

Case 11:

15.000 CUBIC METERS OF SLUDGE AND SOIL CONTAMINATED WITH LUBE OIL



EKOGRID™ technology was used to remediate hydrocarbon impacted sludge in a former sewage lagoon in Moncton. Contaminants of concern were mainly petroleum hydrocarbons (BTEX/TPH). The area remediated was approximately 7500m² with a total volume of over 15.000 m³ of sludge remediated.

Petroleum hydrocarbons levels prior to remediation were up to 23.000 mg/kg. The source of the contamination was primarily lube oil, which typically degrades very slowly due to the antioxidant additives.

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The area was zoned for residential development and contamination levels where required to be reduced to levels agreed with the local authorities. The soil in the area was a sandy silt/clay and gravelly sandy silt/clay. Groundwater was not included in the EKOGRID remediation scope. Contamination was mainly in the sludge separated from the groundwater by the clay layer. The remediated zone was at depths of 0-2,5 meters.

Low electric conductivity of the soil at this site allowed for this volume to be treated with only one EKOGRID control unit. In total, 160 electrodes (10 mm diameter steel rebar) were installed on a 5-meter grid pattern in the contaminated area.



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Site sampling was conducted by the contracted Environmental consultancy. The site was initially sampled from a total of 12 locations and subsequently from 3 areas identified as most contaminated. Sludge samples were collected on several occasions between September 2017 and October 2019. The Modified TPH concentrations at the most contaminated location are shown in the table.

Date	Monitoring result	Reference
Sep 11, 2017	23,000 mg/kg (lube oil)	Exceeded Tier 1 RBSL
May 17, 2018	22,000 mg/kg (lube oil)	Exceeded Tier 1 RBSL
May 8, 2019	13,000 mg/kg (lube oil)	Exceeded Tier 1 RBSL
Jul 5, 2019	11,000 mg/kg (lube oil)	Exceeded Tier 1 RBSL
Oct 19, 2019	4,600 mg/kg (lube oil)	Below Tier 1 RBSL
Nov 7, 2019	6,700 mg/kg (lube oil)	Below Tier 1 RBSL



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Based on the last two sampling events, the Modified TPH *concentration* in the sludge were under the local remediation legal requirements and the clean-up was considered complete.

The EKOGRID™ System degraded the targeted organic pollutants in 20 months to concentrations well below the levels required by the local regulations. Usually, EKOGRID projects target lower levels of residual contamination, working to meet clients and regulators requirements. This project provided a great result especially considering the difficult environmental conditions such as low electric conductivity of the soil and long and cold winter periods.

