

In-Site Thermal Remediation at Complex DNAPL Canadian Rail Yard Site

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In Situ Thermal Remediation (ISTR) was implemented at a Canadian rail yard to address a dense non-aqueous phase liquid (DNAPL) source zone. The primary DNAPL source zone was located under an actively used building and had resulted in a groundwater plume of dissolved level contamination extending three kilometers off-site. The plume is within a complex braided stream lithology and underlies several residential neighborhoods. Historic remedial technologies implemented on-site have included in situ chemical oxidation (ISCO) for the source zone and a Groundwater Pump, Treat, and Reinjection System (GPTRS) at the property boundary for control of off-site plume. The ISCO applications had some success in reducing dissolved phase concentrations within the source zone but lesser success in addressing DNAPL. The GPTRS commenced operations in 2005 with an expansion of the system in 2015. The GPTRS has resulted in decreased levels of contamination in groundwater off-site over its operation.

Based on the Conceptual Site Model (CSM) a combined ISTR approach using Electro-Thermal Dynamic Stripping Process (ETDSP™) and Steam Enhanced Extraction (SEE) was utilized at the DNAPL source zone to remove the remaining DNAPL and thereby eliminating the mass flux of the contaminant to groundwater, and thus eliminating the off-site plume in a shorter timeframe.

The ISTR system commenced operations in March 2016. The system is expected to operate for approximately 7 months. Results of the system implementation and operation will be presented.