



## STORMWATER MANAGEMENT

### Life Cycle / Asset Management



## A “Low Maintenance” Stormwater Pond Retrofit Design Using Validated Performance Metrics

The **Laurelwood Basin B (Pond #53)** is located in the **City of Waterloo** and discharges to Laurel Creek upstream of the Laurel Creek Reservoir. Since construction in 2003, Pond #53 had accumulated a large amount of sediment from general construction and upstream development activities, which threaten the facility’s original designed function. As a result, the City of Waterloo decided to explore innovative solutions to: 1) improve efficiencies for the facility’s sediment clean out and disposal; 2) integrate cumulative effects watershed modeling (using CANWET™) into the retrofit design process and to optimize sediment removal and improve downstream water quality; and, 3) provide better and more cost-effective sediment disposal options for future implementation.

In the spring of 2017, the project was initiated by the City in partnership with GREENLAND® International - Consulting Engineers and Clearflow Group. Third-party consultant review services was also provided under separate contract to the City, and with a focus on products developed by the Clearflow Group that were incorporated into the “low maintenance” retrofit design and construction phases. This review validated claims about the products’ performance related to sediment management. In the summer 2017, a \$350,000 grant was also approved by the Federation of Canadian Municipalities (FCM) to help offset the total project cost of over \$1,000,000. Therefore, the anticipated (positive) post-construction monitoring results will then be shared with other municipalities to identify a scalable and cost-effective approach using proven life cycle friendly products for similar pond clean-out and retrofit design projects.

The retrofitted facility will help reduce annual costs associated with regular maintenance once completed. Additionally, as per a recent study identifying small ponds that may account for about 15% of global CO<sup>2</sup> emissions and over 40% of global diffusive CH<sup>4</sup> emissions, GREENLAND® is exploring other ways in which GHG reductions are achieved through other science-based / life cycle design and performance methods.

This unique project approach will also be considered by the City to rehabilitate other municipally owned waterbody assets. In addition to cost savings from a life cycle perspective, this retrofit project will also reduce/remove sediment released from the pond and improve downstream water quality – including, more efficient reductions in total suspended solids and phosphorus. These performance metrics will also provide further ecosystem benefits to the Laurel Creek Reservoir, Silver Lake, Grand River and ultimately Lake Erie.

