Project Summary for Nunavut Water Board
Phase I Construction – Jericho Fuel Farm
File NWB1JER0410/D12

With respect to the conditions itemized in the letter from the NWB dated March 30, 2005:

1. General

i. The supply and installation details as described in the Hatch™ Specification report have been provided to Nuna Logistics and their sub-contractor A & A Technical Services, who is responsible for the installation of the fuel farm. The final EBA report is provided along with this report as a separate document.

ii. The A & A Technical reports will be provided to the NWB within 90 days as outlined in the NWB conditions. The surveyed as-built drawings will be provided at the same time.

2. Additional Information

i. The construction of the day tank area has not yet started. It was delayed to allow time to complete the camp accommodations complex. When construction takes place it will follow the appropriate design criteria.
ii. The Phase I pad will be built to Hatch design specifications. On site personnel were advised that it was necessary to meet any or all regulations. The farm meets the NWT WCB regulations of at least 110% capacity of the largest tank. The survey data will be used to confirm the actual as-built containment volume.
iii. The liner used by A & A Technical was manufactured by GSE Products and Services. It is 60 mil HDPE (product code HST060A000). The geotextile was also manufactured by GSE and meets the 16 ounce (540g/m^2) specification (product code GEO1608002).
iv. Snow and ice problems were mitigated as described in the body of this report. Accumulations of snow are not within 30m of any water body.
v. The contractor's QA/QC program includes:
    - Layout of liner material
    - Inspection of integrity of material
    - Repair or replacement of damaged areas
    - Welding of seams of liner material
    - Testing seams (Peel and Shear Tests (lbs./inch))
    - Rewelding of seams that fail (if necessary)
    - Re-testing of seams (if necessary)
    - Approve work.

vi. Schedule for Phase I tank farm construction:
- Survey location (1 day)
- Prepare base with available waste rock material (approx. 1 week)
- Prepare base with finer grained cover material (part of base prep.)
- Install liner (less than 1 week)
- Set Tanks (2-3 days)
- Install and test valves (1-2 days)

Schedule for Phase II tank farm construction:
- Prepare base material (rock and fine material) May 1 (2 weeks)
- Install Liner May 15 (1 week)
- Construct tanks May 22 (6 weeks)
- Install Piping July 3 (3 weeks)
- Install Electrical July 24 (1 week)
- Hydrostatic Testing August 14 (2 weeks)
- Pump out wash water August 28 (1 week)

vii. The omitted tasks were: the day tank pad was postponed and geotextile was eliminated from under the HDPE liner. The day tank pad will be ready for lining in late April. The use of a vibratory packer and high quality of the base material used for Phase I did not require the lower geotextile protection.

3. Monitoring

i. Tahera Diamond Corporation will monitor as requested by the Inspector. There are two natural sumps in the immediate area where all of the snowmelt will collect. From these sumps any excess clean water will be pumped to Long Lake, otherwise it will be left to evaporate.
ii. Tahera Diamond Corporation has hired an Environmental Coordinator and this sampling will be a part of her duties.
iii. Sampling will be a part of the duties of the on site staff and will be supervided by the Environmental Coordinator.
iv. The intention is to run a tee off of the freshwater line that runs from Carat Lake to the main camp. The hydrostatic testing of the tanks will be a part of the construction sequence and water usage will be minimized as much as possible. The test water will be reused from tank to tank and eventually released to the large natural sump to the east of the new site infrastructure. Clean water will be pumped further to Long Lake.

INTRODUCTION

Nuna Contracting Ltd. completed the base preparation for Phase I of the fuel tank farm. When the pad preparation was completed, A & A Technical Services were mobilized to install the liner. Both companies have experience in the preparation of tank farm containment areas north of 60^{o} latitude.

EBA Engineering Consultants had completed a review of the fuel tank farm plan. The recommendations of that report were incorporated into the construction of the tank farm.

BASE SOURCE MATERIALS

The two materials used were the rock from the underground run-of-mine (ROM) waste pile and fine grained material. The waste rock was generated during the underground decline mining in 1995. The rock fragment size was generally about -300mm and was fairly dry and clean. Oversized material was pushed to the outer edge of the pad. Survey calculations show that the ROM placed was on the order of 28,000m^3.

The sand was clean and free-draining – thus "ice-poor". The drill hole description of #96-BGC-07 would adequately describe the area for the upper 2m. Sand used for Phase I totaled approximately 4,300m^3.

CONSTRUCTION

Prior to placement of the fill, the area was carefully cleared of snow and rocks. Survey controls and close supervision were used to ensure that no void spaces would be created from oversize material or melting snow.

In order to protect the underlying soil and possible ice-rich zones from thermal degradation, winter construction has been shown to be optimal. During the time that the ROM rock was being placed, the weather cooperated with cold conditions and only very light snowfall which did not cause accumulations that would be detrimental to quality control.

The ROM fill was placed in two lifts of about 1.5m each, with each packed using a Cat CS573 roller packer. The roller packer was used after an initial track-packing by the D9R Cat dozer. The purpose of the packing was to ensure a firm base so that differential settlement would be minimized and to create a uniform non-frost susceptible base. The depth of fill and method of placement meets the EBA recommendation for permafrost protection.

Sub Arctic Surveys were contracted by Nuna Contracting to provide survey control during the construction. Once the ROM subgrade met the design, the fine material placement began. Nuna site supervision monitored all aspects of the fill placement.

The fine material used to cover the ROM material was checked during loading and any large cobbles put to one side. The material was placed in two lifts of about 0.25m each and packed by the roller packer. Packing helped to minimize losses into ROM voids.

A & A Technical was on site and worked with Nuna Contracting to ensure that the fine material placement was ready for HDPE liner installation. The liner was protected by the use of 540 g/m^2 (16 ounce) non-woven geotextile. The geotextile was applied above the liner before the addition of the esker material. The geotextile was not required below the liner because the liner installation company was satisfied that the base material and vibratory packing had produced a top quality base.

The HDPE liner used by A & A was 60 mil manufactured by GSE. The welding was done by trained A & A technicians. Their work was checked for quality control by Al Harmon. As the panels were release, the protective sand cover was placed concurrently. Clark Builders installed the valves and piping between the tanks.

POST CONSTRUCTION

Sub Arctic Surveys have placed prisms on the tanks and will be monitoring the tanks regularly for potential settlement. If settlement does occur, the fuel will be transferred to an empty tank and then the offending tank will be re-leveled.

Thermistor cables were not installed in Phase I due to the depth of fill and absence of obvious ice rich soils.