Introduction

Soils impacted by petroleum hydrocarbons in Baker Lake require proper containment and treatment. With proper treatment, concentrations of contaminants in these soils can be reduced to appropriate levels for re-use.

Background

The Baker Lake Bulk Fuel Storage facility stores fuel for the community and the adjacent gas station. The site contains eight aboveground storage tanks. There is an aboveground steel pipeline to the east of the site, connecting the fuel storage tanks with Baker Lake, 300 metres to the south.

In 2021, a gasoline spill estimated at 10,000 litres was discovered at the facility. The source of the spill was identified as a ruptured drain valve on the pipeline. The leak was stopped upon discovery, and the spill was believed to be contained within the protective berm surrounding the fuel tank farm.

At the end of March 2021, gasoline was detected outside the tank farm's berm. Nunatta responded to this spill, and managed the initial stages of the cleanup. Nunatta managed the retention, sampling and treatment of water potentially impacted by the fuel spill. Nunatta collected soil samples and identified and delineated impacted soils.

The impacted soils have been temporarily stored near the tank farm.

Construction of a Land Treatment Unit (LTU) would allow for the treatment and re-use of these impacted soils. The Hamlet of Baker Lake has selected an area northwest of the built up area and north of the airport for the LTU. This parcel of land (Lot 454, Plan 4945) has been surveyed to use as the LTU site.

Purpose

To remediate impacted soil from a spill at the Baker Lank tank farm.

Project Team

Sulaimon Ayilara, PPD Project Manager

Nunatta Environmental Services Inc, Environmental Advisor

Construction of Land Treatment Unit

The project envisions the construction of a lined treatment cell on the proposed site.

The landfarm will be constructed by stripping surficial soils within the LTU location as required to construct berm. Stripped top soil materials will be temporarily stockpiled in a designated location in proximity to the LTU.

The contractor will use the stripped soil and locally available pit run to build the soil berm along the LTU perimeter. Stockpiled backfill soils shall be tested prior to use and analytical parameters should be confirmed to be below relevant guidelines.

The LTU will be approximately 35 metres by 50 metres measured from the centrepoint of the berms. The base and walls of the landfarm will be made from compacted granular fill and sand. A non-woven geotextile will be placed on top of the sand, and a high-density polyethylene liner will be placed on the geotextile. Sand and aggregate will be placed on top of the liner.

Construction details of the proposed landfarm are shown on attached figures C-01 through C-05.

A fence will be constructed around the boundary of the site. A locked gate will be placed to allow access to the LTU.

Impacted soil will be transported from the tank farm to the LTU.

Soils will be treated by turning them to allow for aeration and adding nutrient amendments as required. Soils will be sampled regularly, and when concentrations are below regulatory guidelines, they may be re-used.