New Mexico Environment Department, Remedial Services

New Mexico

Client

New Mexico Environment Department

Highlights

- Characterization of hundreds of sites
- Remedial design and action
- NMED's first application of horizontal SVE wells
- Contaminants of concern: NAPL, VOCs, petroleum hydrocarbon, asbestos, leaded paint, benzene, 1,2-dichloroethane, methyl tertiary-butyl ether
- Awarded by New Mexico Chapter of ACEC for Engineering Excellence

For nearly two decades, DBS&A has been providing consulting services to the New Mexico Environment Department Petroleum Storage Tank Bureau (NMED PSTB), including the characterization of hundreds of sites, and remediation of those requiring additional attention. Remedial services have ranged from storage tank removals and design of small soil vapor extraction systems to pumping and treatment of city well fields and large excavations. Representative examples include the following:

Jet Grout Barrier and Soil Vapor Extraction Remediation, Santa Fe, New Mexico

The Santa Fe County Judicial Complex site is an NMED State Lead site consisting of a consolidation of several underground storage tank (UST) sites and other potential sources of contaminants in the vicinity of Montezuma Avenue and Cerrillos Road in historic downtown Santa Fe, New Mexico. DBS&A was selected to complete a grout barrier around the property and implement a soil vapor extraction and hot air injection (SVE/HAI) system for removal of non-aqueous phase liquid (NAPL) hydrocarbons and reduction of concentrations of volatile constituents adsorbed to soils in the unsaturated (vadose) zone.

The grout barrier layout consisted of 600 linear feet of jet grouted elements tied to a 185-foot by 22-foot high slurry wall. The only feasible method to access the majority of the NAPL was to install horizontal wells underneath existing buildings. DBS&A designed and oversaw the completion of three horizontal wells; two for soil vapor extraction and one for hot air injection, with a total length of approximately 900 feet. This project is the first application of horizontal SVE wells by the NMED.

Treatment of extracted vapors was accomplished using three separate treatment systems. The first was a 500 cubic feet per minute (cfm) high-capacity enclosed thermal flare. The second treatment unit was a 300 cfm conventional thermal oxidizer already owned by the NMED. The final treatment unit included a 500 cfm thermal oxidizer equipped with a heat exchanger that allowed injection of ambient air heated to 400°F into both horizontal and vertical wells. Additional technologies deployed include ozone sparging and hydrogen peroxide injection for the treatment of groundwater hotspots. This combination of technologies had not previously been utilized in New Mexico. Remediation is anticipated to require three to five years of continuous operation.

Horizontal wells were installed underneath existing buildings to access the NAPL.

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Underground Storage Tank Characterization and Remediation, Peñasco, New Mexico

In response to complaints from residents of Peñasco, New Mexico, that their potable water contained gasoline odors, DBS&A was contacted by the NMED PSTB to investigate. Initially, DBS&A installed temporary granular-activated carbon filters at 12 residences. Whole-house water filters with much larger capacities were later installed to provide clean potable water as a more comprehensive measure until the source of contamination was determined and addressed.

DBS&A characterized the site by performing both geophysical and a ground-penetrating radar (GRR) surveys, as well as Geoprobe investigations on the north and south sides of New Mexico State Highway 75 (NM 75). These surveys resulted in the identification of significant impacts to soils in the vicinity of the two leaking underground storage tank (LUST) sites and along the community water lines on both sides of NM 75.

The remediation process required soils beneath NM 75 to be excavated, while keeping the highway open to traffic.

DBS&A completed remedial actions that included the excavation and off-site disposal of more than 10,000 cubic yards of petroleum-contaminated soil and replacement of the community water distribution line. The project was complicated by the need to excavate soils beneath NM 75, while keeping the highway open. Throughout the project, DBS&A coordinated with several groups including the NMED PSTB and Drinking Water Bureau, the New Mexico Department of Transportation, and Picuris Pueblo. The project was completed on-time and on-budget. DBS&A received the New Mexico Chapter of the American Council of Engineering Companies (ACEC) Engineering Excellence Award for the project.