

PROJECT SNAPSHOT

Thermal Treatment of Deep Bedrock

TCH

Location: Southern California

Client: Confidential

Contamination: TCE

Volume: 18,350 cy

Goal: Achieve risk-based target concentrations in soils/rock and groundwater

Number of Heaters: 40

Duration: 5 months of operation

Mass Removed: 254 lbs.

WHAT MAKES THIS PROJECT UNIQUE?

The CVOCs at the site, mainly TCE, had created a source zone to a depth of 100 feet, with fractured granitic bedrock located from 30 to 70 ft bgs and underlain by massive granite to the bottom of the treatment zone. The exact source zone and volume were not fully delineated when the wellfield was installed, so design was adapted as the project progressed.

Important Project Details

- **Approach:** For the thermal design, every heater boring was equipped with a co-located soil vapor extraction well, allowing for the best pneumatic connection to the bedrock fracture system. The concentration of TCE in these vapor streams from individual wells was used to gauge remedial completeness. Our Tier-One containerized treatment system was utilized to treat the contaminants.
- **Challenges:** The exact source zone and treatment volume were not fully delineated when the wellfield was installed. TCE was present in fractures deep below the water table. Water was located at 50 ft. bgs. The fracture network was not well understood and as such, a robust vapor recovery system was essential.
- **Results:** After the mass removal had peaked, three successive rounds of sampling of the extracted vapors were completed to document asymptotic TCE concentrations. TCE vapor concentrations at heater locations were decreased 99.98% during operation, while the concentrations at nested soil vapor probes located at the midpoint between heater borings decreased 99.9%.



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