



Field Application of mZVI and Enhanced Bioremediation for Chlorinated Solvent Remediation

Site Type: Chlorinated solvent-impacted groundwater in the southeastern United States

Project Type: ISCR and enhanced anaerobic bioremediation amendment preparation and injection

PROJECT SUMMARY

Location: Southeastern United States (Bluffton, South Carolina, per source filename)

Client: Confidential

Contaminants: Chlorinated solvents; individual compounds not identified in the source document

Project Practice Area: In situ chemical reduction and enhanced anaerobic bioremediation

Products Supplied: mZVI suspension, EDS-ER™, EDS-QR™ and associated injection amendments

Our Contribution:

- Supplied mZVI and electron donor amendments for field mixing and co-injection.
- Provided batch mixing and injection guidance for temporary and permanent wells.
- Provided a technician and engineer for initial rig-up, mixing and injection startup.

Highlights:

- Field work included amendment preparation, buffering, ZVI suspension and injection.
- Injection pressures were monitored and maintained below 10 psi.

Site Description and Challenge

The original case study describes treatment of chlorinated solvents in groundwater at a southeastern U.S. site. The project required field preparation and co-injection of reactive iron and organic electron donor amendments. The source document does not identify specific chlorinated solvent concentrations, groundwater cleanup goals, or post-treatment analytical results.

Tersus Approach

The treatment approach combined in situ chemical reduction (ISCR) using an injectable zero-valent iron suspension with enhanced anaerobic bioremediation. Tersus supplied mZVI suspension, EDS-ER™ and EDS-QR™ for field mixing and co-injection. Buffering agents, dispersant and bioaugmentation-related materials were included in the field instructions.

The injection plan used separate mixing batches for the iron suspension, electron donors and chase water. Field crews mixed amendments on site and injected them through temporary and permanent wells. Tersus supplied technical personnel to support equipment setup and the first day of mixing and injection startup.

Injection Planning and Field Implementation

The source documents a planned total injection volume of approximately 22,000 gallons and identifies nine totes of EDS-ER™, four totes of ZVI suspension, buffer and chase water, and 40 liters of KB-1 Plus. Separate field batching instructions describe approximately 1,255 gallons per injection point and a tabulated ZVI target of 209 lb per point.

Field instructions called for controlled mixing of the ZVI suspension and electron donor solutions, with pH adjustment, dispersion and injection pressure monitoring. Injection pressure was maintained below 10 psi according to the field summary.

Selected Injection Design Details

Parameter	Reported value
Planned total injection volume	22,000 gal
ZVI loading per point	209 lb/point (4.75 bags)
Injection volume per point	1,255 gal/point
EDS-QR dosing per point	41.25 gal/point
ZVI concentration	3.0 g/L
EDS-QR concentration	5.7 g/L
Injection pressure	Below 10 psi

Note: The source includes multiple batch-level instructions and volume figures that have not been independently reconciled. This table reproduces its reported design values.

Project Value and Conclusions

This project documents the practical preparation and field delivery of an ISCR/enhanced bioremediation amendment system. The combined approach was intended to provide abiotic contaminant reduction and support biological dechlorination. Tersus supplied amendments and initial field technical support. The original case study does not include post-injection monitoring results, so treatment effectiveness or regulatory closure cannot be established from the available record.

Original Field Photographs

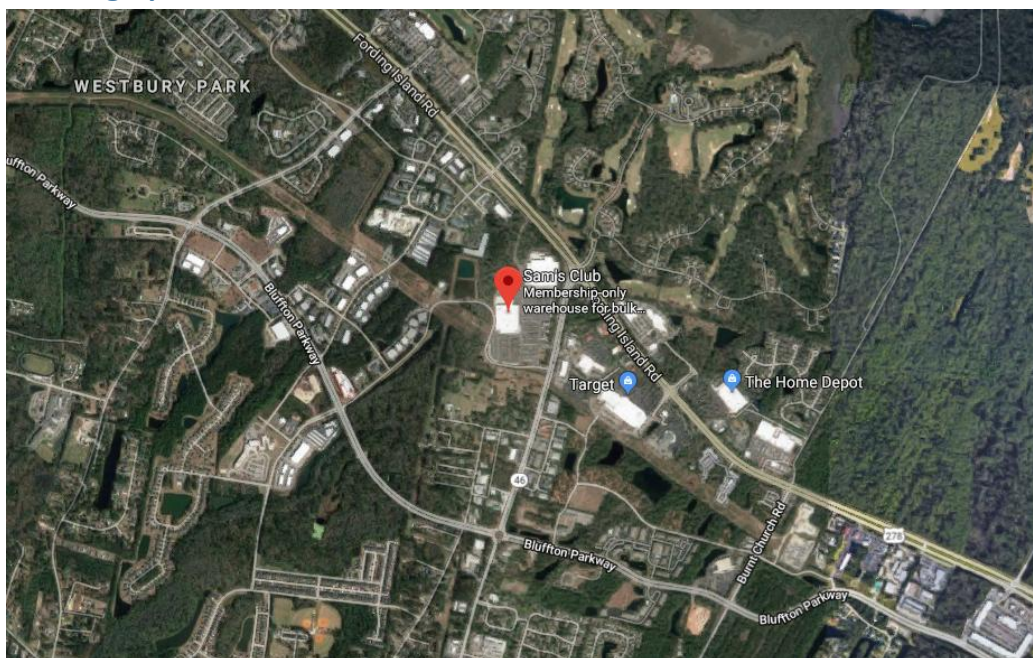


Figure 1. Site location shown in the original case study.



Figure 2a. Drums and totes containing site amendments.



Figure 2b. Amendment materials and equipment staged for injection.



Figure 3. Field mixing and amendment preparation.



Figure 4. Prepared amendment slurry during field mixing.



Figure 5. Mixing and injection equipment at the site.



Figure 6. Injection activities at the treatment site.