

SUCCESSFUL TRAP & TREAT® APPLICATION RESULTS IN CLOSURE OF SOUTHERN CALIFORNIA UST SITE

ABSTRACT

Trap & Treat® BOS 200® was used to remediate petroleum hydrocarbon impacted groundwater in shallow overburdened soil at a former retail gasoline site in southern California. After a thorough remedial design characterization was completed, BOS 200® was surgically injected to successfully achieve the site cleanup goals. A No Further Action was issued in April 2018.

CHALLENGES & OBJECTIVES:

The site is a former retail gasoline station and current convenience store. The primary challenge was maintaining a safe work environment at a highly trafficked project site. The objective of the remedial action was to meet the criteria of California's Low Threat Underground Storage Tank closure policy. NAPL has not been reported to be present at the site since 2004.

APPROACH

- Five (5) RDC soil borings were advanced at the Site; 33 soil samples were submitted to the RPI Project Support Laboratory. Analyses were performed pro bono.
- Based upon the RDC results, a BOS 200® surgical remedy was designed.
- 7,650 lbs of BOS 200®, 750 lbs of gypsum, and 15 gal of bacteria concentrate were applied into 36 injection locations (7.5 ft injection point spacing). Reagent price = \$42,800.
- All compliance wells were thoroughly redeveloped post injection.

PROJECT SNAPSHOT

Key Dates

- Remedial Design Characterization – May 2016
- Implementation – October 2016
- No Further Action – April 2018

Treatment Area = 2,000 ft²

Lithology = Variable, silty sand to weathered granite

Depth to Water = 8 to 10 ft below ground surface (bgs)

Contaminants = Gasoline Range Hydrocarbons

RESULTS

TVPH and Benzene concentrations in the five compliance wells were reduced 66.3 to 100% and 97.7-100% respectively. It is important to note that for most wells the concentrations decreased immediately (due to carbon adsorption), then gradually trended down to their current values (Figure 1). This gradual decrease is due to the biological degradation mechanism associated with BOS 200®. Pre and Post injection Benzene isoconcentration plots are provided as Figures 2 and 3. (Please see the next page for figures.)

Elevated terminal electron acceptor concentrations persist 12 months post injection and will continue to fuel the degradation processes.

DIAGRAMS

Figure 1. Benzene Concentrations Pre and Post Remediation

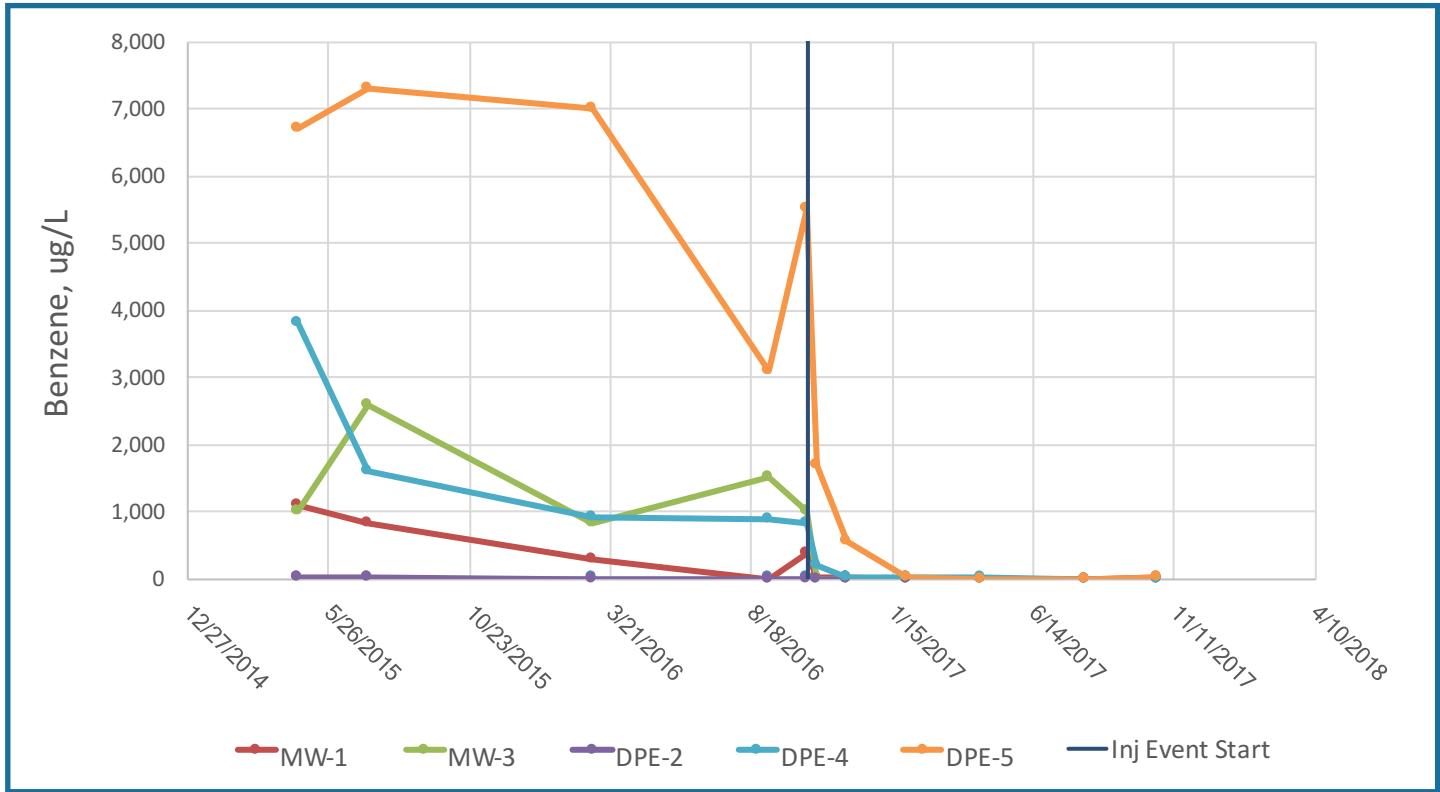


Figure 2. Benzene Isoconcentration Map Pre Injection (2016)

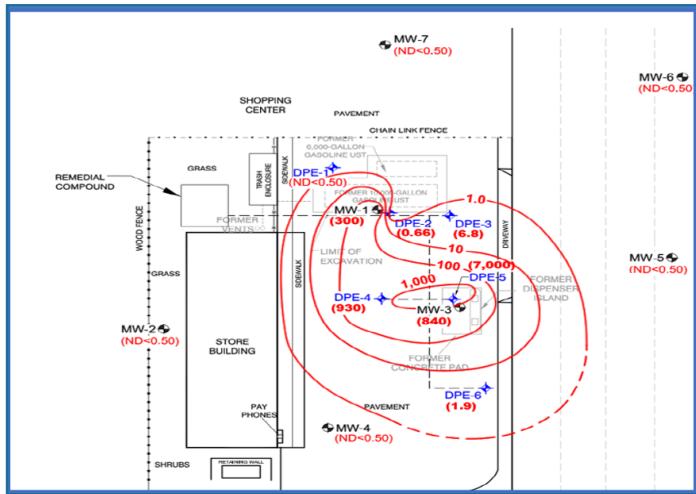
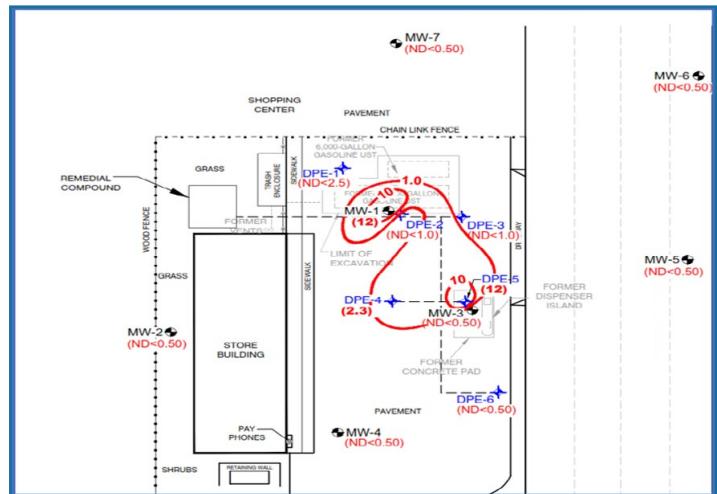


Figure 3. Benzene Isoconcentration Map Post Injection (2017)



Acknowledgements: ATC Group Services, LLC and Cascade Technical Services (RPI Group Installer)