



TERRATHERM

Think Thermal

Southern CA CVOC Site

Site Information



At a former manufacturing facility located in Southern California, a pilot test was completed where ISTD was used in conjunction with an existing dual-phase vapor extraction (DPVE) system to remove CVOCs from the subsurface. The primary Contaminants of Concern at the site were as follows:

- 1,2-Dichloroethane (1,2-DCA)
- Trichloroethylene (TCE)
- Vinyl Chloride (VC)

The pilot test encompassed an area approximately 6,500 ft² located within the existing network of DPVE wells. This area was selected because soil concentrations of 1,2-DCA remained above 1,000 mg/kg below the water table after 3 years of operation of the DPVE wells. The total volume included in the pilot test area was approximately 9,600 cy.

Subsurface Geology/Hydrogeology

The geology consisted of sandy silts and clays to a depth of approximately 40 feet below ground surface (bgs). The hydraulic conductivity of the sandy silts and clays located below the water table ranged between 5×10^{-5} to 5×10^{-7} cm/s. The depth to groundwater within the sandy silts and clays was ~20 feet BGS. Heating extended to 35 feet bgs, nearly to the top of the A-Zone sandy aquifer.

Project Goals

The objective of the pilot test was to demonstrate that contaminant mass removal from below the water table could be enhanced by heating the subsurface and to determine what remedial goals could be achieved with a full-scale thermally enhanced soil vapor extraction (TESVE) application.

Project Approach

The design consisted of converting 6 existing Vapor/Liquid Extraction (VLE) wells to heater-vacuum wells, and installing 23 heater-only wells for a total of 29 thermal wells spaced approximately 22 feet apart. Aside from the six converted VLE wells and one additional VLE well located adjacent to the ISTD treatment area, all remaining VLE wells in the existing remediation system continued to operate in their normal mode during ISTD operations.

Project Results

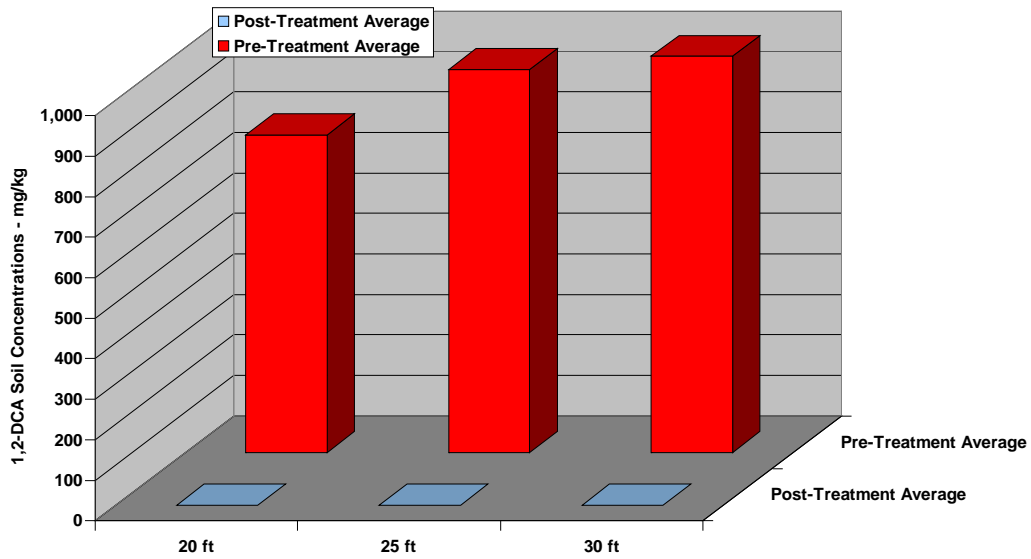
Pre-treatment soil concentrations were reduced by more than 99.9% within the heated zone (table below). Even at the depth interval below the treatment zone (i.e., 35 feet bgs), soil concentrations were reduced by more than 95%.

1,2-DCA Results Following Pilot-Test of TESVE at Southern CA Site.

Depth	Pre avg (mg/kg)	Post avg (mg/kg)	% reduction
20	785	0.01	99.998
25	945	0.01	99.999
30	978	0.67	99.932
35	2,864	138.8	95.155
Average			98.771

Note: Post-treatment averages were based on 6 samples collected from the heated zone at each depth interval.

**CVOC Site Project Results
Southern, CA**



1,2-DCA Post-Treatment Soil Concentrations.