

Municipal Wastewater Lagoon Utilization

With the support of this grant, Swirltex designed, constructed and commissioned their novel wastewater treatment Swirltex Lagoon Unit (SLU) encompassing membranes and aeration devices for treating and filtering wastewater. The purpose of this pilot was to demonstrate the benefits of the SLU treatment process on the long-term health and capacity of rural municipal wastewater lagoons. Project objectives included demonstration of immediate and long-term effects of the Swirltex Lagoon Unit (SLU) on contaminant and nutrient concentrations in a wastewater lagoon, and evaluation of the quality of filtered water, and the recycling opportunity and logistics of filtered water reuse.



RECIPIENT:
Swirltex Inc.



PARTNERS:
Town of Ponoka,
Town of Crossfields,
Fossil Water Corp.



TOTAL BUDGET:
\$1,046,429



AI FUNDING:
\$460,357



PROJECT DATES:
JAN 2017 -
APR 2020



PROJECT TRL:
Start: 3
End: 7

APPLICATION

This project targeted rural communities struggling with increasing populations and aging wastewater treatment infrastructure. Alberta Environment and Parks reports over 400 lagoons in Alberta will require upgrading in the next 10 years. Upgrading a lagoon to current environmental regulatory standards is costly and a substantial financial burden on the community and its members.



PROJECT GOALS

- Design and construction – This stage involved the design, procurement and construction of the wastewater treatment plant.
- Testing & validation – Once the SLU was operating on a wastewater lagoon, the team measured several parameters as metrics of success. Measurements and data collection included key wastewater quality metrics, such as total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD), ammonia, nitrates and bacterial counts. The team also assessed run time, monitored required maintenance, and learned from operational issues which arose during testing.
- Optimization – Changes were made to the SLU during the life of the project based on learnings from operations, included testing of different aeration devices, membrane modules and pumping configurations.

BENEFITS TO ALBERTA

- Reduced discharge strain on watersheds
- Increase in water re-use
- Reduced consumption of freshwater for industrial and agricultural operations
- Improved wastewater treatment quality and efficiency
- Lower footprint systems
- Potential job creation for highly qualified personnel
- Capital infrastructure cost avoidance for communities
- Potential community revenue from the sale recycled water
- Future revenue generation and market expansion for a local Alberta company
- Swirltex values the communities in which they operate and believes in bringing community members together through a shared desire to improve wastewater treatment and environmental practices.



1 Patent



1 New Product/Service



2 Project Jobs



1-10 Future Jobs

CURRENT STATUS

MAY 2020: COMPLETED

The unit constructed and tested with this funding generated many technical learnings for the Swirltex. It was tested at the Towns of Ponoka and Crossfield municipal wastewater lagoons and is currently being tested at the Edmonton International Airport surface wastewater lagoons. As a result of these operations, the team has identified the technical advantages of the design, as well as some design aspects that needed modifications. The plan is to retrofit the plant according to these learnings.