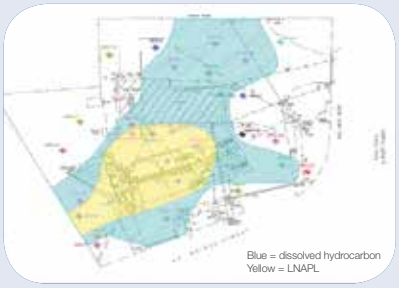
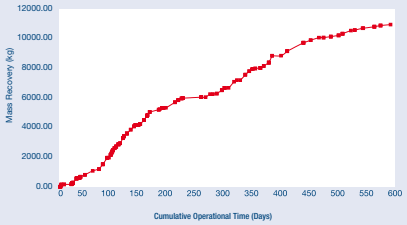
CASE STUDY

REMEDX rethink remediation

Air-sparge-enhanced soil vapour extraction for treating hydrocarbon-contaminated soil and groundwater



Inferred dissolved hydrocarbon and LNAPL plume (2009)



VOC mass recovery

Geological cross-section

Remediation compound

Background

As a consequence of historical contamination and a gasoline release in 2007, light nonaqueous phase liquids (LNAPL) were detected in the soil and groundwater beneath an operational service station.

Previous site investigations had indicated that the made ground, sand and gravels were contaminated by total petrol hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylene (BTEX). The affected geology beneath the site comprised alluvial deposits underlain by floodplain gravel and upper chalk, both classified by the Environment Agency as principal aquifers. The underlying chalk aquifer was unaffected. A waterway approximately 80 m to the east was classified as river quality grade A.

Remediation

In March 2010, the site was closed for redevelopment, during which time RemedX coordinated the excavation of the affected soil (1500 m^3) within the main source area in combination with tank removal and the installation of below-ground infrastructure. Over two weeks, 48 wells were installed using hollow-stem auger drilling. Of those, 15 were sparge wells and 33 were soil vapour extraction wells designed based on the findings from a pilot test completed by RemedX on-site. Dedicated home-run pipes were installed to connect each well to a manifold in the remediation compound.

RemedX designed and installed a full-scale air sparging and soil vapour extraction system on-site. This was operational from August 2010 until February 2012. A total of 10,952 kg of volatile organic compounds (VOC) was extracted.

The results from groundwater sampling during February 2012 showed that the overall TPH and BTEX concentrations had significantly decreased on-site compared with the baseline data (June 2010). The percentage decreases ranged between 84 and 100%.

The remediation system was shut down because the system VOCs reached asymptotic levels and all the water samples showed a significant decrease in contamination. Most of the boreholes showed concentrations below the target levels. The system was decommissioned in August 2012 after three months' of post-remediation monitoring that confirmed no contaminant rebound at the site and acceptance from the authority.

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