

Passive and Active Soil Gas Sampling along a Sanitary Sewer Line Used for Source Area Delineation and Vapor Intrusion Assessment

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Background/Objectives. Historical operations at a dry cleaner resulted in the release of PCE solvent into the municipal sanitary sewer and subsequently into the groundwater. An upgradient manufacturer also released chlorinated solvent into the groundwater, resulting in a commingled groundwater plume. In 2006 the nearby sanitary lift station plugged, resulting in the limited backup of solvent-impacted sewage in the sanitary sewer line. The upgradient contributor to the commingled groundwater plume asserted that the sewage backup was wide-spread and included the entire sanitary sewer line throughout a large multi-building apartment complex.

Approach/Activities. In cooperation with stakeholders and US EPA officials, a strategic approach was developed to assess the extent of the sanitary sewer backup, thereby delineating the source area, and evaluating the potential for vapor intrusion risk at the apartment complex. The scope of work included the installation of 65 passive soil gas (PSG) samples along the sanitary sewer lines of approximately 15 acres of property. Active soil gas (ASG) samples were collected at 12 separate locations to allow for statistical correlation between the two sampling methods. PSG and ASG sampling results were utilized to provide further placement of ASG sampling points for assessment of vapor intrusion risk.

Results/Lessons Learned. The PSG and ASG investigation provided additional lines of evidence that dry cleaning solvent impacts along the sanitary sewer line were delineated and were not distributed throughout the apartment complex. Correlation provided a strong “strength of relationship” in the R-squared statistical analysis between the PSG and ASG analyses. No additional source area delineation or vapor intrusion assessment were required by the US EPA.