



ADVENTUS

Proven Soil, Sediment, and Groundwater
Remediation Technologies

Field Profile TERRAMEND®

Project

Ex Situ Treatment of Soil Containing Hydraulic Oil and Diesel Fuel
Former Manufacturing Facility
Confidential Client
Georgetown, Ontario

Summary

Ex situ treatment of approximately 4,000 tons of soil impacted with hydraulic oil and diesel fuel at a former manufacturing facility in Georgetown, Ontario were treated using Adventus' TERRAMEND® technology. TERRAMEND effectively reduced contaminant concentrations to below the remedial goals in approximately 10 months of treatment.

The Challenge

Our goal was to achieve the remedial standard of 1,000 mg/kg of heavy oils and 100 mg/kg for gas/diesel in all sampling zones. At this site the client was particularly sensitive to treatment costs, and a very low cost approach was required. Due to the constraint treatment proceeded more slowly than otherwise possible, resulting in lower remedial costs.

The Solution

Prior to the application of TERRAMEND, the soil was excavated and placed in a lined remediation cell to a thickness of approximately 2 feet, and was then tilled in order to ensure homogenization. Following cell preparation, TERRAMEND was applied using a site-specific aerobic protocol. The technology involved the addition of nutrients and proprietary organic amendments to optimize the rate of microbial activity in the soil. The process also required the maintenance of soil moisture content at approximately 50% of the soil water holding capacity. Maintenance of the soil moisture content was accomplished through irrigation and tillage. Tilling was performed using a specialized deep rotary tiller with the ability to till to a depth of 2 feet.

The Result

Active treatment of the soil occurred within the treatment cell for a period of approximately 12 months, from August 2000 to September 2001, with a 5 month inactive period from December 2000 to April 2001. During this period, soil hydrocarbon concentrations were reduced by approximately 99%. All hydrocarbon concentrations were reduced to less than the established remedial standard of 1000 mg/kg for heavy oils, and 100 mg/kg for gas/diesel in all sampling zones. Following treatment, the mean concentration of the gas/diesel range hydrocarbons was 3 mg/kg while the mean concentration of heavy oil hydrocarbons was 67 mg/kg.

The Cost

The cost to treat soil at this site was US\$20/ton of soil treated. This cost included all cell construction and treatment application costs and excluded excavation and final disposition of treated soil. Decommissioning of the treatment facilities and end-point analytical costs were also excluded.

The Timeline

Approximately 12 months, from August 2000 to September 2001, with a 5 month inactive period from December 2000 to April 2001.

Table 1: Results of TERRAMEND® Treatment on Total Petroleum Hydrocarbons

	<i>Initial Soil Characterization</i>	<i>1st Progress Sampling</i>	<i>2nd Progress Sampling</i>	<i>Final Progress Sampling</i>
Gas/Diesel Range	-- ¹	--	27	3
Heavy Oil Range	--	--	608	67
TPH	7,820	678	625	70
RDE² (%)		91	92	99

1. Not determined.
2. Removal and Destruction Efficiency for TPH.

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