



Expanded Sewage Treatment Plant Includes Exfiltration Systems with Distribution Chambers to Protect Sensitive Lake.

Project

Exfiltration bed for municipal wastewater treatment plant.

Installation Date

1998

System Owner

Bayham, Ontario, Canada

Port Burwell Facility Manager

Ed Roloson

Engineers

Acres & Associates Environmental Limited
Niagra Falls, Ontario

Permitting Agency

Ontario Ministry of the Environment (MOE)

Contractor

Stone Town Construction of St. Mary's, Ontario

Distributor

C.J. Pink Ltd., London, Ontario

Design Flow

532 m³/d (140,500 gpd)

The cost for sewer extensions and centralized treatment plant expansions is high and not a favored expenditure by most taxpayers. With continued community growth and lack of government funding, municipal managers are enhancing current facilities and coordinating wastewater treatment programs locally to provide cost-effective, ecologically sound wastewater treatment.

The Port Burwell Sewage Treatment Plant sits on the shore of Big Otter Creek near Lake Erie in Bayham, Ontario. Due to steady growth in the surrounding area, expanded wastewater treatment services were needed, while at the same time, protecting the lake. To accommodate the growth, the decision was made to connect the surrounding communities to the area's Port Burwell Sewage Treatment Plant and to explore how this facility could be modified for future efficiency, added capacity, and environmental stability.

Engineers created a conceptual design report for the plant. Based on projected population growth in and around the Big Otter Creek area it was determined that the treatment capacity of the existing Port Burwell plant would have to be expanded from 528 m³ per day to 1060 m³ per day.

A solution converting the originally designed outfall to an exfiltration bed utilizing Infiltrator® chambers saved considerable cost and also provided additional pollutant removal. Key benefits included expansion of the overall plant capacity and a reduction in phosphorous. With the exfiltration chamber system solution, phosphorous is naturally removed by the soil, thereby reducing the impact to the sensitive lake environment.

The chamber gallery is located in the existing plant outfall easement adjacent to the treatment facility. It provides sufficient capacity to discharge the effluent from the Sequenced Batch Reactors (SBRs) on a sequential basis including a 25 percent surcharge. The design also includes inspection ports and manholes so the bed can be physically inspected. The entire bed area is excavated to a depth of approximately 1.2 meters.

A concern from the start was the fluctuating ground water levels in the area, which could result in the bed becoming submerged. The system was designed so that the hydraulics of the plant ensures that the plant effluent will enter the bed and filter through the soil then into the groundwater.

The Port Burwell exfiltration systems has more than met the original capacity projections and environmental requirements. It has performed trouble free according to Ed Roloson, manager of the Port Burwell facility. Fluctuating groundwater levels continue to challenge the project but have been managed through the addition of tiling to control the flow to the exfiltration galleries. In addition, vegetation has grown above the system as planned so that it is nearly invisible to the eye and does not obscure the landscape.



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