

# Technical Summary of the Utilidor System of the Hamlet of Resolute Bay

The hamlet of Resolute Bay is a North Baffin community located at 74°43'01"N and 94°58'10"W on the south coast of Cornwallis Island on the Perry Channel. In the early 1970's, the settlement was relocated from the beach area to the present location. The relocated community's infrastructure was designed to accommodate 1500 people, however, in 2012; the population is recorded only 269. There are three water licenses in this community. The airport water license belongs to the GN (ED&T), solid waste management facility belongs to the hamlet and the utilidor systems belong to the GN (CGS).

The greater Resolute Bay area is comprised of the Hamlet of Resolute Bay, with approximately 86 buildings and 269 residents, the airport site (roughly 10 km from the Hamlet of Resolute Bay), and scattered buildings in between.

The Utilidor System (Sewer and Water system) is over thirty-five (35) years old and nearing the end of its useful life cycle. The system consists of:

- The intake pump house is connected by about 2 Kilometers of pipeline to the Water Treatment Plant.
- The Water Treatment Plant composed of a 530 cubic meters capacity water storage tank, the pumping distribution system, water heating system, and heat exchangers.
- The water distribution piping, including 9 (nine) fire hydrants located throughout the community.
- Sewer collection piping system.
- House services connections.
- Sewer treatment consisting of a macerator pump.

The intake pump house is located at Char Lake and the Water Treatment Plant (WTP) located at Signal Hill.

Water for the community is supplied from Char Lake. The Char Lake pump house moves water from the lake to the water treatment plant where it is treated and stored for distribution. Water is provided to all of the buildings in the Greater Resolute Bay Area. The Hamlet of Resolute Bay is served entirely by the Utilidor system with the exception of the RCMP building which still relies on the trucked system. The Airport Site and the Polar Shelf project along with other scattered buildings also rely on the trucked system.

The connection from Char Lake to the distribution plant is through a 150 mm heat traced and insulated HDPE pipeline. This plant uses heating oil fired boilers to provide tempering water for the water storage reservoir and the distribution of water to the community.

At this time the Government of Nunavut has retained the services of **exp** Services Inc. as the prime consultant to undertake the engineering services for this project. The scope of works involved in Resolute Bay's water and sewer system includes the following:

1. Rehabilitation of the Char Lake Pump House
2. Rehabilitation and improvements to the Signal Hill Water Treatment Plant, including improvements to the water treatment process

3. Replacement of the piped water and sewer system within the town site

4. The construction of a new wastewater treatment plant

Due to rehabilitation of the above items 1 and 2, and replacement of item 3, there is no increase in the amount of water to be drawn or location of the pump house intake, or any waste disposal that will not occur as a result of the changes at the water treatment plant.

At present sewage from the utilidor system is macerated and discharged to the ocean. Therefore, there will be no change at the capacity/purpose/disposal of waste, rather expectation in improving the effluent quality at the end of the discharge pipe in order to satisfy the water licensing requirements

This design shall include pre design and detailed design of all system components. The consulting firm will provide an implementation schedule and project milestones they expect to achieve. The consulting firm will also deliver a detailed master schedule outlining the phases that this multiyear project will require.

The upgrades that will be required are to drastically reduce the current water consumption, eliminate the possibility of contamination either from fuel or cross contamination in the access vaults, improve disinfection, reduce the heat loss, and ensure that all systems of the new distribution and collection systems conform to the Nunavut Water Board (NWB) and the Guidelines for Canadian Drinking Water Quality.

This project is planned into three distinct phases. The purpose of Phase One is to pre design a compliant Sewage and Water Works; this must include a topographical and geotechnical investigation.

Phase Two involves the detailed design of a Sewage and Water Works that will service the Hamlet of Resolute Bay effectively for the next twenty five years and a 'Contingency Plan' that can be applied in the event of possible system failure.

Phase three will be the Construction and Warranty.