Monahan Drain, Ottawa, Upgrades its Stormwater Facility

The Challenge...

The Monahan Drain stormwater facility was constructed in 1993 to support the nearby Bridlewood community in Ottawa, Ontario. The drain was built for the residential area as an outlet for the communities urban stormwater. However, growth of the area required an upgrade of the drain to support the increase in runoff and to improve the water quality. The rebuild was priced at $8 million, consisting of a total redesign of the drain and surrounding wetlands. To enable an increase in capacity and drain alteration, sludge removal was required with a low environmental impact and cost.

The Solution...

Greenbelt Construction Ltd, the general contractors for the site, contacted Geodredging to undertake the dewatering and capture of sludge from the stormwater drain. The work was to be completed in tandem with dredging company EcoTec. The well established Geotube® dewatering technology was deemed the most appropriate and manageable solution for the job.

The Geotube® dewatering system works in a 3 stage process. Firstly, sludge is pumped into a tubed system that mixes with an appropriate polymer that provides separation of solids from liquids. The mixture is then pumped through the dual filament polypropylene fabric of the Geotube® trapping solids inside while releasing the liquids. The liquid then flows back into the Drain via gravity.

The Geotube® dewatering system was expected to dewater 6500 cubic meters at 30% solids (1950Bone dry ton) of Monahan Drain over 37 days. Previous projects have shown that the Geotubes® are capable of removing suspended solids ranging from 2000mg/L to 4mg/L with pumping speeds exceeding 4000L/min. Based on the requirements of the job, 7 Geotubes® measuring 90’ Length x100’ circumference were placed on an impermeable sheeting covered laydown area on the west banks of the drain.

The Construction...

Construction of the laydown area, Geotube® preparation and drainage system on the west banks of the Drain began in May 2015. Pumping and dredging of sludge from the Drain ran from June 12 to August 19, 2015, after which the drying and covering process commenced.
The Performance...

Completion of the required 1950 Tons of sludge was achieved ahead of schedule in just 15 days. Due to a greater amount of sludge than initially expected, Geo-dredging voluntarily pumped for an additional week. This resulted in the extraction of an extra 150 tons providing a final sludge removal of 2100 tons.

The 7 Geotubes® were all filled to a minimum height of 6’ when dried and up to 8’ when dewatering. During dewatering, effluent was free of solids and retained a clearer hue than before entering the bags. Due to the ease of dewatering, a consistent and speedy sludge removal of the drain was achieved.

After pumping, complete dewatering and drying of the bags began allowing for the safe burial of the Geotubes®. The advantage of a Geotube® burial allows for containment and remediation of the sludge and saves on disposal costs while providing natural area growth.