

London, Ontario Geotube® Installation: Awarded Technical Innovation Awards

The Challenge...

The City of London operates 6 Wastewater Treatment Plants (WWTP). Sludge generated at 5 of the City's plants is trucked to the Greenway Pollution Control Plant where it is mixed with the Greenway sludge in holding tanks. All of this sludge is then sent to a fluidized bed incinerator. For years ash produced through the incineration process had been discharged to a two lagoon system where it was stored and then periodically transported offsite. While lagoons are used by many municipalities for the management of various waste streams, they do present their own set of challenges. Maintenance and general upkeep can be labour intensive and lagoons eventually become full and their contents must be disposed of. With limited options for final disposal of material, and high cost associated with removing the ash and transporting it offsite a solution was sought which would not only reduce operational costs involved with managing the ash material, but could also produce an end product which could be more easily disposed of.

Bishop Water began working with the City of London in the spring of 2010 to develop a solution using the Geotube® dewatering technology to manage the ash waste stream. After performing extensive onsite bench testing and trial dewatering to determine the optimum chemical conditioning the material for dewatering with the Geotube® technology, the City of London requested a Pilot Project be conducted in order to determine the effectiveness of the Geotube® technology at dewatering and retaining the ash material on a larger scale.

The Solution...

In late 2010, Bishop Water began a Pilot Project using a Geotube® unit measuring 30' in circumference x 50' long to dewater the ash. The Geotube® was situated around the perimeter of the existing lagoon cells. The ash slurry was diverted directly discharging into the lagoon cells to the Geotube® unit. Existing infrastructure was used to chemically condition the material. Filtrate produced through the dewatering process was discharged by gravity to the existing lagoon cells.



Based on the success of the Pilot Project the City of London determined that the Geotube® units would offer significant benefits when compared to managing the waste stream using the onsite lagoon cells. The City retained RV Anderson as the Lead Engineering Group to the project. Throughout 2011 Bishop Water worked closely with both RV Anderson and the City of London to develop a methodology and design for the installation which would allow the Geotube® units to operate as effectively as possible.

The Construction...

Construction of a permanent Geotube® installation began in the fall of 2011. Dewatering cells were constructed of concrete in order to accommodate the required Geotube® units. Jersey barriers are used to segregate the cells with each of the sells sloping slightly to a filtrate collection basin. The dewatering cells were originally constructed to accommodate 7 Geotube® units measuring 75' in circumference x 55' long, however to allow for increased capacity it is anticipated that Geotube® units 80' in circumference x 55' long will eventually be used in place.

The Performance...

The performance of the Geotube® units to date have not only met the expectations of the City of London, but exceeded them. The simplicity of the technology allows the Operators at Greenway Pollution Control Plant to monitor the installation and operate key components of the facility remotely, meaning no additional personal are required to operate the installation and minimal man hours are required by existing staff.

Filtrate produced through the dewatering process is transferred to a lift station and then pumped back into the treatment process at the Greenway Pollution Control Plant for further treatment prior to discharge.

The plant was designed to provide the City with maximum onsite storage capacity. The City of London intends to reuse the dewatered material as an aggregate for concrete, keeping the material out of the City's landfill site.

This facility is not only considered to be a major success by the City of London, the Ash Management System was awarded 2012 Technical Innovation Award by the Ontario Public Works Association (OPWA) and the American Public Works Association (APWA) Technical Innovation Award for 2013.

How the Geotube® works...



Step 1: Filling

Dewatering with Geotube® technology is a three-step process.

In the confinement stage, the Geotube® container is filled with dredged waste materials. The Geotube® containers unique fabric confines the fine grains of the material.



Step 2: Dewatering

In the dewatering phase, excess water simply drains from the Geotube® container. The decanted water is often of a quality that can be reused or returned for processing or native waterways without additional treatment.



Step 3: Consolidation

In the final phase, consolidation, the solids continue to densify due to desiccation as residual water vapor escape through the fabric. Volume reduction can be as high as 90 percent.



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