

CASE STUDY

PHC REMEDIATION USING A PERMEABLE REACTIVE ZONE IN NEPEAN, ONTARIO



BACKGROUND

CLIENT: LANDOWNER

DURATION: 1 DAY

LOCATION: NEPEAN, ONTARIO

At an active gas bar in Nepean, Ontario, assessments determined that the groundwater was impacted with petroleum hydrocarbons (PHCs). To mitigate potential risks and liability, IRSL was contracted to implement a permeable reactive barrier (PRB) to treat the groundwater prior to it flowing off site.

APPROACH

IRSL addressed the dissolved PHC impacts by injecting a combination of electron acceptors and colloidal activated carbon (CAC) using direct push technology (DPT). The CAC, (Petrofix™) was used to adsorb the PHCs in the groundwater and the electron acceptors were used to enhance the biodegradation of the PHCs.



GEOLOGY: Fill + Glacial Overburden

PLUME SIZE: 25 m wide

Design + Application

The mass flux of PHCs flowing across the property boundary was calculated and a design based on the flux was developed.

The PRZ was completed using 22 direct push points over a 1-day period. Flow rate, injection pressure, total volume, reagent masses, solution was tracked for each point. A total of 711 kg of Petrofix and 198 kg of ORM were injected.

Challenges

- The small working area of the active facility required a very small footprint.
- Sub-zero temperatures
- The active gas bar had high volumes of traffic
- Heterogenetic geology

Results

- The PRB was installed on time and budget without affecting gas bar operations
- The flux of PHCs was reduced by greater than 99.4%



InSitu Remediation Services Ltd. (IRSL) is one of Canada's most experienced remediation companies. Our team has designed, implemented, and optimized, soil and groundwater remediation programs in diverse geological environments in North, Central, and South America, Asia, Europe, and the Middle East.

We confidently implement innovative solutions, based on sound knowledge, using seasoned field staff. Our pragmatic, flexible approach reduces effort, cost to our clients, and environmental risk.

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