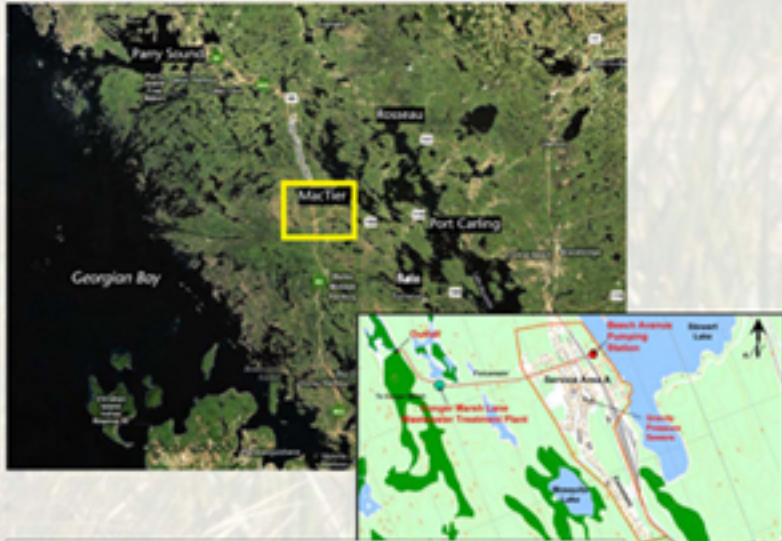


CONGER MARSH Wastewater Treatment Plant



Protecting the **NATURAL HABITAT** while serving **COMMUNITY NEEDS**



Conger Marsh wetland fen

OBJECTIVES

In order to protect the local environment from failing septic systems in the Community of MacTier, the District Municipality of Muskoka designed and constructed the MacTier Wastewater Treatment Plant (WWTP) to serve a projected 20-year population. The goal of the project was to develop a wastewater treatment plant which, in a *socially responsible manner*, protects the aquatic and terrestrial environment in which the plant is situated.

ENVIRONMENTAL SUSTAINABILITY & SENSITIVITY

Water quality was monitored at 6 sites – plants, birds and reptiles were extensively assessed and inventoried. The plant site is also a known



Eastern Massasauga Rattlesnake

Eastern Hognose Rattlesnake

habitat for *endangered Eastern Massasauga and Hognose Rattlesnakes*. The Massasauga Rattlesnake is the only venomous snake still found in Ontario, however due to its small size, it is a minor risk to humans. Design considerations to preserve this habitat consisted of:

- a radio telemetry tracking study monitoring snake gestation sites for two years,
- mitigation measures for the alignment of the access road, and the siting of the treatment plant and outfall,
- an individual from MNR's Reptile Awareness Program provided training sessions for the construction personnel working on the site,
- the access road was constructed with culverts to allow passage of the snakes,
- whenever blasting adjacent to critical habitat areas was necessary, pre-blast inspections were made by a biologist, including seismic monitoring,
- an extensive monitoring program, which will continue for one year past the plant's completion date.

PLANT INNOVATION & ENERGY MANAGEMENT

As the plant discharges to a very sensitive wetland area, a specific treatment process was chosen to provide an extremely *high quality treated effluent*. The plant uses a sequencing batch reactor, tertiary filtration and ultraviolet filtration. Effluent disinfection through ultraviolet (UV) technology (instead of chlorination) prevents the formation of toxic chlorine compounds. In addition to these treatment modifications, additional environmental controls included:

- voluntarily exceeding the already stringent effluent parameter requirements of the Ministry of Environment – specifically, the regulation of nitrates and nitrites, which can affect amphibians,
- mitigation of noise and light pollution effects on the surrounding natural environment,
- extremely efficient HVAC system controls to minimize energy usage,

- dissolved oxygen control within the aeration system to conserve energy,
- SCADA system design ensures reliable and unattended operation to reduce operating and labour costs,
- LEED design concepts – The building architectural details are similar to heritage buildings in Muskoka and the significant cranberry harvesting industry.

ECONOMIC BENEFITS

This project enhances economic sustainability in the Community of MacTier and the District of Muskoka through improved wastewater treatment and the use of *energy management techniques*, high efficiency HVAC systems and a computer control system to minimize the overall costs to treat wastewater for the Community. With a focus on treatment performance, environmental sustainability and being respectful to heritage uses in the area, failing septic systems have been eliminated and the potential achieved for *future economic residential, commercial and recreational growth*.

"This is an exciting project for the District in that the design has a high regard for environmental sustainability and endangered species issues in this Provincially Significant area . . . the consulting engineering services provided by TSH were completed to our satisfaction."

Geoff Bache, P.Eng.
Deputy Commissioner of Engineering and Public Works



Plant Schematic



Detail at Outfall



LEED approach achieved a Control Building design reflecting the local architectural heritage and cranberry industry.

PROJECT TEAM

Totten Sims Hubicki Associates

Prime Consultant

Michalski Neilsen Associates Limited

Natural Environment Impact Analysis

Gartner Lee Limited

Natural Environment Impact Analysis

SENES Consultants Limited

Aquatic Environment Impact

C.C. Tatham & Associates Ltd.

Sanitary Sewer Collection System Design Brief

PEAK Engineering & Construction Ltd.

General Contractor



Association of Consulting Engineers of Canada
Association des Ingénieurs-conseils du Canada



Aquatic environmental inventory

