

Technical Summary of Grise Fiord Water Licensed Facilities

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The Hamlet of Grise Fiord is the most northerly Community in Canada. This is the smallest community in Qikiqtani Region of Nunavut and is located at 76°25'N and 83°01'W in the high Arctic on the southern tip of Ellesmere Island. The population of this community recorded by Nunavut Bureau of Statistics is 157 in 2011. This community is located on a narrow strip of beach near the mouth of Grise Fiord. The land slopes from the beach into a series of low benches for about 100m until it reaches the foot of a steep rock-face. Free gravel deposits predominantly exist in this Community. The depth of the active layer of permafrost is approximately 0.60m.

The current water License # 3BM-GRI 0911, Type B of the Hamlet of Grise Fiord will be expired on July 31, 2011. Water Supply, Wastewater treatment by Lagoon and Solid Waste Management by landfill technology are the main components of this License. Under this License, the current water permit of the community is 7,720 cubic meters annually.

Water Supply: The Hamlet of Grise Fiord currently utilizes melt water from a glacier proximal to the community as a source of potable water. This source is active in summer only for roughly three months of the year. Global warming is suspected in reducing the size of the glacier situated above the Hamlet. Prior to 1978, the community used to use iceberg water as the main source of drinking water. In case of emergency, they still prefer using the icebergs. The community has three storage tanks. Two are active and each capacity of 3,860 cubic meters. This is for domestic use and fire protection as well. The first tank is filled up by gravity directly from the source. The second tank is filled by a pump once the first tank is full. The total storage of both the tanks is about 7,720 cubic meters for 9.5 months period assuming 0.45 m free board and 0.75m dead storage zone with 60 cubic meters additional storage for fire protection.

Sewage Lagoon: The community is treating wastewater by a lagoon system. This facility is located very close to the existing landfill site. Due to airline connections, the Hamlet could not establish the effluent testing program with any accredited laboratory. Last summer INAC engaged summer students for sampling and testing during decanting of the lagoon by siphoning. Hamlet is planning to do this exercise by itself this summer.

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Solid Waste Management: The community is doing Solidwaste Management by using open landfill technology. This site is close to the sewage lagoon and not fenced. Therefore the improvement of the waste management by the community becomes a priority of the community. An engineering consultant, Arktis Solutions Inc., has been hired to design the improvement of the waste management technology of the community. The consultant completed a preliminary conceptual design. The project was declared on hold in order to complete a Nunavut wide feasibility study for waste management technology. The design is scheduled to be completed for Water Board approval in 2011 and construction in 2012-13.