

## Town of Wasaga Beach, Knox Road East Water & Wastewater Servicing Project

In 2014 the Town of Wasaga Beach, one of Ontario's Major tourist destinations and fastest growing communities, completed an extension of its municipal services to address the needs of a well-established residential enclave, known as Knox Road East, and the long-term servicing requirements of a large area of planned development to the south. The project had the additional purpose of correcting an existing bottleneck in the municipality's water distribution system through the looping of trunk watermains.



*Approximate location of **HDD sites** and watermain under the Nottawasaga River*

The project's overall design included the installation 2.5 km of watermain ranging from 150 mm to 500 mm in diameter; 2.6 km of sanitary sewer ranging from 200 mm to 675 mm in diameter, and 0.4 km of 400 & 500 mm diameter forcemain. It also required the installation of a sewage pump station, as well as servicing mains under the Nottawasaga River by Horizontal Directional Drilling (HDD).



*500mm diameter watermain strung along River Road East*



*Directional drilling rig*

Several hurdles needed to be overcome during the design and construction phases of the project. The crossing of the Nottawasaga River required the installation of approximately 200 m of 500 mm diameter watermain and 500 mm diameter forcemain by Horizontal Directional Drilling (HDD). Four 100mm hydro ducts had to be installed (also by HDD) along the same profile in order to bring three phase power to the sewage pump station site. And finally, because the east bank of the river at the crossing rises approximately 20 m at a very steep slope and is known to be actively eroding, the bore path design had to allow for the 100-year erosion setback as well as make provision for a long-term 2:1 stable slope.



*100mm hydro ducts strung underground*



*View of the East banks steep 20m sand dune*

Due to the natural topography the sewage pump station is located at the eastern end of Knox Road East and pumps directly into the WPCP. The station is designed to service approximately 400 ha of existing and planned residential development, as well as 5000 m<sup>3</sup>/day of flow from the community of Stayner in the Township of Clearview. It is a submersible style facility with four pumps (three duty and one standby) and a capacity of just over 300 L/s. Because it is expected to



take a number of years to reach its ultimate design flow, the wet well has been designed to allow for flow splitting, in order to minimize retention times during the initial stages and alleviate odour. Construction of the 11 m deep wet well itself was a challenge due to the proximity of the river and high groundwater table. To address this, a slide rail shoring system was used for the wet well's excavation, in conjunction with an educator well point dewatering system.



*Pipe fusing rig, joining two sections of watermain*



*Staff installing flexible pipe*

Several “at-risk” plant and animal species were found to be present within the wooded area at the eastern end of Knox Road East. Ainley Group worked closely with the MNR’s Species at Risk Biologist and Town staff to develop a plan to protect ten endangered Butternut trees found within the contract area. Measures also were taken to protect the endangered Eastern Hognose snake also present in the area.



*Temporary water pipe strung through wooded area (River Road East dead end)*



*Eastern Hognose snake*

Knox Road East is a well-established neighbourhood in a cottage-like setting that is

characterized by narrow road allowances and large mature trees. The installation of the service pipes within these narrow corridors had to be completed with great care to minimize tree removal and every effort was made to ensure that area residents were made aware of day-to-day project scheduling. In that Knox Road East is a dead-end street, close attention also had to be paid to access issues and a contingency plan for emergency access during construction was developed in cooperation with the emergency departments.

Construction on the Knox Road East Water Servicing project commenced in June 2013 and was completed in August 2014.