

Ex-Situ Soil Mix – BTEX, MTBE, & Naphthalene

Former Gas Station UST Release – Collinsville, IL



One Round of Ex-Situ Soil Mixing

Project Summary: ORIN successfully treated BTEX, MTBE, & Naphthalene contaminated plume with ex-situ chemical oxidation. An excavator was present to displace a certain area of soil down to depth. A portion of that soil was then placed back into the excavated hole while the treatment chemistry was being applied to the soil. The excavator would then continually mix the soil and chemicals together until the desired amount of treatment chemistry was applied. More soil was then added from the displaced pile while additional chemical was applied and mixed thoroughly. This process was duplicated until the desired consistency and chemical volume were applied to the entire targeted soil volume.

Exceeds 97% reduction in contaminant mass

Site Conditions:

Groundwater Contaminants –

- Benzene: 8,700 µg/kg
- Toluene: 34,000 µg/kg
- Ethylbenzene: 34,000 µg/kg
- Total Xylene: 163,000 µg/kg
- MTBE: 310 µg/kg
- Naphthalene: 10,000 µg/kg

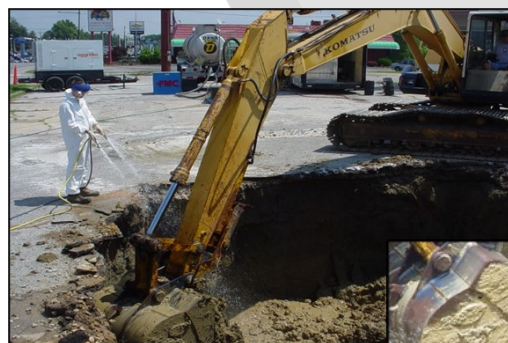
Impacted Matrix –

Clayey silt to silty clay

Treatment Chemistry –

Fenton's Reagent

	Baseline	Post-Treatment	Percent Reduction
Benzene	8,700	40	99.5%
Toluene	34,000	25	99.9%
Ethylbenzene	34,000	290	99.1%
Total Xylene	163,000	1,910	98.8%
MTBE	310	15	95.2%
Naphthalene	10,000	810	91.9%



Project Results: Two weeks following treatment, soil samples were taken at various locations within the treatment area. Based on field implementation efforts, Fenton's Reagent chemistry reduced the mass of contamination by greater than 97 percent. Fenton's Reagent chemistry was found to reduce the petroleum concentrations in the soils below their respective IEPA Tier 1 Commercial Cleanup Objectives.