

Small-Town Dewatering

A Canadian township uses dewatering units to achieve septage disposal compliance



The Eganville wastewater facility features two outdoor dewatering cells and a cold-weather greenhouse enclosure for year-round use of Geotube dewatering technology. This accommodates winter emergency pumpouts.

By Andy Lister

In 2002, Ontario, Canada'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% 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.

How Geotube Dewatering Technology Works

Dewatering with Geotube technology is a three-step process. In the confinement stage, the container is filled with dredged waste materials. The container's unique fabric confines the fine grains of the material. In the dewatering phase, excess water simply drains from the 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%.

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.

Hometown Inspiration

The Geotube idea originally was 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 (WWTP), Bishop presented a 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," Bishop said. "The next step was to conduct further testing."

Pilot Test

The Eganville township first trial-tested Geotube dewatering technology in a small pilot project, processing about 21,000 gal of septic tank waste in July 2005. A Geotube unit measuring 22 ft by 22.5 ft was filled and allowed to dewater through the winter months. Moisture continued to drain from the

Snapshot of Testing Results from Bonnechere Valley Study

- 99.6% suspended solids captured in dewatering units
- 98.2% phosphorus captured
- 82.3% nitrogen captured
- 99.9% *E. coli* reduction
- 100% arsenic reduction
- 98.8% lead reduction
- 99.9% mercury reduction

septage material. At the conclusion of the pilot test, the solids content of the septage in the unit had risen from 3% to almost 40%.

The dewatering outcome was expected; the quality improvement of the septage material, however, was a huge surprise. The pathogen content of the solids declined significantly. This most likely was due to the composting effect of holding the waste inside the Geotube container. Not only did the unit successfully dewater the septage, the lab results of both the effluent and retained solids were impressive.

The effectiveness of dewatering containers, along with the simplicity and affordability of the technology, encouraged Bonnechere Valley to implement these units as a long-term solution for the treatment of septage and biosolids from the WWTP.

Leading the Way

Construction on the permanent dewatering and processing facility began in September 2007 and was completed in April

2008. Located directly across the road from the Eganville WWTP, the dewatering facility is now fully operational and consists of six 30-ft-circumference by 50-ft-long Geotube dewatering units.

The process for a hauler to empty its truckload at the dewatering facility is simple and straightforward. Haulers are required to pull their tanker trucks up to the septage station and empty the load from the tanker into the 10,000-gal underground holding tank. After emptying their trucks, haulers can drive away and resume business as usual. Haulers no longer have to spend time land-applying septage to fields.

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

Continued Testing & Community Interest

Reflecting the township’s commitment to this project, Bonnechere Valley partnered with the county of Renfrew and the MOE to continue evaluating the dewatering and treatment of septage utilizing the new 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 four measures:

1. Pathogen levels going into, during and after dewatering;

2. Levels of metals;
3. pH levels; and
4. Nutrient levels.

From April 2008 to December 2008, roughly 500 cu meters of septage was received and processed. At the end of the year, the Geotube container measured approximately 0.6 meters high, equating to almost 35 cu meters of dewatered septage in the 10% to 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.”

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, septage haulers from the province, the agricultural community and the general public.

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

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