

Barrier Treatment Reduces Chlorinated Solvents at Dry Cleaner Site

AquiFIX®
Long-Lasting Colloidal Electron Donor

Summary

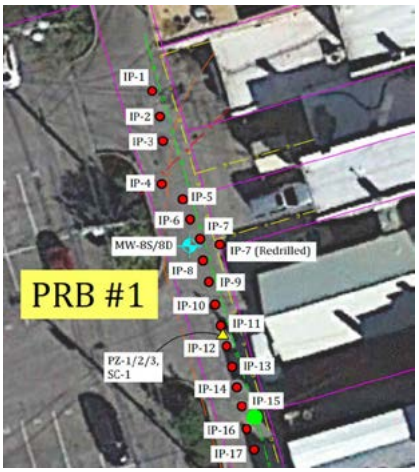
Working with the environmental consultant, REGENESIS designed and implemented an *in situ* permeable reactive barrier (PRB) to quickly and effectively treat chlorinated volatile organic compounds (CVOCs) at a former dry cleaner in southern Indiana. The barrier used a combined remedy of AquiFix®, PlumeStop®, sulfidated micron-scale ZVI (S-MicroZVI®), and Bio-Dechlor INOCULUM® Plus. Within 49 days, CVOC concentrations in downgradient well MW-8D were reduced to non-detect levels and remaining at non-detect for more than a year.

Background

Historic releases of tetrachloroethene (PCE) and trichloroethene (TCE) created a CVOC plume migrating beneath the site. Elevated breakdown products—cis-1,2-dichloroethene (cis-DCE) and vinyl chloride—posed risks to downgradient receptors. The Indiana Department of Environmental Management (IDEM) approved the interim remedy in 2024 to stabilize the plume and prevent further migration. AquiFix was selected for its extended electron donor release, enabling treatment of CVOCs migrating into the barrier from an inaccessible upgradient source.

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PRB application map

Application

PRB #1 was installed along an alley near monitoring wells MW-8S/D. The design included 17 injection points spaced 6 feet apart, targeting depths of 8–22 feet bgs. A total of 8,966 gallons of amendment slurry was injected, containing 3,600 lbs PlumeStop, 2,000 lbs AquiFix, 700 lbs S-MicroZVI, and 5 liters of BDI Plus. Placement validation confirmed distribution in monitoring wells and piezometers.

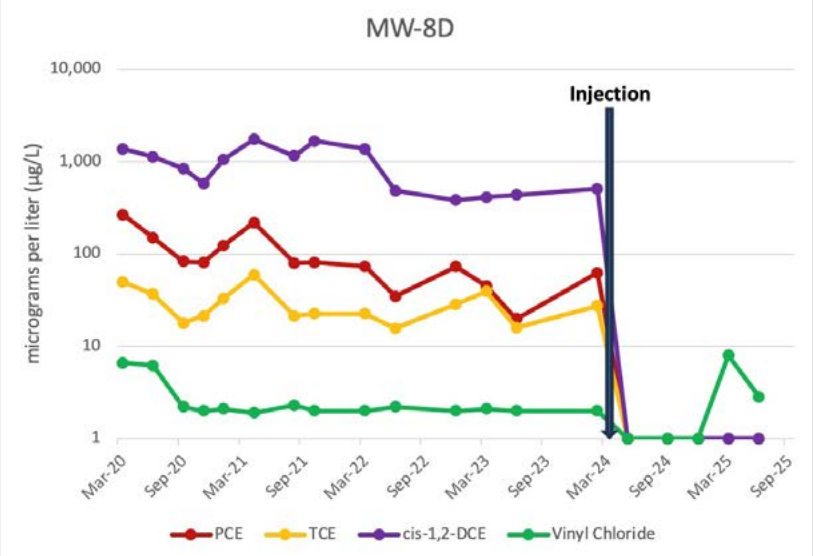
Results

Dramatic reductions were observed following PRB installation. Prior to treatment, PCE, TCE, and cis-1,2-DCE were present at concentrations well above their respective cleanup goals. Within two months of injection, contaminants were reduced to non-detect levels and have remained non-detect, with the exception of vinyl chloride, which is only slightly above the drinking water MCL (2.85 µg/L vs 2 µg/L). Overall, PRB #1 has demonstrated rapid and sustained reductions of parent and daughter CVOCs, with consistent performance across more than one year of monitoring.

Figure 1

Performance well MW-8D, demonstrates near complete elimination of CVOCs at 49 days, with results sustained

Performance Data



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