

GTR

Case Study:

EPA Region 9



In Situ Thermal Remediation was used to successfully treat benzene, TPH-d, TPH-mo, BaP, and Naphthalene from a former gas plant in EPA Region 9. Gas Thermal Remediation (GTR™), using Thermal Conductive Heating (TCH), raised the temperature of the soils in the treatment zone of the former MGP site to an average temperature of approximately 325 degrees Celsius.

Pilot Study Remediation

The COC(s) identified at the Site include total petroleum hydrocarbons in the diesel (TPH-d) and motor oil (TPH-mo) range, as well as benzene, xylene, naphthalene, benzo(a)pyrene (BaP) and contaminants qualified as BaP equivalents detected in soils. The maximum detected soil concentration was 54.7 mg/kg (BaP equivalent value), as measured at sample TCH-1-1. The maximum TPH-d concentration was 1,600 mg/kg and the maximum TPH-mo concentration was 2,700 mg/kg. The highest VOC concentrations were observed in the TCH-1 and TCH-14 borings.

The treatment volume was defined for the pilot study as all soil in the vadose zone from 0 to 15 feet bgs in the area surrounding RI Boring B6-6. To ensure that all soils were effectively heated in the treatment volume, wells were placed 5 feet deeper than the bottom of the treatment volume, resulting in a heated volume larger than the treatment volume.

A total of 7 GTRTM heaters and 14 TCH locations were utilized for the pilot study (one GTRTM heater used to heat two TCH wells, the second TCH well applying reheat combustion air from the first TCH with GTR heater are called “reheat” wells). The well layout design was optimized after the start up of the project on October 4th. In December, four additional GTR heaters were added to supplement heating in certain areas.

The pilot test project of 14 heating wells at EPA Region 9 was successful. The remediation goal of decreasing the Benzo(a)pyrene equivalent contaminants to the target level of less than 0.9 mg/kg was observed in all samples analyzed at the completion of the project.

ISTR Overview

Neighborhood: Industrial

Heating Tubes: 14

Target Temp: 325 °C

Heating Period: 130 Days

Target: 0.9 mg/kg for Benzene

Contaminant:

TPH-d

TPH-mo

Benzene

Naphthalene

BaP

Geology:

Silty Sand

Clay

Well to Poorly Graded Sand

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