

Former Service Station Site with Hydrocarbon Contamination Effectively Treated with Enhanced Aerobic Degradation

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During a property transaction in 1999, a series of Phase I, II, and III environmental site assessments were conducted at a former service station site near Calgary, Alberta, Canada to investigate the extent of subsurface soil and groundwater contamination beneath the property. The service station operated for approximately 55 years, until 1970. The site was redeveloped in the early 1970's, with the construction of a single story commercial building. In 2001, most of the hydrocarbon contaminated soil was excavated, with the exception of a small area beneath the northwest corner of the building. During the excavation, five underground storage tanks associated with the former service station operation were discovered. A new network of monitoring wells was installed to further evaluate the degree and extent of residual hydrocarbon contamination in the groundwater since the majority of the source material had been removed. The groundwater monitoring results revealed that contaminant concentrations had declined significantly in all but two of the monitoring wells located adjacent to the building (TH02-1 and TH02-7). One of these two monitoring wells was located within the area of contaminated soil that could not be excavated (TH02-1). The town in which the site is located is on a shallow groundwater supply, therefore the provincial drinking water guidelines have been prescribed by Alberta Environment as the target remediation objectives for the site. In 2005, regulatory approval was granted to treat the contaminant plume with ORC Advanced[®] to enhance the natural biodegradation of residual hydrocarbons in the groundwater. Post injection monitoring has shown that in the first year following the injection, the concentrations of F1 and F2 hydrocarbons were reduced by 90% in both TH02-1 and TH02-7. The BTEX concentrations in TH02-7 were reduced by 90% within the first year and by 50% in TH02-1. The remaining contaminated soil that could not be excavated may be partially hindering reduction in TH02-1. Monitoring is on-going as concentrations within groundwater continue to decline.