

Successful Mitigation of an Unacceptable Vapor Intrusion Exposure Clark Logic - Schoolcraft, MI

In 2015, Clark Logic of Three Rivers, Michigan, purchased a decaying 10-acre property in Schoolcraft, Michigan. Clark Logic's vision was to create a production and warehouse space for local manufacturers, as well as to provide a much-needed venue for local events in the area. At the time of acquisition, the 2.25-acre structure on the property was in a significant state of deterioration. Furthermore, due



diligence activities performed during the acquisition of the property had revealed numerous environmental conditions that presented significant challenges to redevelopment.

Since the early 1950s, the property had been an industrial facility with on-site use and storage of hazardous materials, including chlorinated solvents. Process wastes from the manufacture of latex and rubber products were circulated throughout the building via subsurface pipes and concrete trench systems and were ultimately discharged to on-site seepage lagoons. Waste handling practices resulted in soil and groundwater contamination across the property. As a non-liable party, Clark Logic was not required to clean up the contaminants, but it did have an obligation to protect occupants and visitors from unacceptable exposure to contaminants.

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While much of the environmental risk could be managed with limited cleanup and institutional controls, the presence of contaminants in soil gas beneath the structure presented a unique challenge. Volatile chlorinated contaminants exceeded acceptable inhalation levels in soil gas beneath more than 85% of the structure on the property; contaminant exceedances were identified at 39 of 43

sub-slab sampling points across the facility. The contaminants were also identified inside the structure at concentrations in excess of acceptable inhalation levels. With assistance from the Kalamazoo County Brownfield Redevelopment Authority and the Michigan Department of Environmental Quality, Envirollogic developed a plan to allow safe occupation of the structure.



A review of previous environmental studies suggested that the soils beneath the site were conducive to soil vapor extraction. Further, the results of pressure field extension testing indicated that sub-slab depressurization (SSD) would be an effective technology to mitigate the vapor intrusion concerns. Envirologic designed an SSD system that included 14 suction (vapor extraction) points across the facility. Suction piping for the vapor extraction points was extended to one of five OBAR Compact Radial Blower systems placed across the facility.

The blower systems are currently operating at a pre-fan vacuum between 6 and 11 inches of water column (” WC) and flow rates ranging from 60 to 75 cubic feet per minute per fan. Performance monitoring results indicated that the mitigation system has generated a negative pressure, meeting the industry standard sub-slab vacuum of a -0.02” WC, across the footprint of the structure.

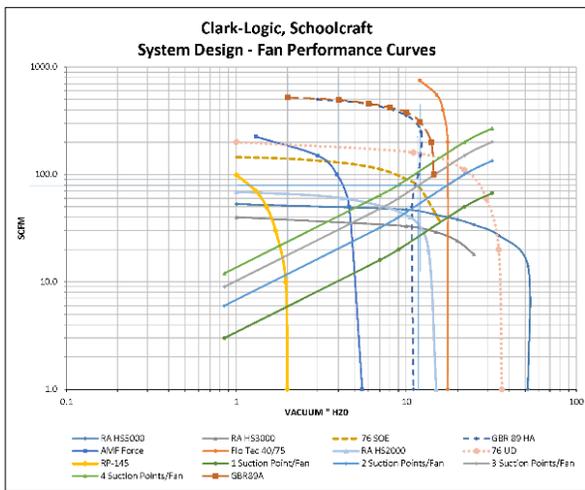
The results of effluent testing indicated that the off-gas meets discharge limitations of Michigan’s Air Pollution Control Rules; thus, off gas treatment is not required.



Performance monitoring results also indicated a significant decrease in contaminant concentrations in soil gas at most locations across the structure. Eight months after system startup, sub-slab soil gas exceedances were identified at only seven sampling points beneath the structure, and the area of the sub-slab

contaminant exceedance has been reduced to about 20% of the structure. Additionally, contaminant levels met acceptable indoor air inhalation criteria. These performance monitoring results indicate the SSD system has been effective in mitigating the intrusion of unacceptable levels of soil gas into the structure.

The system was designed to operate continuously with limited inspections or maintenance. It was also constructed with numerous visible gauges and audible alarms to alert occupants of a malfunction. Clark Logic has since taken control of the system and has nearly completed redevelopment of the facility.





Envirologic has comprehensive experience in all aspects of vapor intrusion, including the following:

- Soil and Groundwater Sampling
- Soil Gas / Sub-Slab Vapor Sampling
- Indoor Air Sampling
- Pressure Field Extension Testing
- Data Analysis and Regulatory Liaison
- Design and Installation of Sub-Slab / Crawl Space Depressurization Systems

If you have questions regarding VI testing, system design or regulatory issues, please contact one of our staff experts at (800) 272-7802.

