

How Does Colchester Generate Biosolids?

The County operates five (5) sewage treatment facilities, as follows: Central Colchester Wastewater Treatment Facility, Lower Truro; Brookfield Sewage Treatment Plant; Great Village Sewage Treatment Plant; Debert Sewage Treatment Plant and Tatamagouche Sewage Treatment Plant.

At each treatment plant, bacteria are fed oxygen so that they can multiply and thrive. These bacteria in turn breakdown and consume harmful organic materials in sewage. The treatment process at each plant requires regular daily wasting of excess and dead bacteria in order to make room for new growth. This excess material is called Sludge.

Only the Central Colchester Wastewater Treatment Facility is equipped to handle sludge. Therefore, wasted sludge from the four other treatment plants is trucked to the Lower Truro facility. Since sludge is comprised mostly of water, about 99 percent water, it is dewatered prior to shipment for final disposal.

This dewatered product is known as Biosolids. Sludge is dewatered using centrifuge technology and the final biosolid product is typically at 17% solids. Prior to February of 2016, belt presses were utilized to dewater sludge, achieving only 11% to 12% solids.

Above information extracted from Michelle Newell's presentation to Colchester Council on January 9th

Where Do Colchester Biosolids Go?

Fundy Compost

Prior to February of 2016, all biosolids generated in Colchester were shipped to Fundy Compost in Pleasant Valley for disposal. Cost for disposal included \$76.35 per tonne of material, plus a \$25 weighing fee per load, and the cost of shipping to Pleasant Valley. Fundy Compost in turn mixed the material with bark, and composted the mixture for a year prior to selling to private users.

Between April 2015 and February 2016, the County paid the following amounts for disposal of biosolids via Fundy Compost:

An average of 475 tonnes of biosolids per month at 11 to 12% solids were sent to Fundy Compost; an average disposal cost of \$36,300

per month. Average number of loads per month was 58, for an average monthly weighing cost of \$1,450. Average cost per month for trucking was \$8,400.

Based on these numbers, the County was paying an equivalent of \$553,800 per year to Fundy Compost for disposal of Biosolids. In fiscal 2013/14 and 2014/15, total cost for biosolids disposal over the 2 years was \$954,000.

In February of 2016, Fundy Compost advised that they were no longer able to accept our biosolids. In the absence of a formal contract, the County was required to make very quick plans for an alternative disposal method. The decision was made to ship the biosolids materials to Kempton for in-house composting.

Colchester Compost Facility - Kempton

In February of 2016, the county began shipping biosolids materials to Kempton for composting at the existing compost facility. At the same time, our dewatering technology at the treatment plant was changed from belt presses to centrifuges, allowing us to improve our dryness from 12 to 17% solids. This change created a savings in shipping and disposal costs.

Biosolids were being segregated from green cart waste for composting, and were being stored and processed in an existing coverall building with aerated floor. Details of the shipping and disposal costs are summarized below: An average of 231 tonnes per month of biosolids was shipped to Kempton; Average dryness was 17% solids; Disposal fees were \$40 per tonne, for an average of \$9,300 per month and trucking costs averaged \$5,500 per month.

Based on these numbers, the County was paying an equivalent of \$177,600 per year for disposal of biosolids in Kempton. It is noted

however that, during this time, some mechanical issues at the plant greatly reduced the amount of biosolids being generated. Otherwise the average monthly shipment of biosolids would have been nearly 350 tonnes, which matches current levels. The resulting annual cost for disposal would have been \$268,000.

Staff in Kempton had difficulty handling the material, which continued to 'flow' when piled in the composting building, even when blended with woodchips. After 11 months of shipping the biosolids to Kempton, the processing building was full, however the material required at least a full year to compost.

With the Kempton facility at capacity, staff were quickly required to find an alternative method of biosolids disposal. Staff then entered into a contract with Envirem, Miramichi, NB to accept the biosolids material. The biosolids material remaining at Kempton will be spread at the site once they have finished composting.

Envirem Disposal

Since February of 2017, biosolids have been shipped to Envirem in Miramichi, New Brunswick. It's an open-ended contract with details as follows: Disposal cost of \$37.50 per tonne, plus a \$1200 shipping fee per load. • Av-

erage disposal of 360 tonnes per month at an average of 17% solids, costing \$13,500 per month. Average trucking rate of 18 loads per month, or \$21,500 per month. Expenses for this fiscal year to the end of Nov 2017 are as follows:

Component	YTD (Nov 30)	Estimate, Fiscal	Budget, Fiscal
Shipping	\$176,325	\$264,000	\$223,800
Disposal	\$105,925	\$158,800	\$169,200
Total	\$282,254	\$423,000	\$393,200

Above data extracted from Michelle Newell's presentation to Colchester Council on January 9th.

Envirem has suggested should the county lock into a 5 year contract they are offering a dis-

posal cost of \$32.50 per tonne (reduced from \$37.50) as well as a larger truck for the reduction of total load numbers. This pricing has the potential to further reduce annual costs by \$80,000.

How can Biosolids be used?

Due to their nutrient content, biosolids are recognized for their potential to improve crop production and soil properties, thus reducing inputs such as fertilizer and irrigation. They are also recognized as beneficial for use in land reclamation for mines, quarries and gravel pits, and can also enrich forest lands.

There are two classes of biosolids under these guidelines, namely class A and class B. Class A biosolids have been treated and stabilized, and meet a high standard for pathogens, metal and contaminant concentrations. Disposal of Class A biosolids does not

require an approval from Nova Scotia Environment.

Class B biosolids have not been treated and stabilized to the same extent as Class A and have a lower quality standard for metal, pathogen and contaminant concentrations. Disposal of Class B biosolids requires an approval by Nova Scotia Environment, and is a designated activity under the environment act.

Any waste product containing any fraction of biosolid material qualifies as a biosolid under the guidelines.

Biosolids must be stabilized to reduce pathogen content, minimize odour and reduce

vector attraction potential. The following methods are recognized as suitable stabilization by Nova Scotia Environment: composting, aerobic digestion, anaerobic digestion, alkaline/lime stabilization, heat drying (greater than 800C), heat treatment (2600C for 30 mins), and, pasteurization (700C for 30 mins).

Class B biosolids cannot be used on agricultural lands or residential lawns and gardens. Their potential uses include parks and trails, forests, reclamation sites, construction sites, golf courses, commercial sod farms and final cover on landfills.

What Do Other Jurisdictions Do With Their Biosolids?

Colchester staff completed a review to determine what other Municipalities are doing with their biosolids. The results are summarized below:

- Summerside operates a Biological Nitrification Plant with biosolids being shipped to an N-Viro facility for alkaline stabilization (lime mixing). Their biosolid product sits at 18% solids, which creates a wetness issue.
- Charlottetown uses a digester and pre-pasturization to generate a Class A biosolid product at 24% solids. Capital cost of a digester can range from \$5M to \$10M.
- Halifax Water has a contract to ship all of its biosolids to the N-Viro facility at Aerotech. Cost per tonne for disposal is substantially more than the disposal rate currently paid by Colchester. Elmsod takes all HRM Green cart waste for their sod farm.
- Moncton sewage treatment plant treats only to the primary level, and constructed

its own Gore Composting System in 2006 to handle its biosolids. They produce 11,000 tonnes per year of 24% biosolid product. The composting process requires mixing with bark and aerating under Gore covers. The process takes approximately 1 year. Their Class A biosolid is sold to private individuals and businesses and utilized on city parks and grounds. The facility, to date, has cost \$12-Million in capital.

- West Pubnico uses geotubes for dewatering, with the final product being buried at an old landfill.
- Meteghan utilizes geotubes for dewatering, with tubes being emptied every 2 years. Biosolid materials are spread on a closed landfill.
- The East River Environmental Control Centre - serving the New Glasgow Area - built an alkaline treatment system for their biosolids in 2005. The facility cost them \$2.3M to construct, with annual operating costs in the range of \$320,000 per

year for trucking, electricity and lime. Their class A biosolid is utilized by a local farmer. This plant is comparable in size to the Central Colchester Wastewater Treatment Facility, but with lower strength waste. New Glasgow processes 3,500 tonnes of biosolids each year, as compared to Colchester's 4300 tonnes.

- Chester uses geotubes for dewatering sludge. Every 2-3 years, they break open their geotubes and spread the material over the final cover of their landfill.
- Cumberland uses geotubes for dewatering at their septage hauling facility. The biosolids from their 8 sewage treatment plants is composted along with their green cart waste. When they dewater sludge from their lagoons, they bury the material on site. The volume of biosolids they produce in 1 year is equivalent to 2-3 weeks of product in Colchester.

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