

Technical Report of the Environmental Facilities of the Hamlet of Grise Fiord, Baffin Region, Nunavut.

Grise Fiord, a high Arctic Hamlet of 150, surrounded by cliffs on the Southern coast of Ellesmere Island at 76°25'N and 83°01'W, is a stopover site for researchers and home, predominantly, to Inuit people. The Inuit settlement of Grise Fiord, in the Territory of Nunavut, was the Northernmost permanent settlement of Canada and the world for a long time. The Community is located approximately 380 km North-west of Resolute Bay and 1920 km North-east of Yellowknife. The depth of the permafrost table is about 0.60m. Grise Fiord receives an average of 15.2cm of snowfall each year. The annual precipitation is almost zero. The highest temperature in summer is 10°C and lowest temperature in the winter is -35°C. The average winds generally South-east is 18.5Km/h. Global warming is suspected in reducing the size of the glacier situated above the Community.

Water Supply: The Municipality presently collects water from glacial run-off from a glacier located above the Community. The run off water is stored in the insulated two storage Tanks, each capacity of about 3860 cubic meters. This is for domestic use and for 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 almost full. The total storage of both tanks is about 7720 cubic meters for 9.50 months period assuming 0.45m free board and 0.075m dead storage zone with 60 cubic meters additional storage for fire protection.

The water requirement for 2020 for the expected population of 267 is 9,310 cubic meters considering fire demand of 60 cubic meters (Ref: FSC, February 2000). The water is disinfected by chlorination system and supplied to the Community by trucks. O& M manual is existing for the maintenance works.

Wastewater Treatment (Sewage Lagoon): The Community has a Sewage Lagoon of capacity roughly 19,360 cubic meters. The average depth of this facility is about 4.57m. The sewage is collected by trucks from house to house and discharged regularly to the Lagoon. This is a facultative type aerated lagoon. The Hamlet decants the lagoon annually using a flexible pipe with symphonic technique. The hamlet is in a process of sampling the effluent and testing in a Lab in Ottawa during decanting in each summer. The discharge chute is in good condition. The lagoon is in containment and the berms are structurally sound. No O&M manual is available for this facility at the present time.

Domestic Wastes and Bulky Wastes: The Hamlet collects domestic wastes by trucks from house to house and manages in a land fill site and burns them during each summer. No O&M manual as such is available for this facility. Bulky metals site is located next to the Land fill site. But these metal wastes are segregated without following any specific guidelines.