



## WATER RESOURCES

### Stormwater Management Facilities

#### Kenny Drain Diversion and Stormwater Management Pond

*Client: City of Owen Sound*

*Project Location: Owen Sound, Ontario*

The Kenny Drain is located in Owen Sound, Ontario and services stormwater drainage from over 225 hectares of land. The Kenny Drain winds through the heart of the industrial area and ultimately discharges directly into Georgian Bay. With such a large upstream drainage area, the Kenny Drain conveys massive flows modelled at 30 m<sup>3</sup>/s for future conditions under a 100-year storm event. As such, the Kenny drain had been experiencing significant erosion problems, and sediment deposits being transported to Georgian Bay.

GREENLAND® was retained to undertake the detailed design of the Kenny Drain diversion retrofit and Stormwater Management Pond as identified in an Environmental Assessment. The project required significant modelling and design attention for such a large drainage area. Incorporated into the design, several constraints provided the process with additional challenges, such as the native fish species within the drain as well as bedrock considerations for depth and overall layout of the pond. As part of the diversion retrofit to the drain, the design required two (2) large concrete box culverts be installed, one to convey the base flow of the Kenny Drain (a 2.1m by 3.0m culvert) and another to convey the 100 year flows from the upstream drainage area (4.1m by 4.1m box culvert). The intricate design allows for a base flow of 4.0m<sup>3</sup>/s to continually flow within the Kenny Drain and in combination with a fish by-pass ladder, works to satisfy the native fish constraint to allow the native species to navigate up the drain. The drain diversion diverts all flows over 4.0 m<sup>3</sup>/s to the SWM pond where the pond acts as a water quantity storage facility and has a controlled release of water back into the Drain under the erosion threshold, thereby significantly reducing the sediment deposited to Georgian Bay. GREENLAND® designed an outlet using a series of box culverts placed on their sides and installed at various elevations to control the release of flows from the pond. This design is uncommon but extremely economic which helped save the City construction and material fees.

Federal and Provincial regulatory agency approvals were obtained in a timely and efficient manner.

The construction phase began in 2017 and was completed in the fall of 2018.

