In Situ Thermal Desorption (ISTD) of Three Separate Treatment Areas at a Brownfield Site:

Midler Avenue, Syracuse, NY

Results:

- ISTD used to heat 3 separate source areas at once
- All ISTD remedial goals achieved under a Guaranteed Fixed Price Contract
- Approximately 86,000 lbs (39,000 kg) of volatile organics were extracted and treated on-site
- Site is now redeveloped and is the location of a large home-improvement store
- Certificate of Completion for the source areas issued by NYDEC in December 2007.

Approach:

- In Situ Thermal Desorption
- Target temperature: 100°C
- Target treatment zone:
  - ◊ Area: 22,295 square ft (2,070 m^2)
  - ◊ Volume: 16,210 cubic yards (12,400 m^3)
- Thermal wells: 288
- Vapor extraction wells: 25
- Temperature monitoring points: 30
- Pressure monitoring points: 6
- Vapor barrier surface cover
- Regenerative thermal oxidizer for off-gas treatment

For further information:

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Site Information: The Midler Crossing Site (the Site) operated as a manufacturing facility since the 1860s. As early as 1866 Pierce, Butler, & Pierce manufactured boilers and radiators in the original facility. In the early 1900s, the Prosperity Co. manufactured industrial laundry and dry cleaning equipment on the Site. Since the 1960s the 200,000 square foot (18,600 m^3) manufacturing facility was underutilized. Pioneer Companies purchased the 22-acre (8.9-ha) Brownfield site in 2004 with plans to redevelop the Site into commercial property.

Aerial view of the ISTD wellfield during operation

Contaminants of Concern (COCs) Pre-Treatment Concentrations and Remediation Goals:

COC	Mean Pre-Treatment Concentration (mg/kg)	Site Specific Cleanup Objective (mg/kg)
PCE	3,630	5.60
TCE	57.9	2.80
VC	0.96	0.80
t-1,2-DCE	0.29	1.20
c-1,2-DCE	11.7	NA
Total CVOCs	3,700	10.2

Geology: Subsurface strata beneath a veneer of urban fill including foundry sand and other inorganic debris consisting of:

- Peat or peat/marl which extended to depths ranging from 14 to 30 (4.3 to 9.1 m) feet below ground surface.
- Soft clay was found below the peat or peat/marl layer. The clay layer was of variable thickness, sometimes observed for 30 or more feet (9.1 m) uninterrupted.
- Mixed sand, gravel, and silt layers of varying thicknesses were observed below the clay layer at most locations, underlain by a glacial till. The depth to till generally increased to the south, ranging from as shallow as 15 feet (4.6 m) along the northern site boundary to more than 51 feet (15.5 m) along the southern boundary.

Challenges:

- Significant mass of Chlorinated Volatile Organic Compounds (CVOCs) resided in the peat/marl layers, underlain by clayey soils.
- High Total Organic Carbon (TOC) content in soil, averaging 10.8%
- Shallow water table; two to four feet (0.6 to 1.2 m) below grade, nearly saturating the entire interval of the treated zone.

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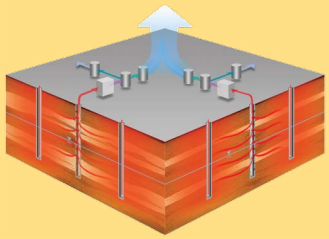
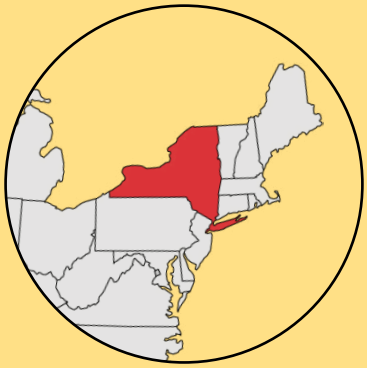
Heating Method:
In Situ Thermal Desorption (ISTD)



Location: Syracuse, NY



Time Frame:

May 2006 to October 2007

Regulatory Oversight:

NYDEC

Project Team:

Pioneer Companies, C&S Engineers, Paragon Environmental Services

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Project Summary:

A heavily contaminated Brownfields site in New York was remediated and redeveloped using a combination of ISTD and Monitored Natural Attenuation. Three source areas were addressed by the thermal technology, and groundwater beneath the site is undergoing natural attenuation. Approximately 86,000 lbs (39,000 kg) of volatile organics were extracted and treated on-site. The performance of the thermal remedy was documented by the collection of soil samples from 51 locations. All areas met the negotiated cleanup standard after thermal treatment. Monitoring of redox-sensitive groundwater parameters and the concentration of CVOCs in groundwater show continued natural attenuation. Three of the seven monitoring wells at the site show concentrations below their respective NYSDEC groundwater standards. Based on current trends, it is anticipated that the remaining wells may meet these standards within 5 years.

The Site, now known as Midler Crossing, which is currently the location of a major home improvement center and local federal credit union, is a prime example of Brownfield redevelopment and selection of “best fit” alternative remedial technologies.

Midler Crossing is within three miles of a population of 190,000 and a 20 minute drive for any of the 450,000 residents of Onondaga County.

This project took over two years in the planning and right-to-build process and represents one of the largest private cleanups of a contaminated site in upstate New York. The project received the Empire Award in 2010 as the highest rated project in New York State by the American Council of Engineering Companies of New York.

An aerial view of the completed project. The larger treatment zone was beneath the location of the store’s entrance.