

CASE HISTORY®

Work Summary (History) CHS-0014 (Ethylenedibromide EDB/GRO/DRO – Free Product Destruction)

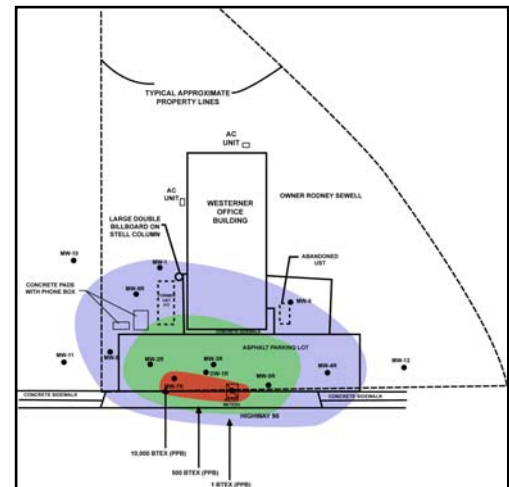
Discovery of gasoline contaminated soil and a UST provided the criteria for acceptance for funding by the Florida Abandoned Tank Restoration Program. Initial remediation in spring of 2004, included removal of the 1,800 tons of contaminated soil. Because free product was observed, the excavation was sprayed with *Cool-Ox™ Pit-Stop Green™* to eradicate the product and eliminate odor. This Technology had previously demonstrated its ability to destroy product, treat mixed contaminants (hydrocarbons with halogens) and eliminate odors and seemed ideal at this urban site where EDB was also present. Post injection monitoring revealed that subsequent to overspray in spring of 2004, dissolved groundwater concentrations (BTEX) dropped by >98%. A Phase 2 *Cool-Ox™* injection in September 2006, brought soil BTEX concentrations under and around the excavation, down by >80%. Free product was eliminated by the *Pit-Stop Green™* application.

Project at a Glance

Site 0014 - Site Information

Type of site	Former Retail Gasoline Station
Location	Washington County, Florida
Contaminants	Free Product BTEX/EDB
Work Scope	<i>Cool-Ox™</i> Reagent
Media Treated	Soil & Groundwater
Soil Type	Sandy Clay Hard Clay
Groundwater Depth	2 to 3 ft bgs
Remedial Objective	1. Eliminate Free Product 2. Initiate GW Remediation

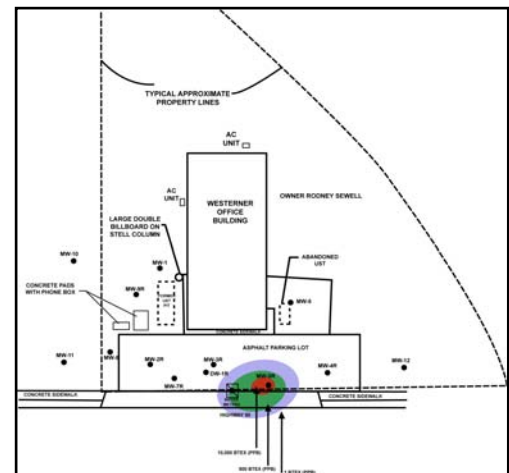
Map 1 – Pre Treatment



Site 0014 - Application Information

Technology Selected	<i>Cool-Ox™</i> Process
Application Method	DPT Probe Rig
Area Treated	1,334 square Feet
Vertical Interval	3 to 35 feet bgs
Injection Point (IP) Spacing	5 feet
Media Volume Treated	1,186 cubic yards
Number of Injection Points	54
Oxidizer Volume	5,940 gal
Oxidizer per IP	~110 gal

Map 2 – Post Injection

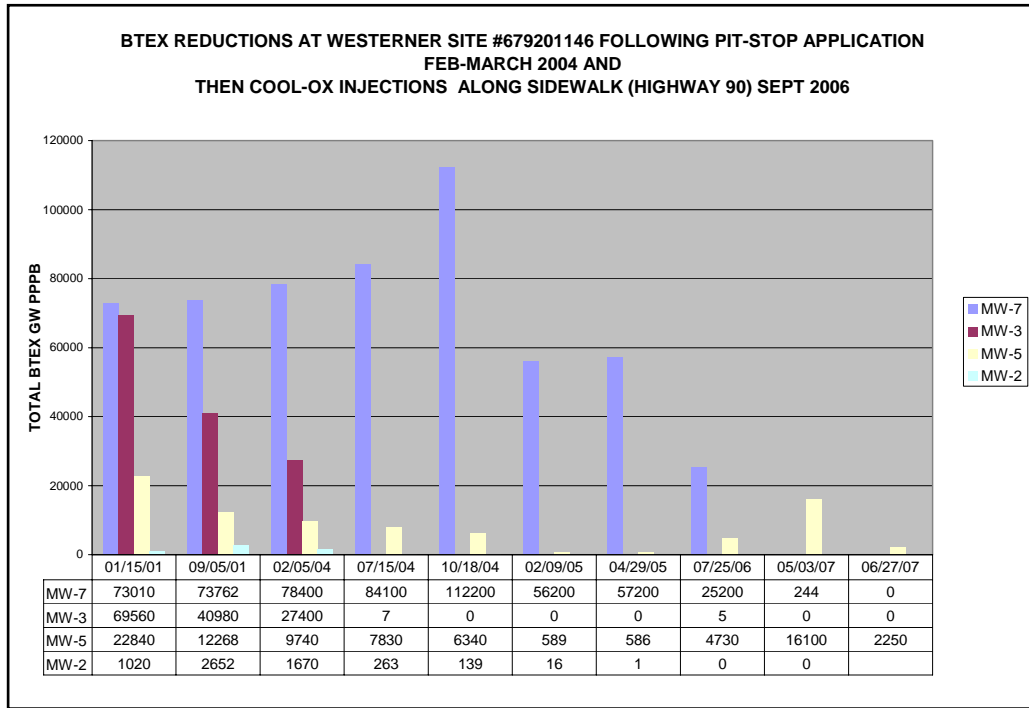


The blue area on Map 1 depicts the extent of the groundwater contaminant plume prior to the first ISCO injection. Groundwater Samples collected after the initial injection revealed that the contaminant plume had shrunk to a small area (see blue area Map 2).

Current Status

Because of the significant reductions in contaminant concentrations, the site was placed in Post Remedial Action Monitoring Status and contaminant concentrations in the groundwater are expected to continue to decrease. Petroleum contaminant concentrations (BTEX & PAH's) are only present where free phased product was discovered.

Site 0014- Contaminant Data



A phased remedial action was performed February/March 2004 involving source excavation and over-spraying of the open pit with *Cool-Ox™ Pit-Stop™ Green*. Not all of the contaminated soil could be accessed due to sub surface utilities, the adjacent building, and highway. Free product was observed (prior to over-spraying) flowing into the excavated area. Subsequent to the over-spray, free product did not return and petroleum concentrations dropped significantly. Phase 2 (August 2006), involved the in-situ injection of *Cool-Ox™* reagent and has reduced the contaminant concentrations in both the soil and groundwater. The site is in Natural Attenuation Monitoring at this time.

Boring No.	Soil Samples		Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naphth- alene	1-Methyl- Naphth- alene	2-Methyl- Naphth- alene	TRPH
	Lab Sample ID & Depth (Ft)	Date Collected									
SB-3	SB-3 / 5'	7/11/2006	5.3	170	150	1130	BDL	3.1	1.9	3.6	450
SB-3*	SB-3 / 6'	6/26/2007	0.67	3.6	20	97	BDL	0.44	0.23	0.46	100
SB-5	SB-5 / 5'	7/11/2006	2.6	10	87	413	BDL	17	10	18	1,200
SB-5*	SB-5 / 5'	6/28/2007	2.3	9	52	190	BDL	4.5	2.3	4.8	310
SB-6	SB-6 / 5'	7/11/2006	1.2	2.8	63	100	BDL	3.5	1.9	3.8	210
SB-6*	SB-6 / 5'	6/28/2007	BDL	0.36	1.3	BDL	BDL	0.27	0.46	0.82	28
PRE COOL-OX™		7/11/2006	9.1	182.8	300.0	1643	BDL	23.6	13.8	25.4	1,860.0
POST COOL-OX™		6/28/2007	3.0	12.9	73.3	287	BDL	5.2	3.0	6.1	438.0

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