

Geotube® Dewatering Technology Provides the Perfect Solution For Waste Treatment

TenCate™ works with Canadian community to address local septage needs.

In 2002, Ontario's legislature and the Ministry of Environment (MOE) produced a policy paper announcing their intent to eliminate the land application of untreated septage. While 90 percent of residents in Ontario used local sanitary sewers to dispose of their waste, and therefore were unaffected by the policy, there were still more than one million residents in rural areas using septic tanks.

Haulers across Ontario were left in a bind, scrambling to find methods to treat and dispose of the septage. It was up to the local municipalities and the private haulers to come up with alternate methods to treat and dispose of the septage. For the small town of Eganville (population 3,455), located in Bonnechere Valley, the solution was found in Geotube® dewatering containers, manufactured by TenCate™.

TenCate™ develops and produces materials that function to increase performance, reduce cost, and deliver measurable results by working with our customers to provide advanced solutions.

Hometown Inspiration

The Geotube® idea was originally presented by an Eganville resident. Don Bishop, a Geotube® manufacturer's representative, understood the benefits of dewatering technology and recognized the potential for a septage treatment application in his hometown. In Fall 2004 at the Eganville Wastewater Treatment Plant, Bishop presented a Geotube® dewatering and containment demonstration for community leaders and public officials. "The municipal leaders were impressed with the simplicity and cost effectiveness of the Geotube® technology," said Bishop. "The next step was to conduct further testing."

Successful Pilot Test

The Eganville township first trial-tested Geotube® dewatering technology in a small pilot project, processing about 21,000 gallons of septic tank waste in July 2005. A Geotube® unit



This aerial image shows the Biosolids / Septage Dewatering Facility directly across from Eganville's existing wastewater treatment plant. Underground septage storage tanks were incorporated at the site, allowing pumper trucks to easily offload septage materials. Geotube® dewatering cells are shown at bottom of photo.

measuring 22 ft. x 22.5 ft. was filled and allowed to dewater through the winter months. Moisture continued to drain from the septage material. At the conclusion of the pilot test, the solids content of the septage in the Geotube® unit had risen from 3% to almost 40%. The dewatering outcome was expected – however, the quality improvement of the septage material was a huge surprise. The pathogen content of the solids declined significantly. This was most likely due to the composting effect of holding the waste inside the Geotube® container.

Not only did the Geotube® unit successfully dewater the septage, the lab results of both the effluent and retained solids were impressive. The effectiveness of Geotube® dewatering containers, along with the simplicity and affordability of the technology, encouraged Bonnechere Valley to

implement Geotube® units as a long-term solution for the treatment of septage and bio-solids from the wastewater treatment plant.

Solid Operation, Proven Technology

Construction on the permanent dewatering and processing facility using Geotube® technology began in September 2007 and was completed in April 2008. Located directly across the road from the wastewater treatment plant in Eganville, the dewatering facility is now fully operational and consists of six (6), 30 ft. circ. x 50 ft. long Geotube® dewatering units.

The process for a hauler to empty their truckload at the dewatering facility is simple and straightforward. Haulers are required to pull their tanker truck up to the septage station and empty the load

(More)

from their tanker into the 10,000 gallon underground holding tank. After emptying their truck, haulers can then drive away, and resume business as usual. Haulers no longer have to spend time and applying septage to fields.

"Bonnechere Valley Township now serves as a great example of how municipalities can address their septage treatment needs," remarked Bishop. "We are leading the charge in Ontario."

Township Continues Testing Effort

Reflecting the Township's commitment to this project, the Bonnechere Valley Township partnered with the County of Renfrew and the MOE to continue evaluating the dewatering and treatment of septage utilizing Geotube® dewatering technology. Beginning in 2008, the Township has handled the operation, evaluation, and reporting for this septage management project. Analysis and testing was conducted on three types of materials for comparison: raw septage, septage filtrate, and dewatered septage solids. The testing focused on the following measures:

- (1) pathogen levels going in, during dewatering, and after completed dewatering;
- (2) levels of metals;
- (3) pH levels; and
- (4) nutrient levels.

From April to December 2008, roughly 500 cubic meters of septage was received and processed. At the end of the year, the Geotube® container measured approximately 0.6 meter high. This equated to almost 35 cubic meters of dewatered septage in the 10-12% solids range.

"The first year of the Septage Pilot Project has been very successful," said Andrew Polley, Environmental Project Manager for the Township of Bonnechere Valley. "The dewatering process has worked well. All of the pathogens and metals in the dewatered material have been well below MOE levels for land application use."



The Eganville facility features two outdoor dewatering cells (left) and a cold weather greenhouse enclosure (right) for year-round use of Geotube® dewatering technology. This accommodates Winter emergency pump outs.

In addition to the positive test results, this collaborative effort with MOE has generated plenty of interest at the local, county, and provincial levels of government. During 2008, the dewatering facility hosted many tours for interested representatives of other Ontario municipalities, as well as septage haulers from the Providence, the general public, and the agricultural community.

Snapshot of Testing Results from Bonnechere Valley Study

- 99.6% suspended solids captured in Geotube® units
- 98.2% phosphorus captured
- 82.3% nitrogen captured
- 99.9% E. coli reduction
- 100.0% arsenic reduction
- 98.8% lead reduction
- 99.9% mercury reduction

The Township will continue with sampling and evaluation of the Geotube® dewatering process in 2009. A final report is planned for early in 2010. The results should provide a meaningful review of the dewatered material and its benefits as a soil amendment nutrient.

A simple test can be used to determine how well the dewatering technology will work in a particular situation. A TenCate™ representative can work with an organization to administer the test and to provide suggestions as to the best dewatering approach. To learn more, call 1-888-795-0808 or visit www.geotube.com.

How Geotube® Dewatering Technology Works

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

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

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 to native waterways without additional treatment.

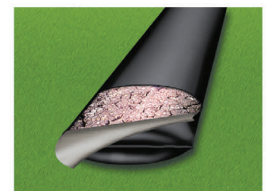
In the final phase, *consolidation*, the solids continue to densify due to desiccation as residual water vapor escapes through the fabric. Volume reduction can be as high as 90 percent.



Step 1: Filling



Step 2: Dewatering



Step 3: Consolidation

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