

## PROJECT SNAPSHOT

SEE

# SEE Remediation of Former Waste Oil Site PHASE 1

**Location:** Southern New Hampshire

**Client:** Confidential

**Contamination:** Waste oil mixed with TCE, PCE, cis-1,2-DCE, 1,1,1-TCA, benzene, ethylbenzene, and naphthalene

**Volume:** 13,270 cy. Treatment to depths of up to 26 ft bgs in a 34,930 ft<sup>2</sup> footprint.

**Goal:** Meet ROD soil clean-up goals for naphthalene, VOCs and CVOCs

**Duration:** 221 days of operation

**Number of Steam Injection Well Clusters and extraction wells:** 88 clusters each with 2-3 screens, totaling 186 injection screens. Contaminant mass, condensate and water was captured at 29 multi-phase extraction wells.

**Mass Removed:** 150,066 lbs.

## WHAT MAKES THIS PROJECT UNIQUE?

Steam was supplied at an injection rate of up to 14,000 lbs/hr and water from the wellfield was extracted at rates up to 35 gpm. After pre-treatment of the extracted liquids, the water was polished in an existing onsite groundwater treatment facility, prior to infiltration in an onsite infiltration system. The water utilized to generate the onsite steam was supplied as treated water from the groundwater treatment plant.

## IMPORTANT PROJECT DETAILS

- **Approach:** The 88 steam injection well clusters each had between two and three injection intervals. Over 28 million pounds of steam were injected, while more than 6.6 million gallons of water were extracted during the steam remedy.
- **Challenges:** Extracted water was discharged to an existing onsite ground water treatment system, and problems were encountered with microfiltration unit sensitivity due to the rapidly changing groundwater chemistry to the steam zone. The problem was solved by the installation of additional pre-treatment hardware during the SEE operation phase.
- **Results:** 83 confirmatory soil samples were collected at the end of thermal operations for analysis. There were no detections of 1,1,1-TCA, benzene, cis-1,2,-DCE, TCE, ethylbenzene or PCE above the ROD standards of 4.0; 0.1; 2.0; 0.2; 20.0 and 0.5 mg/kg respectively and the 95% UCL for naphthalene was below the ROD cleanup level of 4.0 mg/kg.



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