ECOVAC SERVICES

The World Leader in Mobile Dual-Phase/Multi-Phase Extraction
Patented SURFAC®/ISCO-EFR®/COSOLV® Technologies
Treatability Studies / Research & Development

SITE LOCATION:	Russellville, Alabama
CONTAMINATION:	Separate-phase hydrocarbons (SPH - gasoline) in three wells ranging in thickness from 0.02 to 0.20 feet
HYDROGEOLOGY:	Groundwater is present in silty clay at ~3 to 7 feet below grade
SURFAC®/ISCO-EFR® EFFECTIVENESS:	**SPH is not present and dissolved BTEX levels are well below corrective action limits (CALs)**

Background

Gasoline SPH has been historically present in three monitor wells for a number of years. Three mobile dual-phase extraction events conducted by another provider failed to remove SPH at the site.

Hydrogeology

Groundwater is present in silty clay at depths ranging from approximately 3 to 7 feet below grade.

Treatment Methodology

EcoVac Services was contacted to implement SURFAC® and ISCO-EFR® at this site to remove SPH and reduce BTEX concentrations below the site's CALs.

EcoVac Services' **patented** SURFAC® and ISCO-EFR® processes are the combination of surfactant and oxidant injection, respectively, with dual-phase/multi-phase extraction. **The processes described herein are patent-protected and represent the intellectual property of EcoVac Services, Inc.**

SURFAC® and ISCO-EFR® Implementation

A single SURFAC® application was implemented at the site in September and October 2007 (four field days) to remove SPH from three monitor wells. ISCO-EFR® was implemented in July 2008 and October 2009 (a total of four field days) to reduce BTEX concentrations in four monitor wells to below CALs.

Results and Conclusions

A single SURFAC® application successfully removed SPH from this site (four field days).

ISCO-EFR® was implemented using Activated Sodium Persulfate which reduced BTEX concentrations to well below the site's CALs (four field days). A table showing the reduction in BTEX concentrations achieved by ISCO-EFR® is shown below.

Table 1: ISCO-EFR® Results

Date	Well Ids	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)
Prior to ISCO-EFR®	MW-1	2,705	1,560	2,138	7,940
	MW-2	1,191	698	1,615	2,945
	MW-3	2,018	2,584	1,664	7,005
	MW-4	3,652	8,173	2,042	10,308
Post ISCO-EFR® #1	MW-1	1324	814	1,630	6,971
	MW-2	175	170	605	1,468
	MW-3	890	1,851	1,406	6,174
	MW-4	1,117	5,815	1,146	6,654
Post ISCO-EFR® #2	MW-1	11	14	152	157
	MW-2	ND	ND	ND	ND
	MW-3	ND	18	116	464
	MW-4	56	26	17	8

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