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# *CASE HISTORY*

## Fuel Oil Delineation and Site Closure at a Steam Generation Plant

***Challenge:***
In 2006, MUNDELL was retained to provide consulting services at a Ball State University steam generation facility in Muncie, Indiana. The Site had been the subject of environmental investigative activities since 1993 when it was discovered that that No. 2 fuel oil had been released from an on-site underground storage tank (UST) installation.

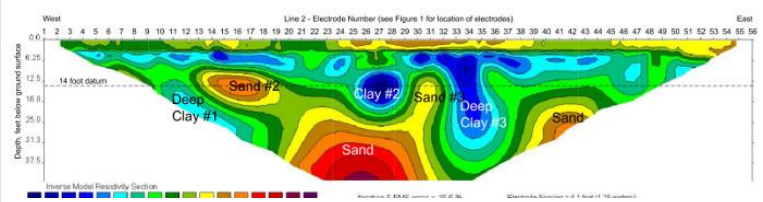


**Figure 1. 2D resistivity geophysical survey results showing the locations of subsurface sand deposits through which LPH s migrated and were contained.**

***Action:***
MUNDELL promptly reviewed historical files and on-site remedial activities undertaken to remove separate phase hydrocarbons (SPHs) that had been identified. Additional subsurface investigations to characterize the nature and extent of subsurface impacts were completed, with ultimately thirty-three (33) monitoring wells and sixty-four (64) soil borings advanced. SPH material was identified in the subsurface at thicknesses of up to seven (7) feet. A geophysical assessment was conducted to identify possible subsurface preferential pathways and maximum SPH collection points. MUNDELL then collected air samples from beneath and within structures above impacted areas to assess potential vapor exposure risks.

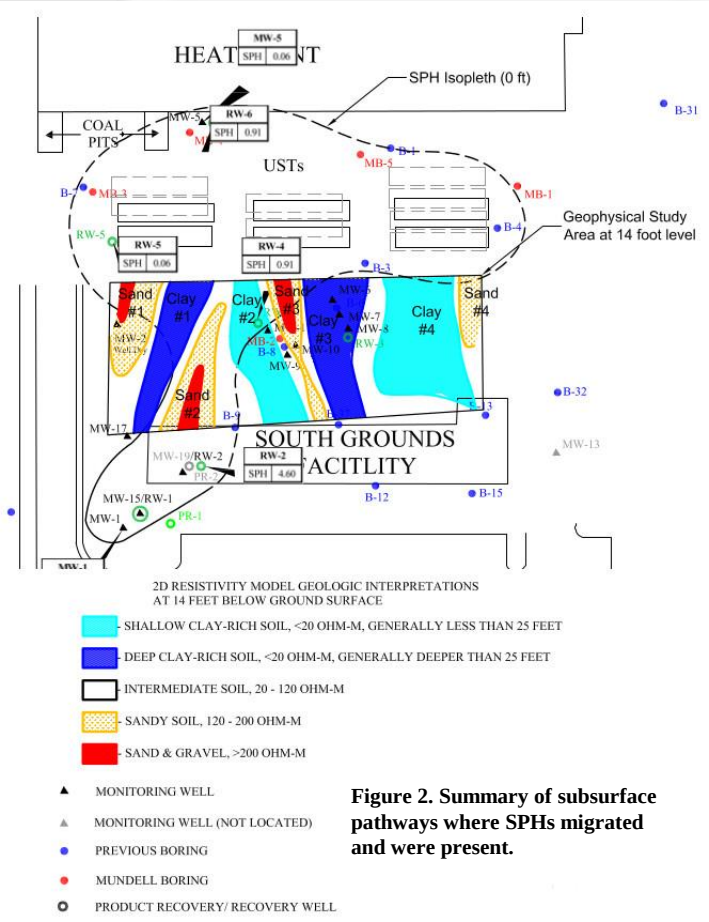


**Figure 2. Summary of subsurface pathways where SPHs migrated and were present.**

***Results:***
Based on the results of cumulative site investigations, MUNDELL determined that: (1) groundwater impacts were limited in effect and distribution; (2) the vapor exposure pathway was incomplete, and; (3) SPH materials were effectively immobilized within a geologic formation beneath the Site. MUNDELL then proposed a risk-based approach to achieve site closure without further monitoring or remediation. An integral component of the closure proposal was the placement of an Environmental Restrictive Covenant (ERC) on the property that defined a specific zone of soil impacts, restricted uncontrolled groundwater use, and limited future usage of the property to non-residential purposes. IDEM approved the site closure plan with the site ERC. In summary, MUNDELL demonstrated that remaining petroleum impacts were not a threat to human health and the environment, and in so doing achieved significant cost savings to the client by closing the site without further monitoring or remediation.