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Summary of Site Investigation Results/ Evaluation of Exposure Risk Pathways

Clare Central
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Milwaukee, Wisconsin

Prepared for:

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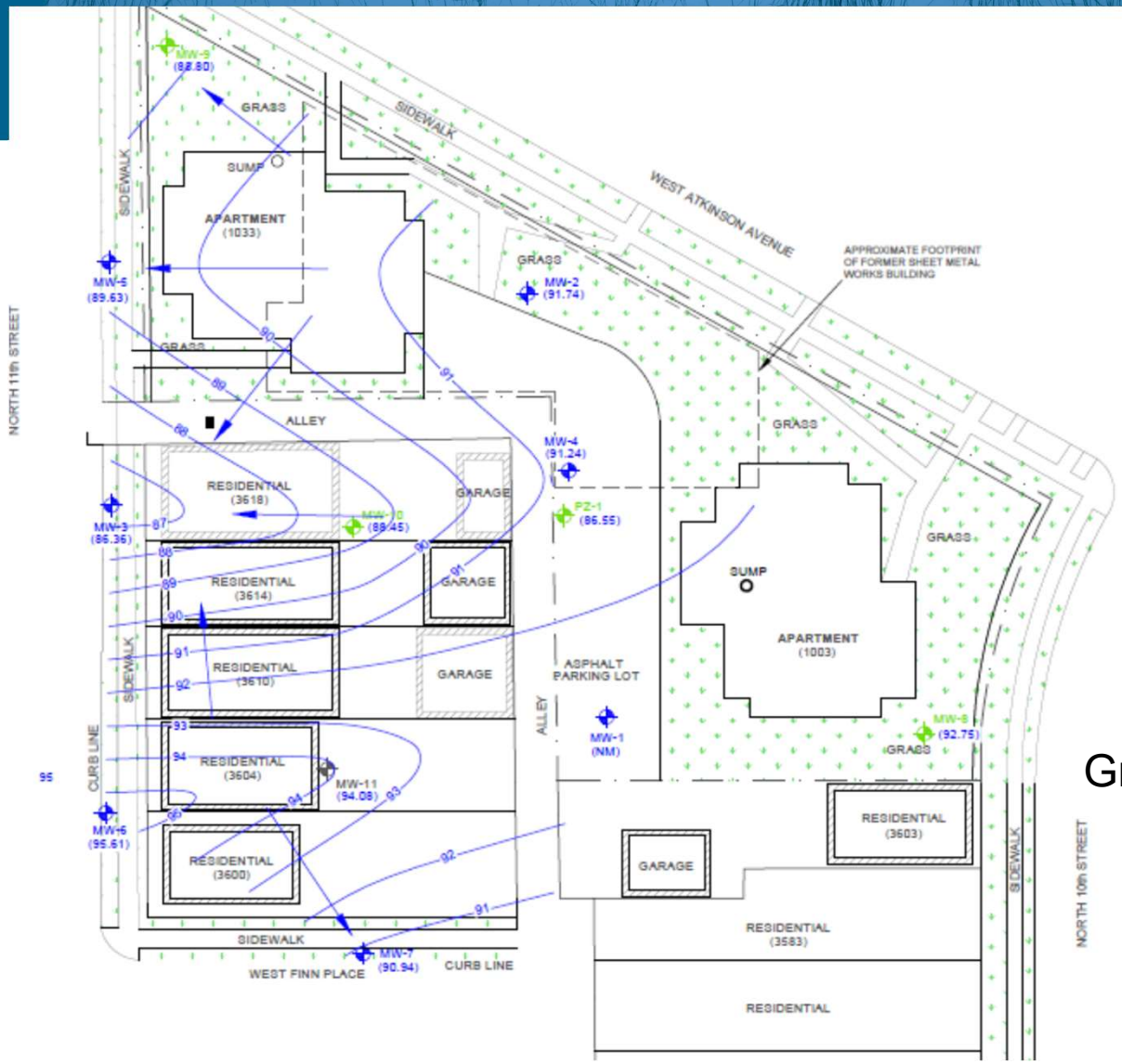
Agenda

1. Summary of Findings To-Date
2. Site Investigation 2019 – 2020
3. Exposure Risk Pathway Evaluation
4. Potential Remedial Options and Considerations
5. Next Steps

Site Plan



Groundwater Flow 8-2019

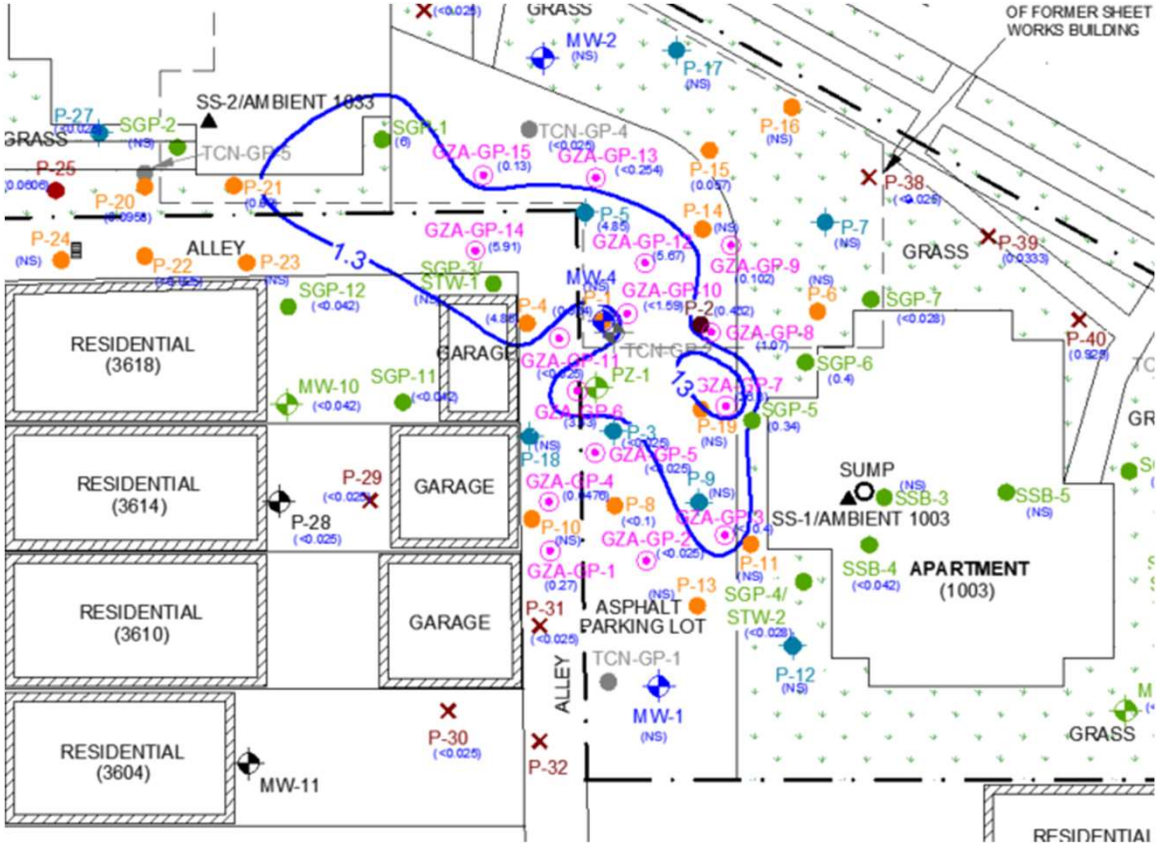
Summary of Findings To-Date

Soil Results

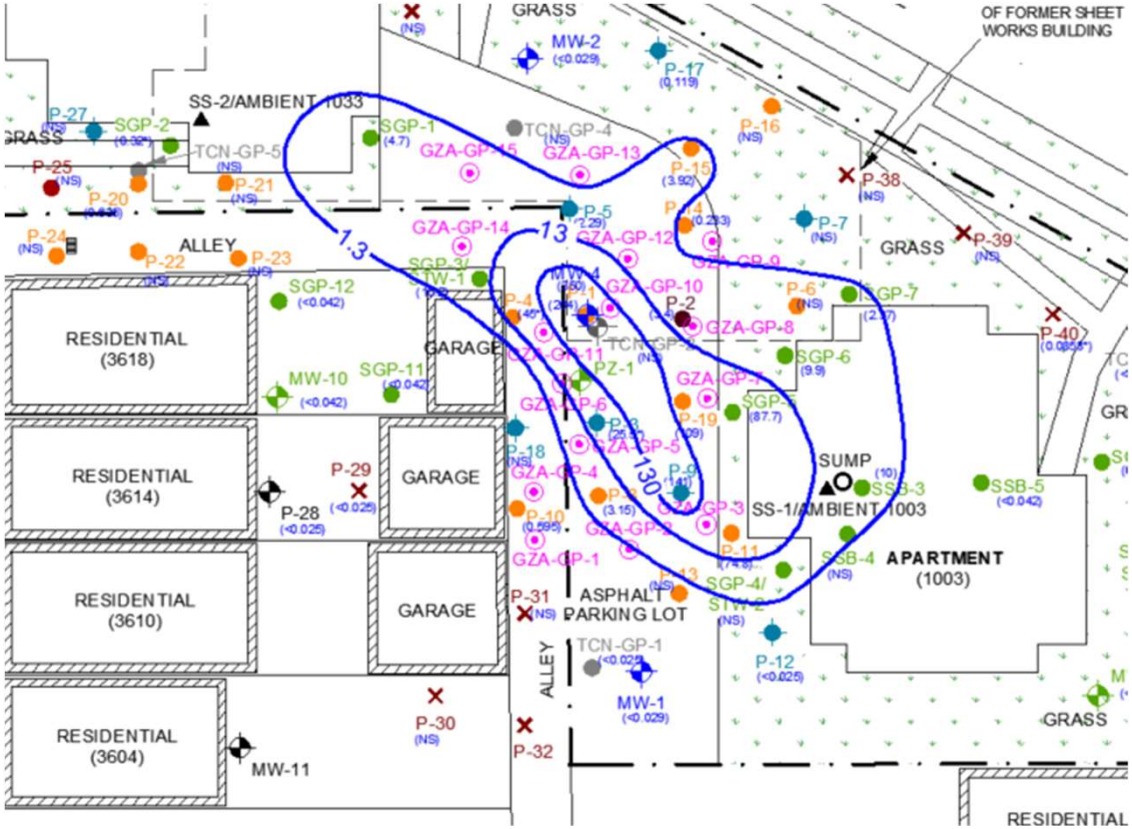
- Based on soil analytical results, the suspected source areas appear to be in the areas of monitoring well MW-4 and soil borings TCN-GP-2 and GZA-GP-7-within the alley way and parking areas. This area is near the back of the former wire manufacturer building.
- Soil profile consists of dense, brown, silty clay and clayey silt with variable to trace amounts of sand and/or gravel observed intermittently throughout the soil column
- Depth to groundwater is 4 to 6 feet below ground surface
- VOC soil concentrations exceed the soil to groundwater RCLs. TCE and vinyl chloride (VC) concentrations exceed the direct contact RCL south of the apartments and within the alley way.
- The CVOC concentrations detected in soil samples collected from shallower depths (0 to 4 feet bgs) are less than CVOC concentrations detected in soil samples collected at greater depths (4 to 12 feet bgs), near or below the groundwater interface. The increased concentrations with depth are possibly due to vertical migration.

TCE Soil Distribution
0 to 4 Feet bgs

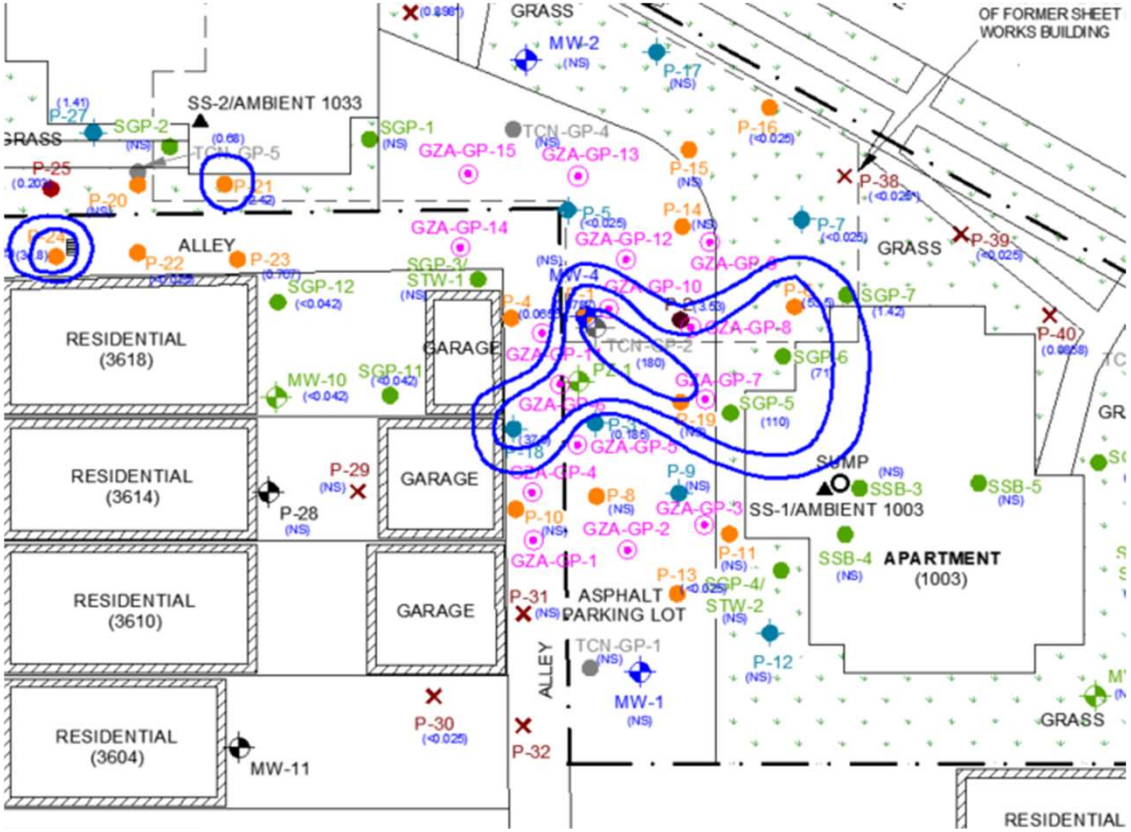
- Total TCE mass in soils to 8 feet bgs is approximately 104 lbs TCE
- Direct contact soil within alley and near buildings is accessible for remedial efforts



TCE Soil Distribution
4 to 8 Feet bgs



TCE Soil Distribution
8 to 12 Feet bgs

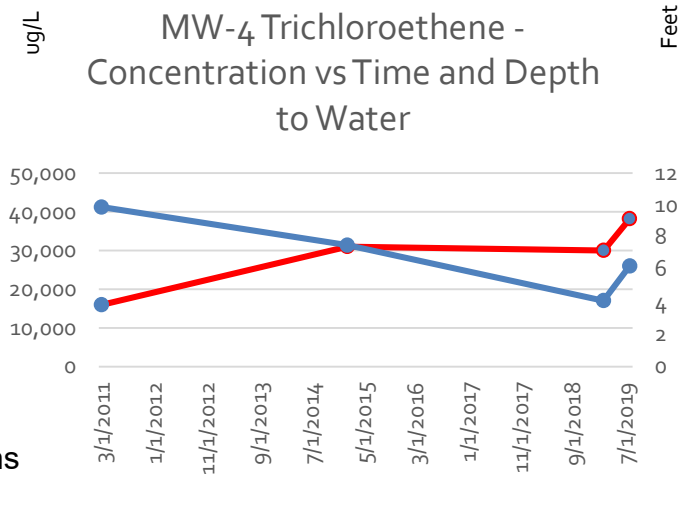


Summary of Findings To-Date

Groundwater Results

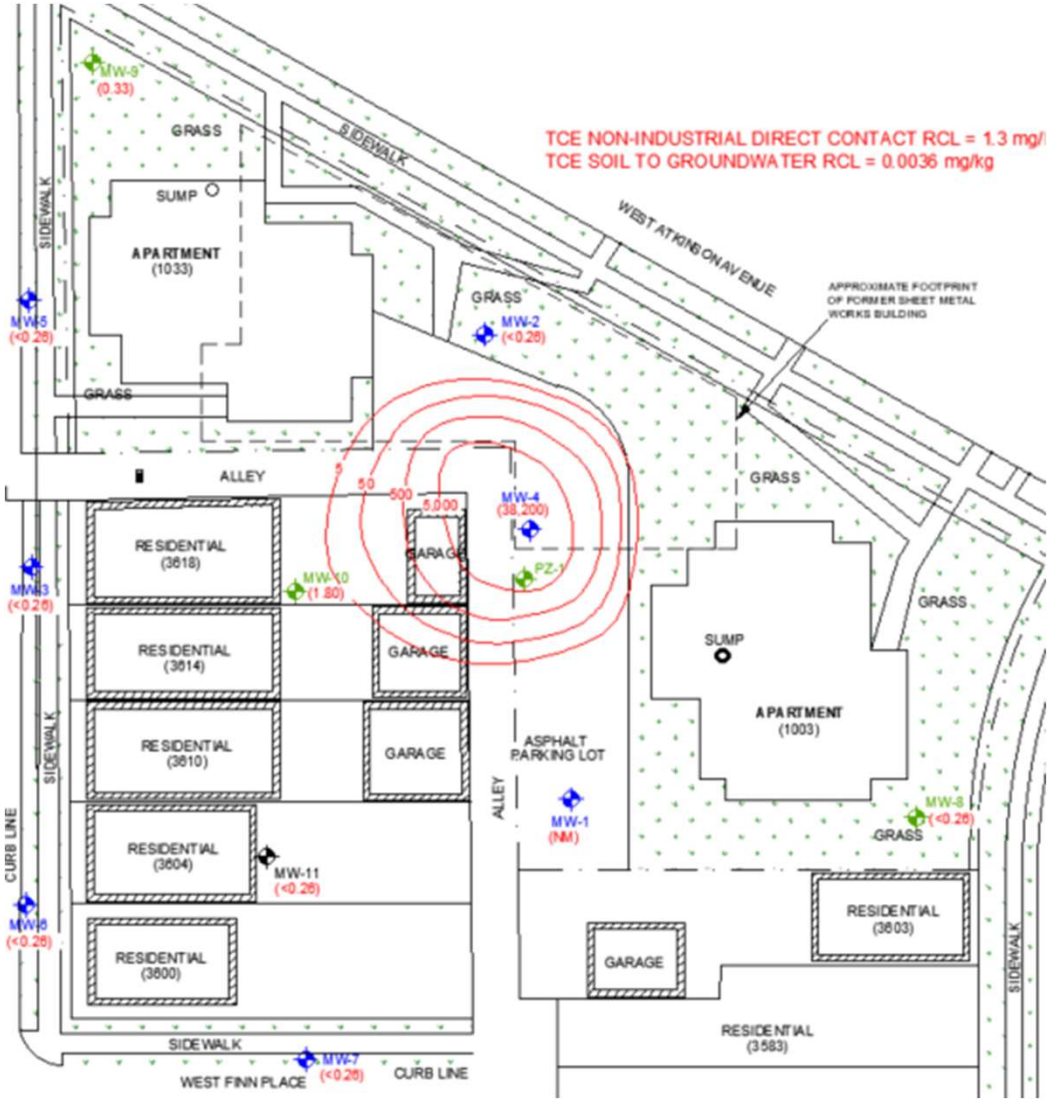
- The horizontal direction of groundwater flow is to the west with some mounding observed near MW-6 located near 11th Street.
- Groundwater dissolved plume is limited in extent and is delineated on-Site in the area of MW-4 in the parking lot and alley area.
- Highest VOC concentrations detected in the groundwater samples collected from MW-4, with TCE concentrations ranging from 16,000 µg/l in March 2011 to 38,200 µg/l in August 2019.
- PZ-1, near MW-4, has TCE concentration less than ES, no other wells exceed ES for TCE

- MW-2 had elevated Vinyl Chloride concentrations above the ES.
- Groundwater samples analyzed for PFAS in MW-3 and MW-4-in 2019. PFOA in MW-4 was above the proposed PAL at 2.5 ng/l



TCE Groundwater Distribution 8/26/2019

- Extent of TCE is limited to area around MW-4, near former building
- Low conductivity clay soils limit horizontal and vertical groundwater movement and contaminant migration
- Horizontal delineation complete
- Piezometer PZ-1 TCE concentration less the ES; vertical delineation complete



Summary of Findings To-Date

Vapor Intrusion Results

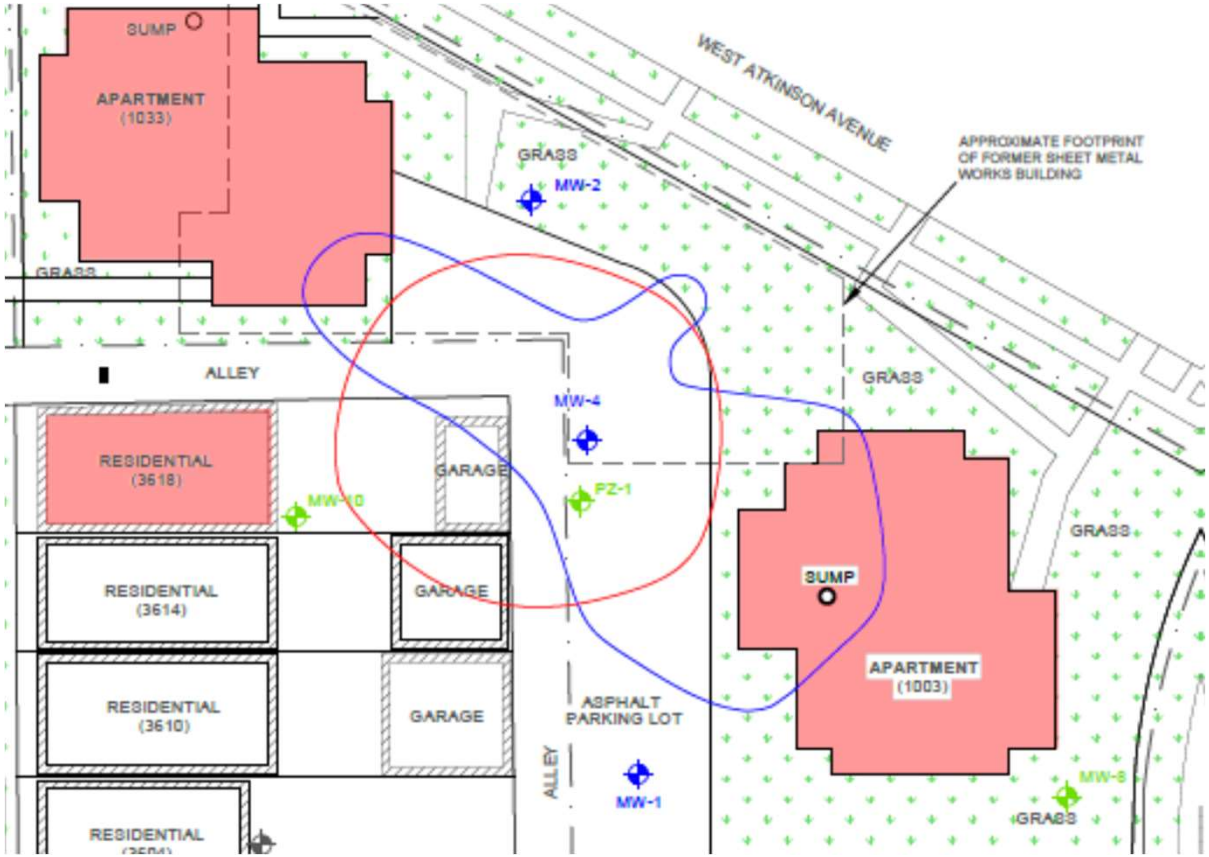
- The sub-slab vapor samples collected in 2011 from both apartment buildings reported elevated levels of TCE above the VRSLs. The SSDSs for both apartment buildings were installed in 2011.
- 2019 indoor air samples collected from the individual apartment within each building show no concentrations of TCE above the VALs.
- Naphthalene was reported above the VAL in each sample collected by GZA in 2019. 1,2-DCE was reported in the samples collected by GZA from the apartments on each floor of each building.
- The off-Site residential buildings located at 3604 and 3614 North 11th Street did not have any reported vapor compound exceeding the indoor air VALS or the sub-slab VRSLs.
- The residence located at 3618 North 11th Street did have a sub-slab vapor concentration of TCE exceeding the VRSL. A vapor mitigation system was installed in this residence in 2014. Requests to conduct maintenance work on the vapor mitigation system have not been responded to by owner.

Vapor Mitigation Systems

Buildings with Vapor Intrusion and active vapor mitigation systems

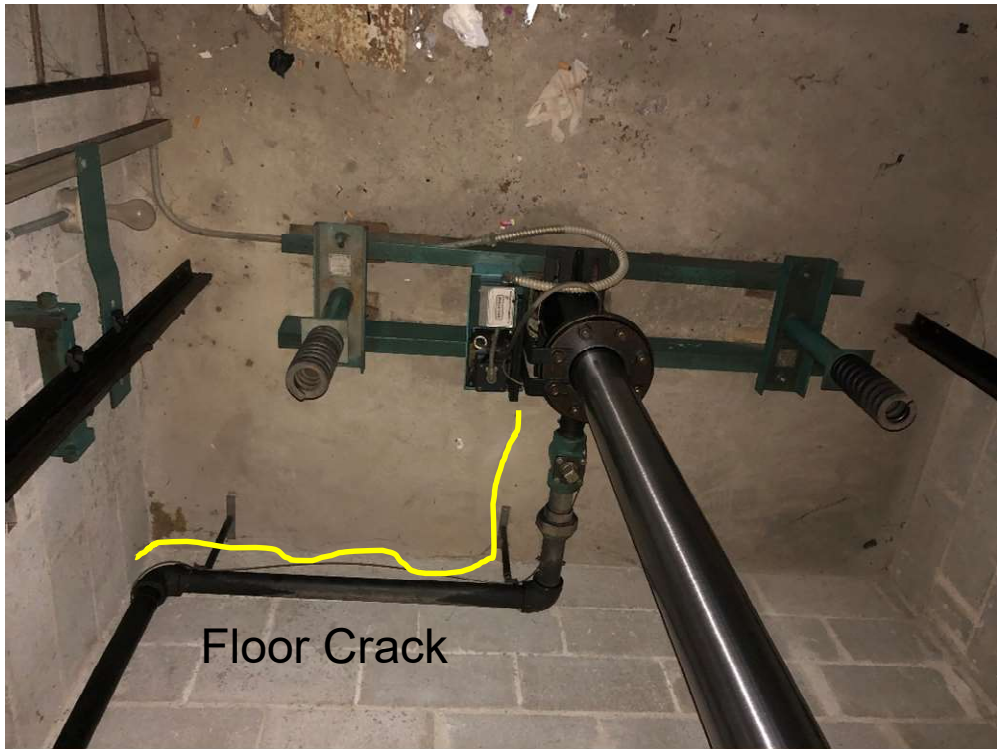
TCE in Soil 0-4'

TCE in in Groundwater



Site Investigation Work
2019-2020

- GZA conducted ambient air sampling in August 2019 within each apartment unit for both buildings.
- An inspection of the elevator pits for both buildings was conducted in 2019. The elevator pit in Building 1033 did not have visual evidence of cracks. The elevator pit in Building 1003 did have observed floor crack around the shaft which needs to be sealed.
- No response from the residence located 3618 11th Street to inspect mitigation system.



Site Investigation Work 2019-2020

- June 15, 2020, GZA conducted additional soil sampling in the direct contact zone within the alley way. Sampling provided delineation of soil concentrations exceeding the direct contact. Concentrations of TCE within the upper four feet in the parking lot area range from 0.47 mg/kg to 23.6 mg/kg in GP-7 (in parking area for Building 1003)
- Vinyl chloride was also identified in the samples collected from the direct contact zone.
- Soil samples exceeding the direct contact RCL extend onto both apartment buildings.

Exposure Risk Pathway Evaluation

- The CVOC soil, groundwater, and vapor impacts identified during the site investigation activities are from historic sources. There are currently no operations on-Site that utilize CVOCs.
- The operations causing the CVOCs impacts ceased in the 1950s and the buildings have been removed.
- The mass of soil and groundwater impacts are located in an area that is controlled and has limited access.

Exposure Risk Pathway Evaluation

- Direct Contact Pathway Exceedance
  - TCE exceedances in soil are confined to area between the buildings
  - Area is partially covered by asphalt parking lot and alley pavement.
- Soil to Groundwater Pathway
  - Soil concentrations exceed the soil to groundwater RCL in the investigation area
  - Pathway evaluated based on actual groundwater concentrations as a performance standard
- Vapor Intrusion Pathway
  - WDNR and MDH have evaluated the vapor intrusion in the apartment and residential buildings surrounding the soil impacts
  - Vapor mitigation system installed in three buildings surrounding the soil impacts.
  - Indoor air sampling indicates that the mitigation systems are effectively controlling the vapor entering the buildings.
  - Recent inspection activities observed concrete crack in elevator pit; seal pits in both buildings with Liquid Boot or similar product.

Potential Remedial Options and Considerations

- Objective- Break the vapor intrusion pathway to the buildings to make the mitigation systems more effective, remove soils in the direct contact zone in unpaved areas, manage residual soil and groundwater impacts through engineered barriers and institutional controls

- Removal of accessible soils around the apartment buildings foundations and install ventilation piping that can assist in venting vapor to the atmosphere prior to entering the building. These excavations may extend to 4 to 8 feet.

- Removal of soils in the grass-covered areas that have concentrations exceeding the direct contact RCLs. This area will be excavated to a depth of 2 to 4 feet bgs and clean soils will be replaced in these areas as an engineered barrier to prevent direct contact and groundwater infiltration through the soils.

Potential Remedial Options and Considerations

- Evaluate the parking lot and alley pavement for use as an engineered barrier. This pavement may require replacement or modification to meet the requirements as an engineered barrier.

- If pavement replacement in the parking lot and alley are necessary, it may be feasible to excavate the highest concentrations soils within the 0 to 4 foot depth interval and treat the soils on-Site to reduce TCE concentration below the 'contained-out' concentration of 8.8 mg/kg;

- Treated soils to be disposed as special waste in subtitle D landfill.

Potential Remedial Options and Considerations

- Considerations
  - Disruption to residents in apartments, access to apartment and use of the alley way by the residential properties.
  - Safety for workers and equipment during remedial activities
  - Space on Site for work activities/on-site soil treatment

Next Steps

- Inspection of vapor mitigation systems
- Sealing the pits in elevator mechanical rooms
- One additional round of ambient samples from the apartments and residence to confirm conditions
- Submittal of Site Investigation Report for WDNR review and approval
- Preparation of the Remedial Action Work Plan
  - Coordination with the City of Milwaukee
- Prepare Remedial Construction Documentation Report
- Prepare Closure Request with continuing obligations for cap and vapor mitigation units.