Independent Electricity System Operator (IESO) released information based on 145 municipalities across Ontario. These 145 municipalities represented about 72% of Ontario's population. The study revealed that 33% of the dollars spent on electricity in Ontario were going to the treatment and pumping of water and sewage. Figure 1 shows the breakdown of this usage which totals $680 million dollars annually. Therefore, over $224 million is spent each year on water in Ontario alone.

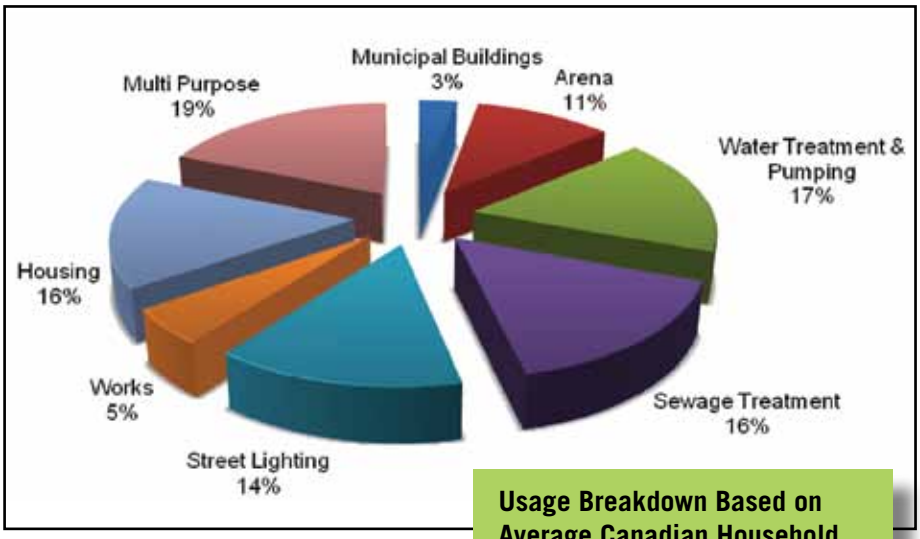
Sewage is included in this discussion because rainwater is classified as storm water sewage and therefore becomes a cost to the municipality for treatment. Urban growth will continue to present challenges to municipalities to keep up with the growing demand for water.

Due to these circumstances, many citizens and corporations have decided to make a difference and take a more sustainable approach to water usage. This is where rainwater harvesting can make an impact. Rainwater is a natural source of water that provides an on site supply for all non potable uses approved by the government.

With deteriorating pipe networks in many cities across Canada, on site water sources have many benefits. By eliminating the need for city water, the pressure on municipal water lines is reduced as the property can use rainwater for flushing toilets and outdoor uses. Rainwater harvesting not only reduces mainline requirements saving the city overhead dollars but contributes to a better water source for plants and turf. Rainwater is collected and stored at a warmer temperature which reduces shock to the plant from cold city water. Rainwater also provides a chemical free water source which is a healthier option for the plant being irrigated.

Storing rainwater reduces water runoff in sewer piping. This reduction prevents the overflow of sewers and flooding during large precipitation events. This directly affects contamination of homes, lakes and rivers by keeping sewage contained in the piping network. Less sewage also reduces the need for treatment which saves municipalities chemical, manpower and electricity costs. Lastly, the decreased flow on the piping network lowers usage which can contribute to fewer pipe breaks, maintenance and longer life of the sewage system.

Figure 1. Average municipal water consumption by usage (Ontario).



Usage Breakdown Based on Average Canadian Household

35%	Bathing & Showering
30%	Toilets
20%	Laundry
10%	Kitchen & Drinking
5%	Cleaning

What Makes a Rainwater Harvesting System?

Rainwater harvesting systems are made up of several components and can be customized for each project. Some systems are very simple and have only a tank with a screen, but still require monitoring and maintenance to keep them functioning with efficiency. Others are very complex and have electronics that monitor factors throughout the system. Here is a description of each component:

Source. This is the area from which the water is to be collected during a precipitation event. A source can be a small home, large industrial building or the entire area of a soccer field. It is becoming common practice today to use the area of an artificial turf field as a collection area and channel the water through the drainage system into a holding tank for use on a nearby natural turf field. This is a very effective option as the amount of rain collected from one field doubles the water available for the field to be irrigated. Therefore if a site gets 1/2 inch of rain, the natural field will receive that watering first and then have approximately the same amount stored for the next irrigation cycle.

Pre-filter. Pre-filtration is used to collect debris before it reaches the tank so that the storage tank does not get full of sediment and has its full capacity available for water storage. Filters come in many forms. A basket filter is the simplest and usually least expensive form of filtration, however it requires more maintenance. Cascade and Vortex filters are other options that are commonly used for larger systems as they can filter greater amounts of water from large collection areas.

Storage. This is the holding unit for the filtered water collected from the source. Storage units can come in many forms, sizes and shapes. There are two main options for storage units, above ground or below ground. Above ground units are usually in the form of a tank that is made of a material that will withstand UV exposure and have an option of colours to match the

JULY SMART IRRIGATION MONTH

Visit www.irrigation.org/SIM for more information on programs & iniatives.

Top. Installation of an underground rainwater harvesting system. **Above.** Typical above ground rainwater harvesting system

area where it will be located. These units are common in smaller applications and are seasonal in Canada due to our freezing climate in the winter. Underground storage can come in many forms as well. The most common are tanks or a modular system that uses structural blocks and a liner to hold the water. Due to the need for excavation, underground systems are normally larger and have the advantage of being buried out of sight. Storage units can come in a variety of materials including concrete, fiberglass, plastic and sometimes steel.

Pump. Pumps allow water to be transferred from the storage unit to the location where the water is required. Pumps are customized for each project according to need. The most common pumps used are submersibles that are placed in a storage unit or centrifugals that are outside the storage unit.

Water is fast becoming a commodity in the same league as oil and will likely become much more highly regulated in the future.

Treatment. Some systems require water treatment from the storage unit. This is usually done when the rainwater is being used in an indoor application. UV filters that kill any bacteria that may be present are the most commonly used.

Backup. A backup is an electronic or mechanical valve that is connected to an alternative water source such as a municipal line or well to provide water to the storage unit when rainwater is not available.

Control. The most advanced rainwater harvesting systems can have a control that monitors water levels, filters, pumps and treatment. These are not always used but may become a regular option as the industry evolves.

Sustainability

Water affects the climate, the survival of humans and wildlife (plants and animals), and is one of our most precious resources. So how do we use it effectively and efficiently in the turf industry? Most sports fields are located near a facility that can be used as a source. Arenas, schools, maintenance buildings and even artificial fields act as catchment areas for rainwater harvesting. Irrigation is 100% a non potable usage of water and therefore can be a more sustainable resource for your facility. Irrigation is not the only avenue for rainwater use. Many new facilities are using rainwater internally for lavatory needs. The Green Building Council's L.E.E.D. (Leadership in Energy and Environmental Design) program allows points to be earned by recycling rainwater. This is a growing standard for new and renovation construction and may be a target for your next project.

Water is fast becoming a commodity in the same league as oil and will likely become more regulated in the future. Be a part of a sustainable future and embrace the changes coming to the irrigation industry. Use recycled rainwater as your water source.

Chris Davies is President of Flow Source Inc., www.flowsource.ca, email chris@flowsource.ca. Visit www.ene.gov.on.ca/en/water/opportunities/index.php for the Proposed Water Opportunities and Water Conservation Act. The website address for the environmental registry is http://news.ontario.ca/ene/en/2010/05/leading-the-world-in-water-innovation-and-conservation.html.

Variety Village: Promoting Access and Inclusive Participation

Archie Allison, Director, Access and Awareness

Variety Village is a world-renowned sport, fitness and life skills facility for people of all ages and abilities. Beginning as a vocational school for young adults with physical disabilities in 1947, Variety Village was recognized and built as a leader in creating opportunities for people with disabilities. In 1981, Variety Village evolved as one of the only accessible sport, fitness and training facilities for children with disabilities. Today, we support 6,300 members of all ages and abilities (physical, developmental, medical, socioeconomic) as an inclusive and accessible sport, training and life skills facility.

Variety Village has always been an integral part of the movement for inclusive environments and healthy active living opportunities. Community leaders from around the world join us to explore accessibility ideas and options to promote access, awareness and inclusive practices.

"Built Environment Standards" are an important initiative to create inclusive environments for people with disabilities. They present a valuable learning opportunity for individuals, communities and organizations in creating access for everyone. The proposed built environment standards address areas including parking, entrance/exits, signage, parks and trails.

Internal Initiatives

Variety Village continues to evolve and learn to meet the needs/interests of the community. Built environment features to support our commitment to access include:

- an underground heating device on the pathway and entrance area to melt snow/ice for mobility and safety
- multiple parking areas for individuals with disabilities at the entrance of the building
- an automatic door entry to assist visitors and members
- large hallways to provide access to individuals moving in both directions simultaneously

POSA HIGHLIGHT

Coverage from Cambridge, June 2010.

- spacious and unobstructed areas with high ceilings
- wheelchair accessible washroom and change areas for men, women and family
- a facility orientation for interested members and guests

Important Considerations

The built environment should recognize and support people with disabilities to create opportunities for participation in

your programs/services. Note that it is important to also consider varied weight, height, mobility, communication and safety design in your planning.

Here are a few areas for consideration regarding the built environment in your community or facility:

1) An increase in membership creates additional needs for accessible parking.

2) Standard regulation sizes for door frames offer minimal standards only; athletes who use sport wheelchairs for training or competition may use tires cambered (for speed and agility) at 42 inches or 106.7 centimetres. In order to accommodate these individuals, door frames need to be increased to a minimum of 42-46" and should not have dividers between them.

3) Is the building/facility conveniently located and is it appealing to the senses? Sight: is it attractive/recognized as an accessible facility? Sound: are there distractions in/outside the facility like construction or competing/overshadowing structures? Smell: are there aromas from gardens, strong scented fragrances? Touch: are the wall textures rough, textured, clear of ornaments? Are there obstructions or protruding columns?

4) Is the facility built with access in mind? Does the built environment support the environment, health and safety, the needs and interests of the public, and is it built to be affordable?

Analyze The Environment Yourself

Finally, take a few minutes to think about how you perceive your built environment and how it affects your attitude, perception and interest. If you do not have any accessibility issues, think about the challenges that may be present for those who do. The bottom line is that the built environment can determine participation in a facility or organization.

For more information on ideas for inclusive and accessible initiatives, please contact Variety Village at 416-699-7167 TTY: 416-699-8147, www.varietyvillage.ca.

Editor's Note: Archie Allison was one of the featured speakers at the recent Parks and Open Space Alliance (POSA) Summer Operational Forum addressing Accessibility in Ontario's Parks and Open Spaces.

Variety Village

Wheelchair Accessible Sports Venues for Children With Disabilities

ACCESSIBLE SPORTS VENUES are bringing new meaning to the commonly used phrase "level the playing field." Besides incorporating the idea of fair competition, where no advantage is given to either team, these venues also level the playing field – literally – making America's favourite pastime accessible to all.

Over 100 accessible baseball fields service over 80,000 children with disabilities across the United States, including Puerto Rico. Each custom-designed field uses cushioned, rubberized turf to help prevent injuries, wheelchair-accessible dugouts, and a completely flat surface to eliminate any barriers; the bases and mounds are painted on.

"The design removes all obstructions," says Diane Alford, executive director of Miracle League, the nonprofit organization that created the first accessible field in a suburb of Atlanta, Georgia, 10 years ago.

The idea began in 1997 when a local youth baseball coach invited a disabled child who was cheering on his younger brother during games to join in. The following year, the Miracle League was formed to provide opportunities for all children to play baseball, regardless of their abilities.

Equality in Rules

To equal the playing field, the Miracle League created new rules: every player bats once each inning; all base runners are safe; every player scores a run before the inning is over; and the last batter up gets a home run. And to make the game a community affair, local volunteers from youth groups such as Boy Scouts and Girl Scouts, church groups, parents and other children team up with the players to serve as 'buddies' to assist them on the field. Finally, to ensure the game is fun rather than competitive, each team and each player wins every game.

Leveling the Playing Field

Unfortunately, simply creating new rules of play didn't solve the accessibility challenges. "We quickly recognized that the reason most children with a disability don't participate in sports is because of the venues rather than the rules of play," says Alford. **>>>**

The Miracle League

Playing on the same grass fields and with raised mounds and bases as the other community baseball teams presented potential safety hazards – not to mention additional challenges – to blind players and those on crutches or walkers or in wheelchairs.

After a lot of research and fundraising, including partnership with local Rotary clubs, the Miracle League found a type of rubber that would make the playing field safe, latex-free and provide the right surface for the ball to roll rather than stop, yet not bounce up and hit someone. The initial complex opened in April 2000. With 100 players from among the 50,000 children with disabilities in metro Atlanta, it soon got national attention.

The Disability League Grows

When Lisa Kensington learned about the Miracle League through HBO's Real Sports, she immediately undertook the creation of an accessible field for her community outside of Denver, Colorado. Teaming up with Foothills Parks and Recreation, the Jason Jennings Adaptive Field opened in the spring of 2006 under the name of Sports Made Possible.

"We opted to change our name from Miracle League to Sports Made Possible to better reflect our mission," says Kensington. While Kensington has been involved with other major fundraising efforts prior to this one, she says that Sports Made Possible has been the most fulfilling project she's ever done.

"It's a win-win game for everyone involved," says Kensington. "The buddies get to build a relationship with a disabled child, and the children get to build relationships with other community members."

The Miracle League hopes to service over 1.3 million children with disabilities through 500 accessible fields by 2012. Already 40 more fields are under construction with another 50 in some stage of development.

Article by Lori Batcheller, reprinted from www.disaboom.com, March 2008. For more information, visit www.miracleleague.com and www.sportsmadepossible.org.

BMO Stadium Goes Natural

THE ONTARIO TURFGRASS INDUSTRY IS ABUZZ over the permanent conversion of BMO Stadium from synthetic to natural turf. Comprehensive articles are available in both the March and April/May 2010 issues of Turf & Recreation magazine. Photos courtesy of Zander Sod.

Winning the Turf War. Synthetic or Natural? The Discussion Continues.

Alison Brownlee, Journalism Student, Humber College

The synthetic turf of the past may have been greener than its natural predecessor, but it sure wasn't kinder. Once the pariah of all athletic surfaces, the first-generation "carpet-on-cement" turf developed in the 1960s chewed up athletes and spat them out. Sprains, tears, concussions and turf burns were the fate of soccer, rugby, baseball, football and field hockey players who dared to take on these plastic playing fields.

Since its first appearance in the Houston Astrodome in 1965, synthetic turf has come a long way. Now, even some multimillion-dollar varsity stadiums popping up across Ontario aren't being built around natural grass.

Of the 30 OCAA colleges and universities, Trent, Redeemer and Algonquin have switched to synthetic. While the remaining colleges have natural sports fields, both Cambrian and Centennial say they are considering artificial turf in the near future.

These fields are nothing like their first-generation predecessors. Professional teams such as the Toronto Blue Jays, New England Patriots and Tampa Bay Rays use similar fourth-generation synthetics.

In 2005, Trent University took a risk and installed an artificial field; a move athletic director Bill Byrick says was the best choice he could have made for his athletes.

"Our natural grass field was pretty rough," says Byrick from his office in Peterborough. He says the worn and tired field became a safety issue. "A lot of cleats were getting stuck in the mud and after every fall late in the season, players would have cuts from the frozen dirt."

After extensive research and long conversations with the University of Ottawa and Algonquin College – two schools that already had synthetics – Trent installed a state-of-the-art plastic fiber field filled with tiny rubber pellets.

Jason Smollett, marketing manager for international artificial turf supplier FieldTurf Tarkett, says the newest versions' artificial fibers are more durable than grass, and the pellets, which are bits of cryogenically frozen tire, provide a cushion of support for athletes, lessening joint pain caused by running and falling.

Smollett says this fourth-generation synthetic turf has surpassed natural grass in safety, durability, performance and consistency.

A recent study, funded by FieldTurf and conducted by Dr. Michael C. Meyers at Montana State University, tracked 465 college-level games played on both natural and artificial fields. The study found 7% fewer injuries occurred on FieldTurf's surface, with 12% fewer concussions, 6% less lower joint trauma and 16% less ACL and associated tissue trauma.

Overall, the study found 19% fewer substantial injuries and 22% fewer severe injuries occurred when playing on the company's newest artificial turf. Nonetheless, some athletes still prefer natural grass.

During the 2010 Ontario Turfgrass Symposium at the University of Guelph, Bob Hunter of Maple Leaf Sports and Entertainment said Toronto FC's previously synthetic BMO Field will be completely refitted with natural grass for the 2010 soccer season.

"Players were complaining about it," said Hunter. "There is this perceived issue relative to wear-and-tear on the body. I think there's a recent study that came out that says it's absolutely a bunch of bull ... [But] we wanted to put in [natural grass] to bring a higher level of professionalism and credibility to our team."

He noted 13 of the 16 North American professional soccer stadiums have natural grass and several European teams, including AC Milan, refuse to play on artificial turf. The BMO field project cost about $62.9 million and involves 82,000 square feet of natural grass.

Some OCAA players have their own reasons for choosing natural grass. David Lambden, captain of the Humber Hawks rugby team, says the variability of natural turf makes it more fun. "Every once in a while you get those rainy, stormy days when the field's just completely muddy, and in my experience, those have been some of the [most exciting] games we've ever had," says Lambden. "Part of the fun of it is the different possibilities."

Lambden also says games can be more strategic, with teams using the quirks of their natural grass home field to their advantage. With synthetic turf, though, he says a field's character disappears.

"There are no variables," says Lambden. "You don't get the dips and bounces, it's just the same."

And members of the St. Lawrence Cornwall women's soccer team say artificial turf infill can wreak havoc on performance.

As defender Joanna Buhr recalls, "Sometimes there are too many pellets in an area and your foot slips back." Fellow defender Kayla Laframboise adds the smooth surface of artificial turf can cause rolled ankles and slips when pivoting, while grass creates enough friction to pivot freely and control slides.

"And you don't get rubber in your underwear," says forward Sarah Tyrell, to a wave of laughter from her teammates.

But regardless of preconceived notions, synthetic fields are becoming more appealing for their low maintenance. The biggest barrier for OCAA facilities is cost.

Jim Galbraith, a founding member of Ontario's Sports Turf Association and the supervisor of grounds maintenance for the University of Western Ontario, says natural grass fields cost $100,000 to $150,000 for a soil-based field and $250,000 to $300,000 for a high maintenance sand-based field.

According to Frank Erle, Ontario Recreation and Facilities Association member and stadium manager at Western, building an artificial field "from scratch" costs about $1.5 million. Resurfacing can cost around $750,000. Erle says synthetic fields are expected to last 10 years, while Galbraith says natural fields are theoretically permanent.

"Grass fields have always been seen as the best to play on," says Galbraith. "Unfortunately, as more people play on them, they thin out and technically self-destruct when it gets really wet at the end of the season."

But both Galbraith and Erle say they appreciate a beautifully maintained natural field. "If it was pristine, there's no question you'd want to play on grass," says Erle. "But there's no guarantee you're going to get that 365 days a year."

Above. St. Lawrence Cornwall's Kim Lebrun poses on the turf field. Photo courtesy of author Alison Brownlee.

As for Trent's field, director of athletics Byrick says he expects to get 12 years out of his turf. He says it's used for varsity, campus rec and community sports and has held up through it all.

Because of Ontario's debilitating winters, the comparative maintenance costs and an increasing interest in sports, Smollett holds that artificial turf is the future – for all levels of sport.

"Whether it's here, or the other side of the world, there's no question synthetic turf is the best choice."

Reprinted from Sweat Magazine, April 15, 2010, www.sweatmag.com. Sweat magazine is an award-winning magazine produced biannually by the final year journalism class at Humber College in Toronto since 2000. The publication is student-run and written, published by the Ontario Colleges Athletic Association, and distributed to OCAA campuses all over the province.

Pesticide Ban Impacts: Three Municipalities Provide Perspective

Mark Dykstra, Director of Environment and Parks, City of Waterloo
Bill Slute, Manager, Parks and Environmental Services, City of Oshawa
Andy Wickens, Manager, Parks and Forestry, City of Mississauga

The revised regulations under The Pesticides Act which eliminated the "cosmetic" use of pesticides in Ontario came into effect on Earth Day 2009. Municipalities have now had one full season to adapt to the changes in operations which have resulted from the new legislation. This article provides perspectives from three different municipalities as to the impacts and costs of these changes.

City of Waterloo

For Waterloo, what are the true costs of the pesticide ban? This is an interesting question for a city that has a strong knowledge and service-based economy. Waterloo is a community of 120,000 people that has 814 hectares of green space. If you have visited Waterloo, you may have experienced RIM Park that offers a major indoor recreation facility, a mix of multi-use fields and baseball diamonds, a golf course (Grey Silo) and an abundance of natural areas along the Grand River.

Understanding and investigating the questions surrounding pesticide use began for Waterloo some 30 years ago when both citizens and staff recognized that routine grounds maintenance practices were both fiscally and environmentally undesirable. Alternatives were explored and researched. The result was a Plant Health Care Program designed to work with nature, not against it. It encouraged creative deployment of horticultural practices and recognized that we are working with living plants/organisms, not sterile mechanical

Mowing, Town of Oakville

OTS HIGHLIGHT
Coverage from Guelph, February 2010.