

Dockside Green Wastewater Treatment

Building Type: Residential / Office / Commercial / Light Industrial

Development Size: 1.3 million ft² (120,774 m²)

Location: Victoria, British Columbia, Canada

Occupancy Date: December 2007

Application: Wastewater treatment and reuse

Capacity: 50,000 gpd (189 m³/d)

LEED™ Rating: Targeting Canada Green Building Council LEED™ Platinum



Dockside Green is the first community ever to target LEED™ Platinum certification for buildings developed in a master planned community.

Introduction

Dockside Green is a 1.3 million sq. ft. (120,774 sq. m) mixed use sustainable community development on a 15-acre (0.06 sq. km) former industrial site in Victoria, British Columbia. The project is comprised of residential, office, commercial and light industrial assets and will be a global showcase in environmental, social and economic responsibility.

Committed to achieving the highest level of certification under the LEED™ green building program, Dockside Green is the first community ever to target LEED™ Platinum certification for buildings developed in a master planned community.

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Solution

Various renewable energy strategies and “green” technologies will be demonstrated on site as part of an environmental sustainability plan. Examples include biomass heating and domestic hot water, solar water heating, photovoltaics, and small-building wind turbines.

Among the many innovative technologies that make the community development a model of sustainable design, Dockside Green will feature on site wastewater treatment and reuse. A GE Water & Process Technologies Z-MOD* packaged wastewater treatment plant, incorporating ZeeWeed* MBR (membrane bioreactor) technology, was selected to treat all the sewage generated within the community in a compact, odor-free, in-house system. ZeeWeed MBR combines the proven activated sludge process with the absolute barrier characteristic of ultrafiltration (UF) membranes.

The development will treat 100% of its sewage on site and use the treated water for flushing toilets, landscape irrigation and water features. It is estimated that over 52 million gallons (196,841 m³) of potable water will be saved from water efficient appliances and the use of treated water on site for flushing toilets and irrigation. With the potential of a further 18 million gallons (68,137 m³) of treated water available for sale off site, the entire potential



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water savings equal the entire Greater Victoria's regional water use on the driest day of the year.

Furthermore, with 6 potential LEED™ points directly attributed to the onsite wastewater treatment and reuse system, the community is further along in attaining its LEED™ Platinum status.

Members of the Dockside Green community will enjoy a variety of unique on site amenities including shopping and dining facilities, as well as an amphitheatre, neighbor park and dock facilities. All of these amenities will have access to recycled water for applicable non-potable uses.

The recycled water system will serve to irrigate a central greenway running the length of the community that will serve as a main pedestrian artery. Treated recycled water will also feed the Dockside Creek, a scenic waterway flowing alongside the greenway that will play a major role within the community's ecosystem as an essential tool in treating stormwater.

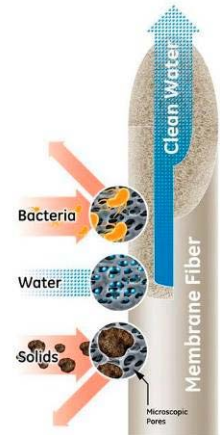
The city will not bill residents for the sewage component charge of the water bill nor for the use of treated water.

Process Overview

The Z-MOD MBR system is designed to treat an average daily flow (ADF) of 50,000 gpd (189 m3/d). A future plant expansion will increase the ADF to 100,000 gpd (378 m3/d) by simply adding additional membranes and ancillary equipment.

Raw water first flows to a concrete bioreactor tank where bacteria consume or digest the biodegradable waste before it enters the membrane chamber where the ZeeWeed membranes are immersed.

Water is gently drawn through billions of microscopic pores on the surface of the membrane fiber via a permeate pump. The pores act as a filter that physically block suspended solids, bacteria and viruses from passing through, producing an exceptional water quality that is completely suitable for non-potable applications.



Ultraviolet units further disinfect the treated water. The sanitized, finished water flows to the water storage tank for use within the community.

ZeeWeed systems recycle ALL gray and black water



Dockside Creek Wastewater Treatment and Reuse System Flow Diagram

