

GTR | Case Study: Cuyama



Ex Situ Thermal Desorption was used to successfully treat TPH-d and TPH-g from a former AST spill site in Central California. Affected soils were excavated and then placed “in a pile”, and Gas Thermal Remediation (GTR©) horizontal wells were placed into the pile during its three day construction. The piled soils represented mixed sands and high TOC soils, totaling a treatment volume of 77,692 ft³.

Full Scale Remediation

Based on the site conditions and localized area of impact, soil excavation was conducted in April 2012 to remove soil impacts at the source area. Soil samples were collected from the excavation pit and revealed TPH-d concentrations of 2,340 mg/kg. A total of approximately 20,000 cubic yards of diesel impacted soil was removed from the vadose zone to a depth of 5 feet bgs and stockpiled approximately 100 feet north of the source area above a non-permeable and non-reactive Visqueen barrier. The pile footprint measured approximately 124 feet by 38 feet with an average height of 14 feet. The angle of repose measured approximately 40 degrees.

Thirty-six GTR©-type thermal conduction heating wells were installed during construction of the Ex-Situ Thermal Remediation pile. Baseline soil samples were collected at time of pile construction revealing a maximum TPH-d concentration 31,900 mg/kg and an average TPH-d concentration of 9,645 mg/kg. Soil heating and LNAPL extraction continued for an average duration of forty-five days, to an average target treatment temperature of 200°C. An average of 191 kW per ton of soil was used to thermally remediate the treatment volume. Post treatment soil sampling of 16 soil samples confirmed maximum concentration of TPH-d of 570 mg/kg and an average concentration of 106.5 mg/kg verifying a 99.7% reduction in concentration from baseline sampling. The project achieved remedial goals without disruption of site activities, was granted a No Further Action notice, and was approved for reuse of treated soils onsite as road base. Ex Situ Thermal Desorption was used to successfully and cost effectively treat TPH-d and TPH-g from a former AST spill and sustainably reuse the soil onsite at this site in central California, USA.

ESTR Overview

Consultant: EDD

Neighborhood: Suburb

Heating Tubes: 36

Target Temp: 200 °C

Heating Period: 45 Days

Target: <100 mg/kg

Destruction Rate Efficiency:
> 90%

Contaminant:
Petroleum Hydrocarbons

Geology:
High TOC, Silts, and Sands