FIRST CERTIFIED SUSTAINABLE WINERY IN ONTARIO

CLIENT:	Cave Spring Cellars
LOCATION:	Ontario, Canada
TREATMENT TYPE:	Winery wastewater
CAPACITY:	7,000 – 18,000 litres per day
SYSTEM SIZE:	4 x BioGill bioreactors

SITUATION

Cave Spring Cellars is committed to environmentally friendly and sustainable wine-making. Spearheaded by Dave Hooper, Operations Manager, all processes and management practices at the winery were investigated, looking for smarter, cleaner, more energy efficient methods to reduce the winery's environmental impact in the making of its internationally acclaimed wines. Key focus areas included waste minimization, energy savings and onsite wastewater treatment.

While the local water authority can remove the Biological Oxygen Demand (BOD) in wastewater, a surcharge is levied if BOD exceeds 300mg/L. Taking a proactive approach and planning for future needs, the winery wanted to improve its onsite treatment, reduce BOD levels and hence discharge fees for its current and future wastewater requirements. Conventional technologies required expensive infrastructure investment, so a more compact solution was also required.

SOLUTION

As a first step, the winery set up a pilot BioGill system. This initial project saw BOD dropped from as high as 6,000mg/L to just 48mg/L in 22 hours, well below the required threshold that would trigger municipal charges.

In October 2015, a full scale system using four BioGill bioreactors was installed by EcoEthic Inc., a Canadian wastewater specialist company. Being a compact and modular design, a room was built to house the BioGill units underneath the winery's crush pad, as this required less construction than traditional treatment options.

Cave Spring Cellars.

Cave Spring Cellars was named Ontario's first certified sustainable winery, June 2016.

DESIGN

With differences in production volumes depending on the time of year and the vintage, the treatment process was designed to cope with fluctuating organic and hydraulic loads. During peak production and crush times, this system can treat up to 18,000 litres of wastewater per day. The ability to address lower flows of higher organic loads (in non-vintage periods) was also considered.

Wastewater flows down from the crush pad into two consecutive settling tanks. From there, the effluent moves to a large balancing tank (30,000L) where the composition is balanced for easier filtration. Effluent then goes into the processing tank where it is circulated into the BioGill units. The effluent is delivered to the top of the BioGill units, where it is gravity fed over and down the gills.

BioGill technology harnesses microorganisms, Nature's best recyclers and decomposers, to remove the organic material (BOD) in the wastewater. The microbes grow on the gills effectively digesting the BOD-producing organic materials.

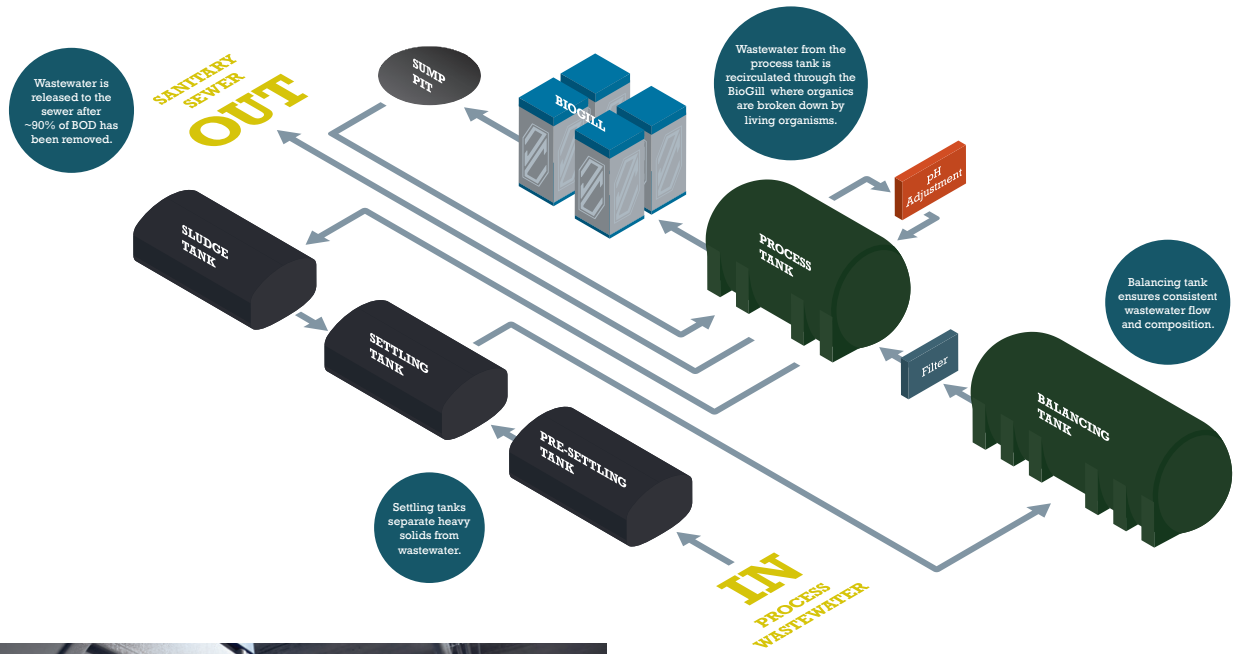
RESULTS

The BioGill system has lowered the BOD in the winery wastewater by up to 99%. Prior to treatment, the BOD from non-vintage loads can be up to 9,645mg/L. Following a 22 hour treatment cycle, the BOD has been reduced to 101mg/L.

Independent testing by the Niagara Analytical Laboratories reports:

	BOD_5	TSS
Pre BioGill	9645	1995
Post BioGill	101	37

In June 2016, Cave Spring Cellars became Ontario's first certified sustainable winery for its wastewater treatment, waste management and energy saving initiatives. Externally audited by Sustainable Winemaking Ontario (SWO), the program was developed by the Wine Council of Ontario (WCO), in order to assist the local wine industry implement environmental best practices. This helps wineries reduce water service costs and helps the local community in its efforts to better manage wastewater for a healthier environment.



Four BioGill units operate at the winery.

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