Government of Nunavut
Pond Inlet Contaminated Soil Landfarm
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PROJECT SUMMARY OF POND INLET LANDFARM

The Pond Inlet Landfarm design is based to provide aerobic treatment of soils contaminated with petroleum hydrocarbons of a diesel/heating oil variety. This process relies on biological degradation and volatilization to remove hydrocarbon-based compounds. To implement the landfarming process, the soil is generally spread in a thin layer (0.15 m - 0.30 m deep) over an area, and then tilled on a regular basis to promote aeration and stimulation of microbial activity. If the soil thickness is increased the process will work equally well, however, the duration of remediation will also increase. Similar to ex-situ bio-pile remediation, nutrients, moisture and microbes may be added to accelerate the biological degradation of hydrocarbon impacted soils. In some instances, landfarming must be performed over an impermeable liner to prevent the migration of contaminants (leachate) into the underlying native soil and ground water.

The subject landfarm cell is designed to accept hydrocarbon contaminated soil. No site specific information was used for the design of the landfarm. The landfarm was designed with an area of 6400 square meters and is located within a fenced area.
The cell is approximately 1.8 m in height and 70 m by 70 m in length and width respectively. The surrounding berm is constructed of re-compacted native fill, and covered with an impermeable membrane that is keyed into the top of the berm on all four sides. The impermeable membrane is comprised of a 300 mm Arctic Liner® that is underlain and overlain by a 10 oz/yard Non-Woven Geotextile, and covered by 50 mm of fine granular material.

The slopes of the berm are 2.5:1 on the inside slope and 2:1 on the outside slope. A 1.2 m deep (7 m square) retention basin has been constructed in one corner of the landfarm containment berm, and filled with fine granular material. A 100 mm High Density Polyethylene (HDPE) perforated leachate collection pipe is located at the bottom of the retention basin, connects to a solid pipe on the sloped face and runs to the top of the berm. The leachate collection pipe can be used to control moisture content by removing leachate or water from the retention basin and spraying back onto the contaminated soil.