

PROJECT SNAPSHOT

SEE/TCH Remediation at a Former Manufacturing Site

TCH/SEE

Location: California

Client: Burns & McDonnell

Contamination: CVOCs (TCE and PCE)

Volume: 15,392 cy

Goal: >95% Uptime and Mass Removal

Heaters and SEE Wells: 51 TCH and
8 SEE Wells

Duration: 5 months of operation

Mass Removed: 22,386 lbs.

WHAT MAKES THIS PROJECT UNIQUE?

The site consisted of two adjoining parking lots at different elevations, separated by an 8-foot retaining wall. The source zone was located below portions of both lots. The target treatment zone (TTZ) extended from 10 to 100 ft bgs and TCH was used to heat the upper portion of the soil. However, the lower 20 ft of the source zone extended into a high-flowing aquifer, where steam was utilized to ensure that thermal treatment goals were met.

Important Project Details

- **Approach:** A total of 51 heater wells were used to heat the interval from 10-80 ft bgs, while 8 steam injection wells supplied heat below the TTZ from 80 to approximately 100 ft bgs. A total of 3,620,000 lbs of steam was injected. Several existing well locations were reused as temperature or pressure monitoring points to reduce drilling costs.
- **Challenges:** The bottom of the site was underlain by a high flowing aquifer with flow estimated velocities of more than 1,000 ft/year. In order to heat the lower portion and reduce the amount of groundwater entering the heated zone, TCH was combined with Steam Enhanced Extraction (SEE).
- **Results:** Over the course of the 150-day operational period, over 22,000 lbs of chlorinated organic compounds (CVOCs) were removed from the source zone. This was more than double the estimated starting mass of CVOCs in the treatment zone.



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