

RegenesiS Remediation Services™ – PCE Plume Treated with 3-D Microemulsion®

Combined Treatment Remedies Used to Treat Chlorinated Solvents at Former Manufacturing Facility

*Ludlow, Massachusetts*

A real estate developer and their environmental consultant selected RRS to design and implement an in situ enhanced reductive dechlorination (ERD) remediation plan for the Ludlow Mills Complex, originally developed in the 19th century. The site was impacted by a metal manufacturer from the 1980s to 2012, which used PCE as a degreasing agent, leading to the contamination of groundwater. The source area was excavated before treatment by RegenesiS Remediation Services (RRS). After excavation, the stated goal of the 3-D Microemulsion® application was to reduce PCE levels to meet the Massachusetts GW-2 standard of 50 ug/L. The treatment included the use of 3-D Microemulsion as a controlled-release electron donor, CRS as an additional electron donor, and bioaugmentation using BDI® Plus.

The contaminated soil at this former manufacturing facility covered an area of approximately 12,000 square feet (ft²). A total of 7,200 pounds of 3-D Microemulsion, 2,800 pounds of CRS, and 113 liters of BDI Plus with over 10¹¹ Dehalococcoides (DHC) cells per liter were injected over a period of five days on site. Taking advantage of 3-D Microemulsion's unique subsurface distribution characteristics, direct-push injection points were advanced every 200 ft². RRS utilized retractable screen-tip injection tooling to apply the pH neutral 3-D Microemulsion with the CRS® and BDI Plus at discrete intervals across the vertical treatment interval, in a bottom-up approach, from 15 to 25 feet below ground surface (bgs). The RRS trailer and equipment configuration allowed for low pressure application of the materials at up to four injection points simultaneously, up to 200 feet from the trailer while monitoring flow rates and injection line pressures at each application point.

Remediation Details:**Site Type:** Former Manufacturing Facility**Remediation Approaches:** Enhanced Reductive Dechlorination, Bioaugmentation**Technologies:** 3D Microemulsion, CRS, BDI Plus**Geology:** Sand, Silt**Medium:** Groundwater, Saturated Soil**COCs:** Chlorinated VOCs**Surficial Treatment:** 12,000 ft²**Treatment Interval:** 15-25 ft. bgs**Cubic Yards Treated:** 4,440**Cost Per Cubic Yard:** \$24.98**About RRS:**

RegenesiS Remediation Services (RRS) is a dedicated team of scientists and engineers whose primary function is to provide environmental engineering and consulting firms with specialized groundwater and soil remediation planning, design, verification and application services.

This uniquely qualified group of remediation professionals combine excellence in field activity management and RegenesiS' class-leading technologies to bring sites to closure. RRS draws from REGENESIS' 19+ years of experience working with hundreds of leading environmental engineering firms on thousands of remediation projects around the world.