there is no lost opportunity cost for development from flows that would have been directed to the sewage lagoon if they were relying on conventional decantation and treatment, which would take up development capacity for about 80 new homes, a substantial revenue stream.

The key to realizing more affordable decentralized solutions lies in ensuring that the right audiences understand the full facts and that decisions are based on Life Cycle Costing. (continued on page 4)

Is Canada Missing the Boat on Decentralized Solutions?

Continued from page 3

A stronger requirement for proper comparative information would do wonders to move toward a more sustainable future for many Canadian small towns and villages.

When it comes to realizing the potential for onsite and decentralized systems, the technology is proven. However, if we are going to offer a more affordable future, we need to get the small towns and policy makers to accept these solutions and overcome their innate inertia towards the familiar. By not looking towards the more creative and cost-effective solution, we are making a choice to remain stuck in the old, expensive ways of the past. It is an abyss of high debt and high operating costs that offers an unsustainable future

for Canada's struggling small towns and cities.

It is interesting to note that several large American cities have been finding relief through decentralized solutions by employing cheaper pipes, less pumping and storage for less watershed transfer. In Boston, Massachusetts, Mobile, Alabama and Los Angeles, California, new decentralized components serving older neighbourhoods have relieved pressure on overburdened systems and avoided much more costly conventional plant upgrades. This is an important form of economic "capacity mining" that has widespread potential in Canada.

In Canada, we need our collective leadership to come together and engage on this crucial issue. Together we can move forward, away from the tired convention of treating the high peaks and volumes, into a future of affordable averages and onsite

options, particularly benefitting small and dispersed populations.

We need a Call to Action. A Call to Action similar to the one issued in March by the American Society of Civil Engineers (ASCE) Committee on Sustainability stating that the "current approaches, practices and standards do not address the full range of societal needs... Therefore, we must work together with people who understand the issues and can develop practical solutions".

Unless we in Canada regroup and bring forth more sustainable standards, approvals and methodologies, the environmental, energy and economic pressures of protecting the future health, safety and welfare of the public will overwhelm us. We can't afford to miss the boat on the benefits that decentralized solutions offer. We need action. The time to act is now!

Trish Johnson is a member of the Ontario Onsite Wastewater Association (OOWA) Board of Directors and Co-chair of the OOWA Government Relations Committee. She is also the Senior Environmental Consultant and Small Solutions Strategy Advisor for R.V. Anderson Associates Ltd. in Ottawa, ON.

The Ontario Onsite Wastewater Association (OOWA) provides leadership in this important area. We invite you to learn more and join in leadership and a decentralized dialogue at OOWA educational events in Peterborough and Kanata, Ontario planned for fall 2015.

For more information see OOWA's Events Calendar at www.oowa.org/events/
For more information in ASCE's Call to Action see www.asce.org/sustainability

OOWA's 2016 ANNUAL CONFERENCE & TRADE SHOW

March 6th - 8th, 2016

The Ambassador Hotel & Conference Centre

1550 Princess Street, Kingston, ON

SAVE THE DATE!



OntarioOnsite WastewaterAssociation

Sunday March 6 - Tuesday March 8, 2016

Be sure to save the date and join us for OOWA's 17th Annual Conference & TradeShow!

WE ARE NOW ACCEPTING PRESENTATION PROPOSALS AND REGISTRATION, SPONSORSHIP AND EXHIBITOR INQUIRIES.

Please contact us for more details: 1-855-905-6692 or outreach@oowa.org

Check back to our website's 'Events' page for more details in the coming weeks.

FILTER BED SIZING: CRACKING THE CODE

By Anne Egan, P.Eng., R.J. Burnside & Associates Limited

Having worked in many different jurisdictions across Ontario, I have observed that there are some very different interpretations when it comes to the use of Filter Beds in accordance with 8.7.5 of the OBC. This has been witnessed among designers as well as regulators. While there is some room for interpretation of the code, there are certain critical aspects associated with filter bed sizing that are too often applied incorrectly. Many times I have heard that a conventional leaching bed system will not fit on the site, so the proposal is to use a filter bed because it is very compact and can be squeezed into a much smaller area. While the filter bed will typically occupy a smaller footprint than a conventional absorption trench bed, there are many cases where undersized filter beds are being installed because the required loading rates as specified in Table 8.7.4.1. of the OBC are not being respected.

The Filter Bed originated from a study conducted by the Ministry of the Environment which was published in 1974. Design guidelines for Filter Beds were then incorporated in the 1982 MOE Manual of Policy, Procedures and Guidelines for Private Sewage Disposal Systems, and were subsequently incorporated into 8.7.5 of the OBC. If you are a designer of filter bed systems, I would urge you to consult the old 1982 MOE guidelines (available

online), as there is a lot of valuable background information in that document which did not necessarily get transferred to the code. Article 8.5 of this document clearly outlines the intent behind the filter bed sizing requirements, which is to make sure that the total area of the filter bed is based on loading rates that properly reflect the ability of the underlying soil to absorb the applied effluent on a continuous basis and over the entire life of the system without a breakout to ground surface, and to limit the probability that the soil component will be sized without proper consideration of soil characteristics and its absorption capabilities which could lead to system malfunction or failure.

When sizing a filter bed, the designer should first consider the requirement for the Contact Area, which is based on the familiar QT/850 relationship. (It is important to note that the T-time used in this calculation of the required Contact Area be that of the underlying soils, not the T-time of the imported filter sand; a commonly observed error). The second component of the filter bed sizing exercise is to calculate the total Loading Area based on the maximum loading rates as contained in Table 8.7.4.1., and sentences 8.7.5.2.(2) and 8.7.5.3.(1) of the OBC. The Loading Area is the total area, which would typically include the Contact Area, as well as the required 15 metre sand mantle or

extended contact area as it is sometimes called. The total Loading Area is the total footprint of the filter bed, but does not necessarily need to consist of the specified filter sand. Outside of the required Contact Area, a typical "septic sand" could be used for the mantle area, provided it meets sentence 8.7.4.2.(2) of the OBC. This is particularly important in some parts of the province where filter sand is significantly more costly than typical septic sand.

As a general rule of thumb, unless the native soils are visibly granular sand with a T-time of 15 min/cm or less, a filter bed needs to be raised or partially raised, with a mantle (minimum 15 m) and a total Loading Area in accordance with 8.7.4.1.:

TABLE 8.7.4.1. Loading Rates for Fill Based Absorption Trenches and Filter Beds

ITEM	COLUMN 1	COLUMN 2
	Percolation Time (T) of Soil, min	Loading Rates, (L/m ²)/day
1	1 < T ≤ 20	10
2	20 < T ≤ 35	8
3	35 < T ≤ 50	6
4	T > 50	4

(continued on page 6)

OOWA'S NEWEST INITIATIVE: YOUNG PROFESSIONAL'S SUB-COMMITTEE

Jane Zima, Young Professionals Sub-Committee Co-Chair

In June of 2015, OOWA launched its most recent initiative: the Young Professional's sub-Committee, a division of OOWA's Membership Committee. Co-chaired by Jane Zima and Brady Straw, the sub-committee is looking to support professionals within the onsite and decentralized industries under the age of 35. With a committee roster already boasting 10 members and growing, this enthusiastic group is off to a promising start. Although committee mandate and initiatives are still being formed, the committee hopes

to host a series of annual events, engage in community-based volunteer efforts, support and connect OOWA's existing young professional's membership and recruit new student and recent graduate members.

If you or anyone you may know would be interested in joining, volunteering or participating in OOWA's Young Professional sub-committee, please contact co-chairs Jane Zima (jane@simbiH2O.com) or Brady Straw (brady@waterloo-biofilter.com).

Filter Bed Sizing:
Cracking the Code

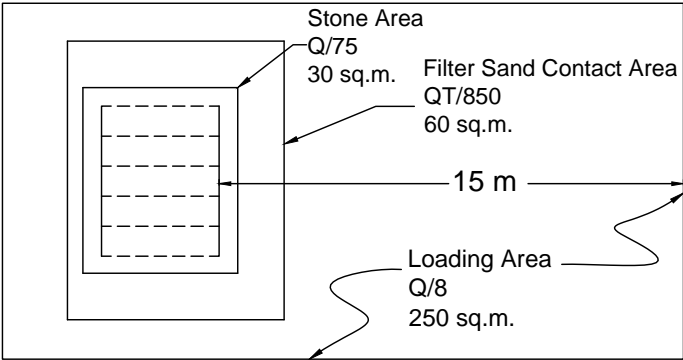
Continued from page 5

For illustrative purposes, consider a four bedroom home with a design flow of 2,000 L/day on a site where the native soils are silty sand mixture with a T-time of 25 min/cm. The stone layer is easily determined as 27 m² based on Q/75 in accordance with 8.7.5.2(3). The required Contact Area would be approximately 59 m². Table 8.7.4.1. requires a maximum loading rate of 8 L/m²-day for soils with a T-time of 25 min/cm. Applying 2,000 L/day at 8 L/m²-day requires a total Loading Area of 250 m². This area could consist of a bed that is 10 m wide by 25 m long, within which is contained at least 59 m² of filter sand, and the required 27 m² stone layer. This is significantly larger than the Contact Area, but it allows the effluent to be applied to the underlying soils at a suitable rate.

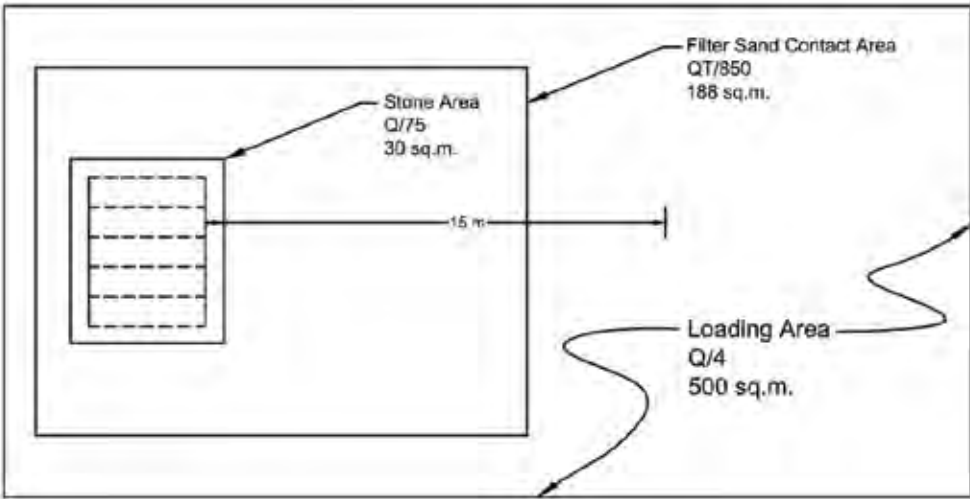
The difference between Contact Area and Loading area becomes significant in low permeability silt and clay soils. If one applies the same calculations based on clay soils with T>50 min/cm, the total Loading Area for the filter bed must be increased to 500 m², with a Contact Area of approximately 188 m². Consider that one could actually lay out the filter bed in a configuration that provides the 15 m mantle within the 188 m² of contact area. All too often, this is where the design ends up and it is significantly undersized. Applying 2,000 L/day over 188 m² results in a loading rate of approximately 11 L/

m²-day which is almost three times the recommended maximum loading rate. While the filter bed would still be a smaller footprint than a conventional raised bed under many site conditions;

many undersized filter beds are still being designed, permitted and installed across the province. Watch for additional information in OOWA's upcoming best practice guide for filter beds.



Typical Filter Bed Layout Based on 2000 L/day and T=25 min/cm



Typical Filter Bed Layout Based on 2000 L/day and T>50 min/cm

MEMBER
PROFILE

Monique Sauve

Lead Sewage System Inspections,
South Nation Conservation Authority

My hometown is a small town called Alexandria in the eastern region of Ontario, 10 minutes from the Quebec boundary. At one time I was a small town girl living on municipal sewers and not very familiar with the term 'wastewater'. I have resided in this area all my life with my two brothers and my mother. I have raised my two beautiful children, Kayla and Kristian on my own so, I have not had the chance to travel the world yet but plan on doing so with my partner Charles in a few years. I enjoy hunting on our 10 acre property and in the summer, we cruise the St-Lawrence River on our boat and enjoy fishing. I also grow a large variety of vegetables and fruits which I harvest and use to then treat my family to good healthy meals. I own a small hobby farm which keeps me quite busy especially our golden pheasants and my oasis of Orchid flowers. Managing all this replenishes me after a long day of work.

As a single mom at 26, I decided to study as a Registered Nurse but during the process realized I was desperately craving the outdoors. So I returned to school and completed an Environmental Technical course and that's when I started working for Raisin Region Conservation on the Loch Garry and Middle Lake study.

I spent two years on the project enjoying the outdoors. At this point, I discovered the importance of our Conservation

Authorities (CA) throughout Ontario with their projects and programs that protect nature in our own backyards. I put in all my efforts and hoped that I would someday be working for a CA full time. In 1998 I was hired by South Nation Conservation (SNC) as a staff person in their communications department. During that time, SNC had the opportunity to apply for a contract position assisting the Eastern Ontario Health Unit (EOHU) with the septic inspection program in the five united counties of Prescott-Russell, Stormont, Dundas and Glengarry. The program involved 12 municipalities all together. SNC was awarded the contract and a description job was posted. I applied along with several hundred applicants and was granted the office manager position. This is where it all started for me and septic systems.

I then became an inspector for the United Counties of Prescott-Russell for 2 years and then transferred shortly afterwards to the position of Compliant Officer. This is when I got to see all the different types of systems that existed in our area. I was challenged with different situations; building code interpretation, being a female in the field, public confrontations and gaining excellent hands-on experience. At times I wanted to give up, but didn't. With all that experience, I was then designated as the Deputy assisting the EOHU Chief Building Official. In 2012, the EOHU decided to step down and the septic inspection program was returned to the municipalities. With the support of my CA, we approached those municipalities and were granted management of the program in 12 municipalities in the eastern region.

Now CBO of this area and 16 years in this field, this is a very big accomplishment



MONIQUE SAUVE

for me. In less than 10 years, I have seen some significant changes in our area and a result I have become a true believer in public education. This is what really makes the difference. I have noted in the past few years, that individuals in the industry have taken this to a much higher level.

I am proud of my region, which is the reason for my devotion as a regulator. I have learned so much in this industry and am still learning. The challenges I have dealt with in the past seem to improve with every passing year. I now see the dedication of our contractors, designers, pumpers and consultants which makes my job easier. I am surrounded by knowledgeable people in this industry which is what keeps me going every day. I have and will continue to devote myself to the onsite industry. I cannot see myself doing anything but that, as my children would say.

OOWA EVENTS

**Central Ontario
Regional Meeting**
Tuesday, September 22nd, 2015
Innisfil Municipal Office,
2101 Innisfil Beach Road,
Innisfil, ON

Special Guest Speaker:
Colin Sprake
of Make Your Mark.

**South Western Ontario
Decentralized Symposium**
Tuesday, September 29th, 2015
Upper Thames Conservation
Authority Office
1424 Clarke Road, London, ON

**Peterborough Region
Decentralized Symposium**
Wednesday, September 30th, 2015
The Venue,
286 George Street
North, Peterborough, ON

Special Guest Speaker:
Chuck Marohn of Strong Towns.

**Eastern Ontario
Decentralized Symposium**
Date: TBA
Brookstreet Hotel,
525 Legget Drive, Ottawa, ON

Please check our website's new Events Calendar for registration and agenda details of upcoming events and more regional meetings that are planned for the fall/winter of 2015 at www.oowa.org/events/

OOWA THANKS OUR PETERBOROUGH DECENTRALIZED
SYMPOSIUM PARTNERS AND SUPPORTERS TO DATE



By Caroline Sabourin - Legalshield

Source Protection Plans and Septic System Maintenance across Ontario:

PROGRESS, CHALLENGES AND LESSONS LEARNED

Chitra Gowda, Source Water Protection Lead, Conservation Ontario

The Clean Water Act, 2006 is part of the Ontario government's commitment to ensure the sustainability of clean, safe drinking water for all Ontarians, by protecting sources of municipal drinking water including lakes, rivers and well water. Under this legislation, the source water protection program was established with substantial funding from province. This resulted in the development of science-based Assessment Reports and local Source Protection Plans (SPPs) by 19 multi-stakeholder Source Protection Committees, with Conservation Authorities (CAs) providing support including administration, technical and communications. The Ontario government has approved 16 of 22 Source Protection Plans from 2013 to July 2015, and implementation of the approved Plan policies across the province is underway.

As required by the Clean Water Act, the local Source Protection Plans include mandatory policies to address certain activities which are or could be significant threats to sources of drinking water in specific areas. In January 2011, the Ontario Building Code was changed to require Mandatory Maintenance Inspections every five years in all areas where sewage systems (governed by the Building Code Act) are identified as a significant drinking water threats, in an approved Assessment Report (technical studies behind the Plan) or approved Source Protection Plan.

Onsite sewage system inspections are conducted by the principal authority defined by the Building CodeAct (the

municipality, board of health, or conservation authority). Conservation Authorities have a history of being involved in onsite sewage systems management across Ontario, through a range of services, with a few CAs administering inspection programs as well. CAs often work with members of the Ontario Onsite Wastewater Association (OOWA) as well. Between 2007 and 2012, CAs administered the Ontario Drinking Water Stewardship Program (ODWSP) funding provided by the province to landowners, to address certain activities identified as significant threats to drinking water sources. At least 1200 septic systems were upgraded or decommissioned over that period, where they were identified as a significant threat. Several Mandatory Maintenance Inspection programs have been initiated across Ontario with the approval of local Assessment Reports under the Clean Water Act. The number of required inspections range from none in a few source protection areas, to thousands in many source protection areas.

Progress updates on some of these source water protection related inspection programs in the Province are provided below, along with insights into the challenges faced, and the lessons learned. Watershed-wide CA programs (which typically provide technical and financial assistance to property owners) and municipal septic re-inspection programs cover large geographic areas that may include specific vulnerable areas where septic systems are significant threats. These watershed-wide and community-based programs contribute to the protection of sources of drinking water as well.

NORTH BAY-MATTAWA

Robert M. Palin

Robert M. Palin is the Onsite Sewage System Program Manager at the North Bay-Mattawa Conservation Authority (NBMCA) in northern Ontario. Approximately 600 properties were identified as requiring Mandatory Maintenance Inspections of septic systems, based on the local Source Protection Plan for the North Bay Mattawa source protection area. Palin explains that they are in the last year of a five-year inspection cycle, with all inspections expected to be completed by end of the year. Very few septic systems

were found to be faulty through the inspections, and Palin says this is due to various reasons including residents obtaining permits and replacing their systems before the inspections, emptying their septic tanks before the inspections, and selling their properties prior to the inspections. These also result in the number of inspections becoming a 'moving target', as some properties were eliminated from the initial list, while new septic systems were found during site visits. Palin also administered the ODWSP, and reports that many residents took advantage of the ODWSP grant funding when it was available, in order

to repair or replace their septic systems. However, the first round of Mandatory Maintenance Inspections was met with several complaints by the public. Further, since the first round of inspections is still a recent memory for residents, some are questioning why the second round of inspections will start next year, not realizing that nearly 5 years has already passed. For further information on the NBMCA sewage system inspections including the Mandatory Maintenance Inspections of septic systems, based on the local Source Protection Plan, please visit: www.nbmca.on.ca/site/indexd.asp?id=159.

EASTERN ONTARIO

Keith Taylor

In Eastern Ontario, Keith Taylor, source water Project Manager at Quinte Region Conservation Authority (QRCA), provided information on Mandatory Maintenance Inspections in Quinte region. Municipal Building Inspectors have completed inspections for 99 of 172 septic systems. Similar to Palin, Taylor also mentions that the number of inspections is a moving target number. Taylor also says that there have been no septic system failures reported yet, and accredits that to about a quarter of the system owners being able to avail of ODWSP funding to repair or replace their systems, and also because several systems were decommissioned in order to be connected to municipal sewer pipes. The QRCA frequently interacts with municipalities on the inspections, and has produced a factsheet on sewage system activities and protecting drinking water sources. Taylor believes that the Mandatory Maintenance Inspections for septic systems in the Quinte Region has been a success story. To learn more about septic system inspections in the Quinte Region, please visit: www.archive.constant-contact.com/fs131/1101501069352/archive/1120658991159.html.

CATARAQUI REGION

Holly Evans

Holly Evans, Environmental Technician at the Cataraqui Region Conservation Authority (CRCA), explains that the Public Health Units are conducting the Mandatory Maintenance Inspections for septic systems which are significant threats in vulnerable areas of the Cataraqui source protection area. Evans says that there are 24 septic systems identified as significant threat activities, and of these, owners of 14 systems have participated in the ODWSP. The number of inspections completed is yet to be reported at this time. At a source protection plan implementation workshop hosted by the CRCA in March 2015, Mark Green, Chief Building Inspector at Leeds, Grenville and Lanark District Health unit, reported that across the province since 2000, septic system maintenance programs have resulted in

22% of the systems requiring upgrades, 17% requiring corrective actions (repairs), and the remaining 61% needing no action. At the local level, the big question is still: Who pays for inspections, repairs and replacement? Green's presentation, which also includes an overview of new technologies to manage sewage onsite, can be found at: www.cleanwatercataraqui.ca/CRCAworkshops.html.

MISSISSIPPI-RIDEAU

Allison Gibbons

Allison Gibbons, source water Co-Project Manager for Mississippi-Rideau source protection region, which spans two CAs, mentions that there are only two septic systems requiring Mandatory Maintenance Inspections. These will be addressed by the Leeds, Grenville and Lanark District Health unit later this year, with support from the municipality. Allison reports that due to the small number, there have not been any concerns thus far.

SOUTH-CENTRAL ONTARIO

J. Pedro Cruz

In south-central Ontario, J. Pedro Cruz, Building Inspector at the County of Dufferin, describes that of the 116 properties in the municipality which required Mandatory Maintenance Inspections for septic systems, all 116 passed the non-intrusive visual inspections which were completed by early fall 2014.

Cruz summarized the process undertaken by the County of Dufferin into these steps: (1) identified properties that met the requirements of the mandatory inspection program and retrieved septic information relative to the properties; (2) advertised in local newspapers that during the summer, a mandatory inspection program would be implemented in the County of Dufferin.

This was done to make the general public aware of the possibility of their property falling within the scope; (3) notified

property owners of the program, the intention of the program, how and why their property was selected, basic details of what to expect during the inspection and rough date for when to expect the inspector to show; (4) conducted the inspections, on warm, sunny days between July and September.

The property owners were given the option of being present during the inspection, but were told that their presence was not necessary. There was a visual check of the grounds, clearance distances to the tank and septic bed were checked, photographs were taken, an inspection report filled out, and a septic system maintenance hand-out was left with a copy of the inspection report at the house or with the property owner; (5) compiled summary report for each specific zone (wellhead, etc.) and summary for each Conservation Authority; and (6) filed all inspection reports for record keeping.

Cruz describes the inspection program as being very well received, with no confrontations with the public. He attributes the overall success to the fact that the County of Dufferin: (1) advertised and made people aware in advance, that there would be a possibility of their property being within the scope of the inspection program; (2) made efforts to educate the public about how to maintain their septic systems and the reasons why, which improved the general knowledge of septic systems and highlighted the importance of regular maintenance; (3) provided clarification that the inspections were mandatory per the Ontario Building Code; and (4) did not charge for any of its inspections: this was the largest contributor to the inspection program's success in the County of Dufferin.

COUNTY OF WELLINGTON

Kyle Davis

Kyle Davis is the Risk Management Official at Wellington Source Water Protection, which is a partnership between the lower tier municipalities within the County of Wellington, and the County. (continued on page 12)

There are close to 670 properties requiring Mandatory Maintenance Inspections for septic systems, within Wellington County, and the inspections must be completed by 2017. Depending on the municipality, the inspections will be conducted by either the municipal Building Department Officials or a consultant hired to complete the inspections.

Davis describes the recent education and outreach 'Septic Socials' events as being organized and hosted by Wellington Source Water Protection in partnership with the Ontario Rural Wastewater Centre (ORWC). The Septic Socials were held in summer 2015 at six locations, and attended by approximately 100 people. The Septic Socials contributed to increased awareness and knowledge of septic system maintenance and inspections. Katherine Rentsch and Doug Joy of ORWC at University of Guelph, presented to the audience, providing a clear picture of what onsite systems are, how they work, how to operate and maintain them, and what the mandatory inspections would entail. In order to learn more about septic system inspections in the County of Wellington, please visit: www.wellingtonwater.ca/septic-inspections/

SAUGEEN, GREY SAUBLE, NORTHERN BRUCE PENINSULA

Michael Varty

Within the Saugeen, Grey Sauble, Northern Bruce Peninsula source protection region, the Town of South Bruce Peninsula has implemented a town-wide septic system re-inspection program, contracted with the consultancy agency WSP.

At the Wellington Septic Socials, Michael Varty, Director of Environment, WSP Consulting, provided a presentation on the program. Approximately 2200 inspections out of 5000 have been completed in the Town of South Bruce Peninsula, with the program starting in 2013 and the first cycle ending in 2016. Varty indicates that there is a

large focus on the education of property owners, concurrent with the inspection process, and this has led to a high rate of voluntary participation by landowners. Based on the inspections, the Town issues a certificate by mail if there are no visible signs of unsafe septic system, or a remedial action letter indicating the visible deficiencies observed by the inspector and the date by which remedial actions must be completed. In the Town of South Bruce Peninsula, so far about 422 remedial action letters have been issued, of which only 1-2% will require significant repairs.

LAKE SIMCOE REGION

LEAP

As described in the OOWA Onsite Newsletter of Fall/Winter 2014 (Vol. 15, Issue 2), the Lake Simcoe Region Conservation Authority provides technical and financial assistance through its Landowner Environmental Assistance Program (LEAP). The purpose of the septic system program under LEAP is to help landowners through the process of repairing, upgrading or replacing faulty or malfunctioning septic systems in order to protect ground and surface water. To find out more, please visit: www.lsrca.on.ca/leap/projects/septic.php

SOUTH-WESTERN ONTARIO

ABMV

In south-western Ontario, the Ausable Bayfield Maitland (ABMV) source protection region also includes properties subject to Mandatory Maintenance Inspections, which are being implemented by various agencies: municipal building officials in four municipalities; the Huron County Public Health Unit on behalf of four municipalities; and the Township of Huron-Kinloss through its township-wide septic inspection program.

Donna Clarkson, Source Water Protection Specialist for the ABMV region says that most of the municipalities started inspections in early summer of 2015,

and an estimated 15-20% of inspections have been completed. To date, none have reported any negative feedback from landowners.

All municipalities plan to complete the septic inspections by year end. Following consultation with the various staff delivering the inspections, ABMV staff developed a Septic System Education and Outreach package which inspectors provide to landowners as part of their inspection. The package includes several easy to understand resources such as a map showing the subject property lines and local wellhead protection areas; ABMV factsheet on Septic System Inspections in Wellhead Protection Areas; Conservation Ontario factsheet on Wellhead Protection Areas and brochure on Septic Systems; and Service Ontario septic system checklist.

Some resources are based on those developed under the Township of Huron-Kinloss program. In addition to the educational resources, the ABMV staff developed a Homeowner Questionnaire for property owners to complete and to return to the inspector at the end of the inspection. Information from the questionnaire will be used by the Source Protection Authorities to assess the effectiveness of the education program. For more information, please visit: www.sourcewaterinfo.on.ca/content/downloads.php

HURON-KINLOSS

The Township of Huron-Kinloss started a Community Septic Inspection Program in 2007, as a proactive measure to protect surface water and groundwater resources. The program requires that septic systems in the township are inspected every 8 years; however properties with septic systems identified as significant drinking water threats require an inspection every 5 years to satisfy the Source Protection Policy requirements. Inspections are done between May 1st to October 31st, weather permitting. The township advises property owners to leave the inspection report for new owners, if the property is sold. (continued on page 26)

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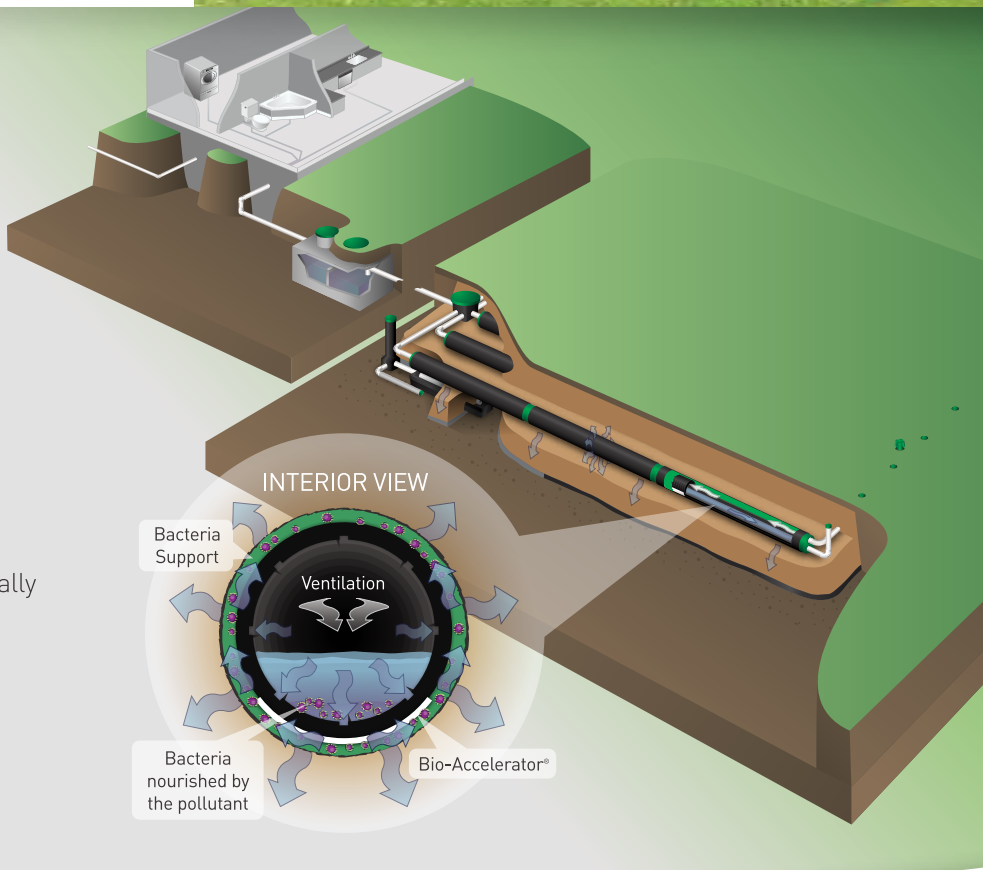
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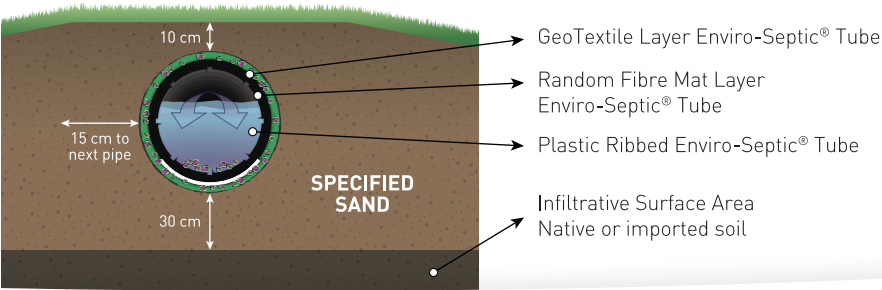
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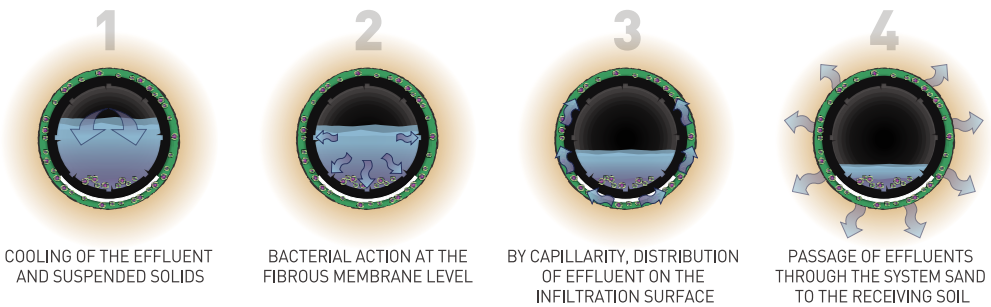
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	TSS	mg/l	206	207
EFFLUENT AVERAGE				
	BOD5	mg/l	8	3
	TSS	mg/l	4	4



HOW TO MAXIMIZE PROFIT!

Colin Sprake, Make Your Mark

The biggest challenge with most businesses is that people talk about revenue and not profit. In fact, many business owners are stunned that they can make so much revenue, but at the end of the day there is hardly any money left in their bank account! This is because of the lack of understanding of profit. You have to understand profit in order to make serious money in your business. Most business owners rely on their bookkeepers and accountants to tell them whether they have made money or not at the end of the year. If you are in business to make money then you need to be on top of your profit on a monthly, if not weekly basis! It does not matter whether you sell a service or a product or if you do projects, you must know the profitability of each.

The most important aspect of profitability is to determine what profit you are going to make on a service, product or project before you even start selling or submitting proposals. The challenging part is most business owners do not take into account what their time costs when doing pricing. Every time you are involved you need to include your costs at an hourly rate of what would it take if you had to replace yourself with another person to get the job done.

Plus, you must understand the massive difference between mark-up versus margin. I am going to illustrate this with a very simple example:

Let's say you buy a \$100 item and you mark it up by 200% to get your selling price, which means it would sell for \$200. The tough part is this is only a margin of 50%, which is simply calculated by taking the profit and dividing it by the revenue (\$100/\$200). Similarly for a project, let's say you have a project that is going to cost you \$5,000 and you mark it up by 30%, which equates to a selling price of \$6,500. The margin on the project is only $\$1,500/\$6,500 = 23\%$. So, you are not making 30%, you are only making 23%!

Once you have determined your costs you can ascertain what profit you are going to make and what profit you want from a project. Knowing this really assists you in negotiations with your clients as some clients are price driven and will attempt to drive your pricing down, which can absolutely destroy your profitability. In fact, by knowing your numbers you can decide whether to take on a project or not! I would highly recommend setting a per project profit that you want and not take on clients whose only criteria is to get a screaming deal that often turns into negative profit and theoretically you paying the client to do the work.

It is really important to have very specific and detailed battery limits and deliverables in each project proposal that you submit to ensure that you get paid for scope creep and any items that were not included. Nothing beats a detailed project proposal, crystal clear understanding and

communication upfront of what is being delivered before the project commences!

Finally, the quickest way to kill project profitability is rework. Unnecessarily returning to sites multiple times and inadequate materials planning; resulting in numerous trips to stores to procure items. All of this brings down the project profitability and hinders you from taking on other projects because while you are one site you cannot be on another site making more healthy profit!



COLIN SPRAKE ON STAGE

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COLLABORATION OVERCOMES EXTREME CHALLENGES

YMCA CAMP KITCHIKEWANA: A CASE STUDY

This story is about 5 businesses, one non-profit and a federal agency who all came together to ensure that a kids camp will continue to provide traditional summer camp programming well into the future. Camp Kitchikewana is run and administered by the YMCA Muskoka Simcoe and is located on Beausoleil Island which comprises Parks Canada's Georgian Bay Island National Park. To grow and to improve the level of service and comfort of the camp, the YMCA needed to repair and increase the capacity of its septic system. As John White will relate in his story below, this installation was far from normal and was only made possible by the efforts of the following individuals and organizations:

- Rob Armstrong, CEO and David Grass VP, Facility Development & Asset Management of YMCA Muskoka Simcoe who saw the potential for a creative solution and had the vision to see it through the myriad of the physical and regulatory challenges
- John and Trevor White of White Contracting and Barging who transported all of the supplies, excavated and installed the system by using approved alternatives to the many site limitations
- Eric Gunnell, P.Eng. and Lynn McIlwaine, C.E.T. and Senior Engineering Technologist at Gunnell Engineering who developed the innovative system design and plans

- John Roy and the Bionest Wastewater Treatment Solutions team who provided the wastewater treatment system technology
- The staff at Near North Suppliers who provided many of the materials used in the installation
- Ben Lowry and Doug Herd of the Monteith Building Group who worked under exceptional winter circumstances and strict site limitations to construct and expand the existing camp kitchen into a more modern facility capable of feeding more kids
- Parks Canada staff responsible for the Georgian Bay Islands National Park who provided the necessary approvals to the proposed system design and installation challenges

This project will make a significant difference in the lives of thousands of kids and will contribute to the financial well-being of the Muskoka/Simcoe branch of the YMCA. By valuing the future of the camp and by understanding the functionality of the technology, all the partners in this project have demonstrated the capabilities of the onsite industry's innovation and the power of collaboration. The result of all this effort is countless summer camp memories made possible by the creative individuals who make their living in the onsite wastewater industry.

*A special thanks to Bill Robinson, OOWA Board Member and owner/operator of Robinson Enterprises, for bringing this project to our attention and who felt that it was an important one to share. Share your story with us!
Contact Mike Gibbs at 1-855-905-6692 ext. 101.*

THE CASE STUDY

By John White

In July of 2014, we were contacted by the staff at YMCA Camp Kitchikewana on Beausoleil Island to investigate an onsite system failure and to provide an estimate of value to effect repairs. Upon inspection, we quickly arrived at the realization that the required system was going to surpass the 10,000 litre per day category.

The ongoing education system here at White Contracting & Barging, paired with knowledge gained from OOWA presentations, OBOA members and advanced treatment seminars, allowed us to quickly determine

that the Solution to this issue would be best attained by a team. We chose to enlist the technical support of Gunnell Engineering Ltd.

The experience gained by White Contracting & Barging working on National Park sites previously, enabled us to understand some of the physical constraints which would impact the design requirements, as well as the actual implementation of the systems. The Team at Gunnell Engineering Ltd. as able to work with us in designing a set of systems to handle; not only the domestic waste from the numerous

sleeping cabins, but also for the kitchen replacement which was not yet under construction. The new kitchen facility prepares approximately 250-300 meals per service – 3 times daily. As it happens, we were a part of the solution team for Monteith Building Group out of Orillia, charged with scheduling and coordinating the kitchen renovation to ensure on-time completion, Once again, site constrains in the form of limited permitable use of space was our greatest physical hurdle.

(continued on next page)

YMCA CASE STUDY CONTINUED

As part of our YMCA solution, Gunnell Engineering Ltd specified Bionest Wastewater Treatment & Solutions product for sludge retention and pre-treatment of high strength kitchen waste. From this point – we implemented 2 – two compartment septic tanks feeding Bio Reactors prior to the drainage field. As the Tankage was being installed for the kitchen (approx.. 160,000L combined), we had the support of Gunnell Engineering Ltd., as well as Bionest Wastewater Treatment & Solution, which was confidence inspiring, as this is an much more intense treatment unit than our typical residential install.

Our installation team was greeted on site by the exceptionally supportive staff of David Grass and the YMCA Group... go figure... repair a kitchen and bathroom setup for 200 (plus) people... and they love you! Our Team was also greeted by several "local residents", in the form of Massassauga Rattle Snakes, and Turtles – generating several NEW

Challenges and opportunities... The snakes and Turtles CLEARLY did not understand, nor were they bothered, that the limitations of movement of Heavy Equipment was much more difficult and time consuming when they exercised their "right of way" and we were forced to find alternate route s and "work arounds".

We were also aware that our project site was atop of 26m of clean native sand and what makes the native soil depth uniformityrelative is that limited space became paramount as a safety issue: it was prone to cave-ins, necessitating off site removal of approximately 80m3 and therefore additional equipment and barging.

And final factor, the site was located in an area with the highest concentration of Native Artifacts on the Island; this being of particular interest to our local community, not only it's historical significance, but for its local ancestry, as even some of our own team members have ancestors buried on Beausoleil Island National Park. Parks Canada staff had undertaken explorations prior to our commencement and First Nations People

held a ceremony to provide their blessing and approval to proceed.

At this point, all systems are operational and our combined forces are generating a long term maintenance schedule & agreement including monitoring of effluent quality levels.

White Contracting & Barging and our partners in this project, are very proud to have worked with the YMCA of Simcoe Muskoka in going above and beyond the bare essentials in their waste treatment choices to help reduce the negative impact on the environment. In choosing as advanced treatment unit for a facility of this type, where funding is not always relatively available, I would commend YMCA for the example they are setting for our children in proactive protection of our environment and our natural resources.

Thanks to all the efforts of those involved for the creative solutions that ensured that this project was a success.

YMCA INSTALLATION: TECH SPECS ON BIONEST SEWAGE TREATMENT SYSTEM

By Lynn McIlwaine, C.E.T. Senior Engineering Technologist, Gunnell Engineering

- Project is located on an island. All sewage treatment system material was required to be transported to the island by barge. Once on the island mobility of material i.e. tanks, sand, stone, pipe had to be transported to each sewage system location by use of low impact construction equipment to minimize disruption to existing access routes. Due to mobility limitations on the island plastic tanks were used. This made it easier for tank movement however; more tanks were required due to limited size of plastic tanks.
- Project is located on Parks Canada property therefore construction of the replacement sewage systems could only occur in areas already disturbed, due to presence of potential archaeological relics and antiquities. Continuous watch for artifacts was necessary. Tree removal or damage to trees or undisturbed areas was not permitted.
- Challenge of designing a sewage treatment system to fit into the same footprint of original sewage treatment system to meet current standards.
- A Bionest sewage treatment system discharging to an inground filter bed was chosen to services staff cabins and a Wellness Centre with a daily design sewage flow of 4,000 L / day.
- A Bionest sewage treatment system, was chosen to service the new kitchen with a daily design sewage flow of 6,000 L / day, complete with the BCM 3000 pre-treatment unit and a sludge storage tank to treat the restaurant strength sewage to residential strength prior to discharging through two Bionest Reactor tanks (in parallel) to an inground absorption trench septic field equipped with Infiltrator Quick 4 Equalizer 36 Chambers.
- Limited staging area for equipment, sewage treatment materials and excavated material.
- Construction area constraints required sewage treatment disposal fields to be constructed first, followed by tank installation.



Photos By: David Grass, Vice President, Facility Development & Asset Management, YMCA of Simcoe/Muskoka.

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OOWA-OASIS Ongoing Collaboration Update

By Jane Zima, Government Relations Committee Co-Chair

Over the past year, members of OOWA and OASIS (Ontario Association of Sewage Industry Services) have been collaborating on a variety of different policy issues and joint event initiatives. Recently, these discussions have been formalized in the organization of two designated task forces: The 2017 Joint Annual Conference and Exhibition task group, and the Residuals Management task group. Each of these task groups have established their volunteer members and have met through routinely scheduled conferences calls. The 2017 Joint Annual Conference and Exhibition task group is made up of Chis Aitkin, Bob Thomson, Roger Winter and Lisa Grozelle representing OASIS, and Jane Zima, Rick Esselment, Anne Egan representing

OOWA, supported by OOWA staff Rachel Robichaud and Mike Gibbs. Venue options are being considered for locations near or within the GTA in order to accommodate a larger event and exhibition requirements.

The 2017 Joint Conference Committee is in the early planning stages for coordinating our largest exhibition to date, anticipating 80-100 provincial, national and international exhibitors. Although the exhibition and tradeshow will feature joint efforts and communal events, respective Annual General Meetings and presentation sections will be facilitated.

The Residuals Management task group is made up of Rob McLellan, Mike Clark,

Chris Aiken, Roger Winter as OASIS volunteers, and Rick Esselment, Marie-Christine Belanger, Anne Egan and Jane Zima as OOWA volunteers. Liza Grozelle, Rachel Robichaud and Mike Gibbs are facilitating staff supporting this task group. The task group has identified mutual topics and policy issues of concern such as the availability and cost-effectiveness of septage receiving, anticipating and leading the revision of policy development through or proposals to government. This task group will work together to form strategies, joint initiatives and long term planning as they relate to their shared aspects of the decentralized sewage industry and regulations.

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How to Approach the Food and Beverage Sector Regarding Wastewater

By Alex Mazurewicz, Communications Manager, The BLOOM Centre for Sustainability

BLOOM has been working in Ontario's food and beverage processing industry for the last few years to increase adoption of innovative, on-site water use and wastewater management solutions. Creating change is not an easy mandate, especially when proposed solutions address problems, not yet, fully understood by industry.

Part of our work has focused on increasing awareness: making water more visible and changing the way that food and beverage companies think about and use water. In short, positioning water as a strategic business issue facing the industry, and therefore one which must be managed.

Key to awareness has been conducting on-site pilots and demonstrations to measure, manage and treat wastewater. Pilots allow food and beverage companies to understand the issues, explore "what if" scenarios and evaluate new solutions without having to fully commit. This de-risks the chance of costly mistakes and unintended consequences by allowing both the host organizations and solution providers to gather "real" operational results.

Looking back over our work to date, we want to share some of our key findings and lessons learned.

Operational information is not always accurate

When beginning a pilot demonstration project we receive information regarding water conditions and composition that the host facility believes to be accurate. Pilot equipment is then engineered to operate for those levels. Over the course of the study we often find the provided information was not representative of real life conditions, impacting the

demonstration and possibly the viability of the solution itself. This issue can always be avoided, but it requires a small upfront investment of time and resources. It is human nature to want to jump right into the "fix", but taking the time to investigate as much as possible before implementation is worth the extra time. For some organizations this is the first time they have explored these questions so they do not fully understand their various facility process inputs, outputs and their relevant composition and volumes.

Ontario's food and beverage sector is dominated by small and medium sized companies

Many companies are resource constrained. Their expertise, training, and focus is on producing high quality product. They do not have the same level of knowledge and practical experience around water and wastewater management. Solutions need to be tailored to their operations and current constraints. They will also need support to both obtain and understand their water information. Working together to obtain this is a win-win for both the solutions providers as well as industry.

A full-scale solution often requires a variety of interconnected changes

Onsite wastewater solutions are most effective when the entire operation is evaluated to understand contributing causes rather than just symptoms. If you simply create solutions for a perceived problem you may be missing the real opportunity. For example, a production manager may say they need a solution to handle 10,000L of high strength wastewater a day. You could simply find a solution to that. But to truly make a difference you need to see what drives

that daily output. Upstream source reduction practices should always be considered first.

Identifying opportunities across the entire process can yield better results than expected, some improvements may not even require any technology changes simply process or procedural changes. This in turn can create a decrease in strength and amount of wastewater which in turn decrease the total required capacity of the solution, reducing the costs, and increasing the ROI.

Take the time to understand the operational cycle and tempo

How can you define an average day in the food processing sector? Very few food processors operate the same way daily. Batch processing and cleaning add a layer of variability and solution uncertainty. Some days require massive cleaning, some days large vats are emptied, or maybe there are periods of sporadic packaging and no wastewater will be created for multiple weeks. Successful solutions have to fit the full range of wastewater flow and composition being produced. We even encountered a processor who implemented a solution without fully understanding their processes and during downtimes has to feed dog food to their system to ensure steady flow of organic material!

When in doubt, test it

Data will always trump opinion. A small-scale pilot project may be the only way to truly understand how a solution will work and interact with the balance of the process. It allows for testing the composition of wastewater and building a representative picture of how its operational variability. It enables a business case to be made and projections to be accurate. It makes a proposal for

investment easier when positive ROI can be shown and all stakeholders can see the solution working.

These insights may seem obvious in hindsight, but when dealing with multiple stakeholders and often conflicting requirements it is important to maintain a view of the big picture. To some organizations a drain is just a magical portal that will accept anything and then it becomes someone else's problem. They need someone who will take the time to understand them and have the expertise to show how implementing certain improvements will not only allow them to operate sustainably, but also reduce costs, time, and headaches.

We have noticed that many small and medium sized food processors are starting to understand the impact of wastewater and the related risks. We will be furthering this education at the 3rd Food and Beverage Sector Water Innovation Forum in September. The forum will bring together over 200 stakeholders across the industry sharing their unique perspectives and ideas



A FERMENTER AT SAWDUST CITY BREWING COMPANY
Photo by: BLOOM Centre for Sustainability



NETWORKING SESSION AT CAVE SPRINGS TOUR, NOVEMBER 11, 2014
Photo by: BLOOM Centre for Sustainability

around the current challenges and opportunities. One goal of this year's forum is to fundamentally shift the conversation from water being solely viewed as an environmental/regulatory compliance issue to water being viewed

as a strategic business issue and opportunity to drive bottom-line value to improve industry profitability and competitiveness. The Forum will take place on September 16th, 2015 at the Mississauga Convention Centre.

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OOWA COMMITTEE UPDATE: GOVERNMENT RELATIONS

By Jane Zima, Government Relations Committee Co-Chair

OOWA's Government Relations Committee has been hard at work with regular dialogue across a variety of government ministries and with our collaborative partnerships with other provincial organizations and not-for-profits. The government relations team is helping to lead and facilitate improvements in the onsite and decentralized policy landscape in Ontario.

In the past months, representatives from OOWA's GR team have met with the Director of the Standards Development Branch at the Ministry of the Environment and Climate Change. Fruitful dialogue has led to a positive and supportive relationship with this Branch, setting the foundation for a promising collaborative future.

Members of the GR team have met with the Director and her team at the Modernization of Approvals Branch, also at the Ministry of the Environment and Climate Change. OOWA is looking to work with this Branch to facilitate a collective workshop and information session guiding membership through the various stages of the approvals process and general approvals best practices. Stay tuned for additional details!

President Michael Seiling of the Ontario Building Officials Association (OBOA) has a long-standing relationship with OOWA President Rick Esselment. Together they are establishing a synergistic relationship between the two Associations. OBOA is looking to build a framework to review OOWA's future building code change

recommendations to the Ministry of Municipal Affairs and housing, with intent of providing feedback and commentary. OOWA has agreed in turn to participate in the development and review of the OBOA's Part 8 curriculum, and also providing support to their ongoing education and training programs.

Education is a key tool in for regulators for consistency of interpretation and uniform understanding of the Code. Consistency of Code interpretation across the province is vital to the success of both organizations and industries. This synergistic "knowledge partnership" helps ensure all stakeholders can be appropriately consulted, and that code interpretation is objectively and concisely communicated.

Board Member and Government Relations Co-chair Trish Johnson has been working hard on a variety of fronts to ensure that decentralized systems across the province have a voice, particularly through her participation in progressive groups such as WaterTAP. Through platforms such as the WaterTAP Infrastructure Working Group, Policy Working Group and a sustainable Infrastructure Forum, Trish is advocating for the sustainable, responsible and cost-effective planning and management systems in Ontario.

OOWA continues to collaborate and foster continued dialogue with FOCA (the Federation of Ontario Cottage Associations). OOWA has offered to support both the cottage association

at large, as well as their individual associations, by attending their events and hosting education seminars and workshops in respect to wastewater system do's and don'ts, maintenance and frequently asked questions. If you know of a cottage association or community group that would be interested in OOWA's attendance or hosting of an education session, write to us at info@oowa.org.

OASIS (Ontario Association of Sewage Industry Services) and OOWA have continued having dialogue in respect to several initiatives and Provincial policy issues, in addition to active participation in each other's events. See the related article in this Issue of OnSite for additional details and information.

Finally, OOWA has been working with the Ontario Society of Professional Engineers (OSPE) on a variety of education and training initiatives. The further development of OOWA's Registered Professional Program has been both exciting and effective, collaboration between the two groups is only just beginning. Education, promotion and advocacy for various parts of industry, recruitment and resource sharing are also underway.

OOWA thanks its collaborative and working partners for all of their efforts and continued support. We encourage all of our members to actively provide their ideas, concerns, and policy ideas to make OOWA's continued progress possible!

Decentralized Tertiary Wastewater Treatment Plant With a Sub-Surface Disposal System for a New Residential Development in the Town of Mono

By Jatin Singh, P.Eng, WSP Canada Inc. and Michael Varty, P.Eng, WSP Canada Inc.

All households, commercial and industrial developments in the Town of Mono (Town), Ontario, Canada are serviced by private septic systems. In 2012, Brookfield Residential (Brookfield) proposed a sub-division for new 340 detached residential houses at Part Lots 1 and 2, Concession 2, in the Town. The area of the proposed development is approximately 70.81 ha in size (175 acres). In the absence of a municipal sanitary collection system or surface water body nearby, a new communal sewage treatment plant with a subsurface disposal system (leaching beds) was proposed by Brookfield. The Town agreed to this approach, and decided to take the operation of the sewage treatment plant and disposal system over from Brookfield once it has been successfully operating for five (5) years.

WSP Canada Inc. was retained by Brookfield in 2013 to design a new sewage treatment plant and a sub-surface disposal system (leaching beds) to service the new community development. The effluent criteria for the new sewage treatment plant was established in consultation with Credit Valley Conservation Authority (CVC) and Ministry of Environment and Climate Change (MOECC).

- The effluent criteria are:
- Carbonaceous Biochemical Oxygen Demand (CBOD5): 10 mg/L,
 - Suspended Solids (TSS): 10 mg/L,
 - Total Ammonia Nitrogen: 2.0 mg/L,
 - Nitrate Nitrogen: 3.0 mg/L,
 - Total Phosphorus: 0.25 mg/L

It was agreed that the surface water quality objectives will be monitored separately upstream and downstream of the leaching beds, and will not be the basis of performance for the sewage treatment plant. As the effluent criteria were very strict, the performance is to be measured at the wastewater treatment plant so that adjustments could be made faster in an event of poor performance. Monitoring of the surface water and groundwater is being completed as due diligence, and as verification that the calculated impacts (such as phosphorous breakthrough from the leaching bed, and nitrate dilution) are accurate. Should unexpected impacts be noted in the environment, these would be reported to the MOECC.

The proposed wastewater treatment plant equipment is designed for an average daily design sewage flow of 365,000 L/day (full build-out capacity). Equalization tanks were sized to assimilate peak wet weather flows and were constructed upstream of the wastewater treatment plant. Due to the proximity of the new sewage treatment plant to the new development (within 60 meters), the facility was designed to ensure it blended in with the surrounding properties and concealed all process modules while still being functional and cost-conscious. The wastewater



treatment plant includes a raw sewage pumping station, two (2) equalization tanks (with aerators), two (2) integrated Rotating Biological Contactors (RBC) and primary clarifiers (ROTORDISK® systems by Blumetric Environmental Inc.), two (2) secondary clarifiers, two (2) deep bed sand filters, and chemical systems (alum, sodium bicarbonate, methanol).

The effluent from the treatment plant is pumped to a sub-surface disposal system. Based on the soil type, groundwater level, and bedrock elevations encountered onsite, a fully raised leaching bed was selected as the preferred servicing option. (continued on page 27)

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Continued from page 12

In the first round of the program which ended in 2014, approximately 3000 properties with septic systems were inspected, identifying 2.2% of the inspected systems to be at a high risk based on environmental hazard, and 2.4% to be at a high risk based on structural safety. The second round of inspections has begun in 2015. The township expects that in the near future, there will be an increasing trend of problems and failures as the systems continue to age. For more information, please visit: www.huronkinloss.com/septic-systems.cfm.

ESSEX REGION
ERCA + DRCC

As described in the OOWA Onsite Newsletter of Fall/Winter 2014 (Vol. 15, Issue 2), the Essex Region Conservation Authority (ERCA), in partnership with the Detroit River Canadian Cleanup (DRCC), initiated a program in 2013 aimed at educating watershed residents about proper septic system management and encouraging behavioral changes. Danielle Stuebing, ERCA's Director of Community Outreach Services, explains that a DRCC survey discovered that there were landowners who did not even know that their sewage was treated by a septic system. Of those who did know, many were not aware that septic systems require regular maintenance. In the Essex Region Source Protection Plan, which was approved in April 2015, microcystin-LR has been identified as a water quality Issue at the Lake Erie raw water intakes.

Dr. Katie Stammer, ERCA's Water Quality Scientist and Source Protection Project Manager, explains that phosphorus contributes to the growth of blue-green algae blooms in the Great Lakes including the cyanobacteria that produce the toxin microcystin-L. She adds that improperly

functioning septic systems can certainly contribute to this problem. In order to help inform landowners about the need to ensure septic systems are properly maintained, ERCA and the DRCC created a postcard with easily understood information. Stuebing said that while the issues can be complex, the desired actions are really quite simple – ensuring regular maintenance of a septic system.

Stuebing reiterated the importance of using clear and simple language in identifying the desired actions, when communicating with the public in an effort to spur action, and not get too bogged down in scientific data. It has to be relevant to the recipient in terms of why they should care. In addition to a postcard, ERCA partnered with maintenance contractors to provide a 10% discount to anyone who mentioned the program, and also provided a prompt in the form of a fridge magnet to remind homeowners to maintain their septic systems - much like an oil change reminder.

Presentations were also made to municipal councils to gain political support for and awareness of the initiative, and a forum was hosted specifically for regional building inspectors who maintain the primary responsibility for responding to complaints. *(continued on page 26)* Stuebing explains that the goal was to gain a better understanding of the barriers to addressing septic issues. This program generated significant media interest and septic contractors reported some uptake on the promotional discounts. While formal quantitative analysis was not undertaken, informal surveys conducted one year after the program indicate an enhanced understanding and awareness of septic maintenance needs. Stuebing concludes that while this has been a good start, continued education and outreach efforts are needed in order to ensure septic system maintenance.

In conclusion, septic system inspections or preparations for the same, based on the requirements of the Clean Water Act are well underway in several source protection areas and regions across the

province. Some of these inspections are part of a larger, community-based inspection program. Based on responses to the inspections thus far, it is seen that participation greatly improves due to: (1) education and outreach efforts made in advance of the inspections, providing clear messages that ensure the desired actions take place; (2) availability of grant funding such as the ODWSP to property owners to mitigate the financial impact of remedial actions; and (3) reductions in inspection fees. Commonly used educational materials about septic systems are listed below:

- Ontario Ministry of Environment and Climate Change factsheet: www.conservation-ontario.on.ca/library?view=document&id=239:swp-education-outreach-septics&catid=66:resource-catalogue-swp-education-and-outreach-policies.

Ontario Rural Wastewater Centre brochure available at the same website above.

- Conservation Ontario brochure: www.conservation-ontario.on.ca/library?view=document&id=81:septic-systems-2011&catid=59:source-water-protection

- Ontario Ministry of Agriculture, Food and Rural Affairs 'SepticSmart!' video and resources: www.omafra.gov.on.ca/english/environment/facts/sep_smart.htm

Conservation Ontario and Conservation Authorities continue to seek opportunities to collaborate and identify sources of financial support to promote and foster sound septic system management. This includes with building partnerships with local municipalities, landowners, contractors and the Ontario Onsite Wastewater Association members. For more information about possible septic services and programs being offered in your local watershed, please visit Conservation Ontario's website: www.conservation-ontario.on.ca/about-us/conservation-authorities/ca-contact-list. Conservation Ontario is the provincial organization which represents Ontario's 36 Conservation Authorities.

A NEW PERSPECTIVE ON INNOVATION
By Rick Esselment, OOWA President

It is becoming increasingly evident that the future of all water and wastewater management solutions requires pioneering innovation and entrepreneurship, strategic thinking and a willingness to adapt and change. These characteristics are critical to the successes of individual businesses as well as government and public service organizations. In a culture of continuous improvement, intelligent and efficient management is our key to the optimization of fiscal and human resources while enhancing reliability and performance. Intuitively then, innovation cannot be restricted to technology.

Our existing management of administrative resources and programs, and data and compliance requirements necessitate review and reflection on the suitability of existing frameworks for service delivery. A common sentiment during periods of change for some stakeholders is a feeling of discomfort with new directions. These same stakeholders are often

entrenched in the existing status quo and prefer lengthy incremental changes to the systems they are familiar with, irrespective of broader costs or benefits to our communities and other stakeholders. This seems to ring true for both policy adoption of a decentralized approach to wastewater management, as well as in changes to the regulatory frameworks that currently govern onsite wastewater management.

Leading change and progress requires a cohesive vision of future impacts, which incorporates stakeholder needs at every level, and offers a way forward that will improve outcomes for all of our communities, organizations and businesses. It is OOWA's role to promote and embrace innovation as an ongoing necessity for our organization and our membership. Managing our cherished water resources will require our leadership, innovation and experience. In this way, we can truly become industry and community leaders.

Decentralized Tertiary Wastewater
Treatment Plant for a New Residential
Development in the Town of Mono

Continued from page 25

It was determined that by using a raised leaching bed sewage disposal system, in conjunction with tertiary level sewage treatment, there is capacity to hydraulically load the soils at twice the rate of conventional systems due to the reduced strength of the sewage being discharged. This allows for a reduction in the area required for the installation, and a corresponding reduction in cost due to the reduction in the amount of materials required. The subsurface sewage disposal system includes a total of twelve (12) above-ground sewage leaching bed cells arranged in six (6) groups and each group with two (2) cells. The type of imported leaching bed sand was specially chosen to help minimize the effects of groundwater mounding*, while still providing additional treatment capabilities in the sub surface.

An aggressive design and construction schedule necessitated the pre-purchase of equipment and splitting the construction into 3 contracts: Sub-Grade Contract#1, Wastewater Treatment Plant Contract #2 and Leaching Beds Contract# 3. The contracts were split for time efficiency and Health and Safety reasons. Contract 1 needed to be installed while the process design (Contract 2) was being finalized. Contract 3 (Leaching bed) was given to a separate contractor who specialized in that work and that work area was made separate from the treatment plant work area for Health and Safety (liability) reasons.

A contingency plan was put in place to be able to collect and treat the wastewater that is produced on the site after the new residents of the development have begun moving in, if

the wastewater treatment facility is not ready for use. The construction on the new facility started in mid-2014 and was to be commissioned in October, 2014. However, due to late delivery of pre-purchased equipment to the site, the plant was commissioned in March, 2015. Per the contingency plan, temporary arrangements were made to haul sewage to the nearby wastewater treatment plant. To accelerate the plant startup process and promote biological growth on the surface of the RBC's (during winter season), fresh activated sludge, sugar (15 to 20 pounds) and many pounds of bacteria enzymes was fed to the RBC's for several weeks. Treated secondary effluent was not discharged to the tertiary filters until desired secondary clarifier effluent (cBOD5 and TSS) was achieved. A rigorous wastewater sampling procedure was adopted during the entire commissioning phase to check the efficiency of the plant unit processes, make process adjustments, optimize unit processes and achieve the desired effluent criteria.

The treatment plant must comply with the established effluent limits (mandated by MOECC) six (6) months after the commencements of the operation of the works. Most recent laboratory analysis of the tertiary effluent shows a significant reduction in the Biochemical Oxygen Demand (8 mg/L), Total Suspended Solids (15 mg/L) and Phosphorus (0.60 mg/L). The total ammonia nitrogen was 0.97 mg/L and the nitrate nitrogen was undetectable.

**(Groundwater mounding is the phenomenon that occurs when significant volumes of water (in this case sewage effluent) is introduced into the subsurface. The nearly horizontal groundwater table beneath the leaching bed begins to "mound up" beneath the discharge area and reduce (or eliminate) the treatment that would normally occur in the unsaturated zone of the soil. The regulatory requirements for minimum unsaturated zones are typically 600 to 900 mm)*

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