

PROJECT EXAMPLES

Cumberland High Performance Wastewater Lagoon Upgrade (in progress)	
The issue	Cumberland's lagoon-based wastewater treatment system is out of compliance. The effluent from lagoon discharge into Maple Lake Creek and flows into Trent River. During summer this effluent is the only flow in the Maple Lake Creek making the entire 5 km length of the creek as a sewer outfall. As a result, public access is excluded.
The project	The project will upgrade the existing lagoon-based wastewater treatment system to meet regulatory requirements for disinfection, add an engineered wetland for effluent polishing and increase capacity to serve a growing population. The design includes restoration and enhancement of previously drained natural wetland adjacent to lagoon that would receive treated effluent from the upgraded lagoon system to facilitate habitat diversity and public enjoyment of the area.
Adding value for a better planet	<ul style="list-style-type: none"> • The use of wood-sourced biochar media reed bed in engineered wetland will sequester CO₂. • The wetland will help protect downstream ocean shellfish farming area. • Adding disinfection by "peracetic acid" as a fish friendly alternative to chlorine. • Upgrades to maximize the performance of lagoon to meet regulatory treatment requirements, rather than replacing with a mechanical treatment system, that small towns struggle to afford and operate. • the project will help to mitigate the impact of increasingly dry summer due to climate change, reduce nutrients and pathogen loadings, and improve fish habitat in Maple Lake Creek and downstream in the lower Trent River.

City of Nanaimo - South Fork Water Treatment Plant	
The issue	Nanaimo's surface water source was subject to increase in turbidity several times per year, occasionally requiring the issuance of Boil Water Advisories. With climate change impacts, turbidity events were expected to increase. The City's single chlorine injection treatment process was insufficient to remove certain pathogens. This water system did not meet the Vancouver Island Health Authority's surface water treatment policy, thus the need for filtration and disinfection.
The project	The project will meet the new regulations whereby the Vancouver Island Health Authority adjusted the City's Operating Permit.
Adding value for a better planet	<ul style="list-style-type: none"> • The design of the project focus on gravity flow throughout the system and feature the use of a siphon to drive water through the membranes by gravity, saving in excess of \$60,000 per year in power costs. • Almost all the waste from the treatment process is handled on site – the liquid waste is discharged to the engineered wetlands, and the solid waste (sludge) is used as a topsoil amendment by a local company. • The structure can accommodate future growth. Building materials are designed with 75-year life span.

District of Sechelt – Water Resource Centre (Wastewater Treatment plant)	
The issue	District of Sechelt needed to replace two aging wastewater treatment plants to meet capacity and effluent quality demands. The District also faced a significant investment to replace its aging outfall.
The project	Instead of refurbishing both plants, the District built a new plant that met regulatory requirements. The sustainable LEED Gold facility is built with flexibility for expansion. The Water Resource Centre includes a greenhouse that uses innovative organic processes that increase the effectiveness of the treatment process. The design ensured the facility integrates well with the surrounding neighbourhood and the adjacent Sechelt Marsh park.
Adding value for a better planet	<ul style="list-style-type: none"> • The Sechelt Water Resource Centre uses an innovative organic process that includes plants suspended over treatment tanks enclosed in a greenhouse. The plant roots enhance the biological treatment process, making it more efficient, reducing energy and space requirements. • The greenhouse also helps meet the aesthetic objectives for building the facility in a residential area, as well as controlling fugitive odors and noise. • A treatment system that is more cost and energy efficient to operate. • An active use park on the site consistent with the adjacent recreation and residential areas. • Reuse of resources (biosolids, heat). • The building includes a public meeting room that supports educational tours and community events.

These are some ideas how you can add value to your projects while achieving the project outcome.

- Use of natural assets;
- Habitat restoration;
- Improving watershed function;
- Integrated stormwater management;
- Installation of green roof;
- Bioswales/raingarden;
- Groundwater recharge;
- Developing urban forest;
- Stream daylighting;
- Installation of fish passage;
- Reclaiming and reusing wastewater;
- Reclaiming nutrients from wastewater;
- Renewable energy generation;
- Recovery of resources for District Energy & heat systems;
- Reclaiming heat and cold from wastewater;
- Anaerobic digestion of wet organic waste;
- Combustion of dry organic waste;
- Gasification of dry waste to synthesis gas; and,
- Cogeneration of electricity and heat.