

GTR | Case Study:

Hunters Point



In Situ Thermal Remediation with Gas Thermal Remediation (GTR[®]) is being used to remove NAPL contaminants from a former military base. The system is extracting nearly 1,000 liters of liquid waster every week. LNAPLs, such as fuel and oils, and DNAPLs, such as PCBs and chlorinated solvent, are being removed from the subsurface to make way for a residential homes.

Project Description

Permitting and Preparation: Three permits were obtained for onsite thermal remediation activities: (1) a USEPA review and remedial action plan was approved; (2) an air quality management district permit was constructively obtained; and (3) a county permit for the use of temporary propane tanks was constructively acquired. All permitting was accomplished within 30 days of project contracting.

Remediation Implementation

Soil and NAPL samples taken from the former oil retention area showed NAPL was present from 1 meter to 7 meters bgs. Former testing showed that “cold” pumping of the NAPL was ineffective, due in part to the high viscosity of the oils. The thermal design called for simultaneously heating the soil, groundwater and NAPL to 100°C, while extracting heated oils from the treatment zone. Heating of the NAPL drastically reduced its viscosity, resulting in exponentially higher extraction rates. The formation of in situ steam helped mobilize the oil to proximate extraction wells.

Seventy-two (72) GTR[®]-type thermal conduction heating wells were installed during construction of the project. Baseline soil and NAPL samples were collected at time of construction revealing a maximum contaminant concentrations of over 40,000 mg/kg. In situ heating and NAPL extraction continue to date, and over 10,000 liters of NAPL has been extracted so fare. An average of 235 kW per ton of soil is estimated for thermal heating during the six months of active “gentle” heating and oil extraction.

In Situ+NAPL Extraction

Consultant: Insight, CDM Smith

Neighborhood: Suburb, military

Heating Tubes: 72

Target Temp: 100 °C

Heating Period: 125 Days

Target:
Elimination of mobile NAPL

Destruction Rate Efficiency:
> 90%

Contaminant:
Petroleum Hydrocarbons, Oils,
PCBs, Chlorinated Solvents,
Phospates