

BOS 100® and GeoTAP™: Economical Replacement of Legacy Remediation System

Summary

- Location: British Columbia, Canada
- Source treatment area: 8,200 ft² (760 m²)
- Lithology: Dense till with cobbles and heaving sands
- Depth to water: 29.5 ft (9 m) below grade
- COCs: PCE, TCE, cis-1,2 DCE, VC
- Implementation method: Direct push/GeoTAP™
- Technologies: BOS 100®

Challenges and Objective

A former dry cleaning site in western Canada, adjacent to residential and school properties, was remediated using BOS 100 to address groundwater and vapor intrusion by PCE, TCE, cis-DCE, and vinyl chloride. The GeoTAP injection method—combining rotosonic drilling and direct push technology—enabled precise placement of BOS 100 at targeted depths within challenging glacial till and underlying sands and silts. Product placement was guided by saturated soil analytical data from the sonic drilling phase. After a successful pilot test, full-scale implementation (Figure 1) in 2021 resulted in a substantial reduction of contaminants, allowing for the decommissioning of the groundwater treatment system in 2022. Project objectives included reducing PCE concentrations, discontinuing groundwater treatment, supporting human health and ecological risk assessments, and securing risk-based Certificates of Compliance from BC ENV for both the site and affected off-site areas.

Approach

A pilot test was implemented in 2019 with six injection points (IPs) using GeoTAP; two postinjection boreholes were drilled to verify the distribution of BOS 100. Full-scale injection of BOS 100 was completed in 2021. Following access with the GeoTAP method, 105 IPs were completed on-site.

Results

The pilot test was successful in reducing PCE concentrations at the target well by 2 orders of magnitude (Figure 2), and optimized emplacement of the amendment was demonstrated using confirmation soil borings. These outcomes supported the plan to move forward with the full-scale injection event. Currently, the PCE concentration at the pilot test target well has been reduced to 1.46 ug/L, a 99.99% reduction compared to baseline (pre-pilot test). The onsite pump and treat system was decommissioned in 2022 based on the results obtained by the full scale remediation effort. The site is currently in a long-term monitoring program.

