

Use of an Alternate Regulatory Mechanism and Results-Based Approaches for Site Cleanup

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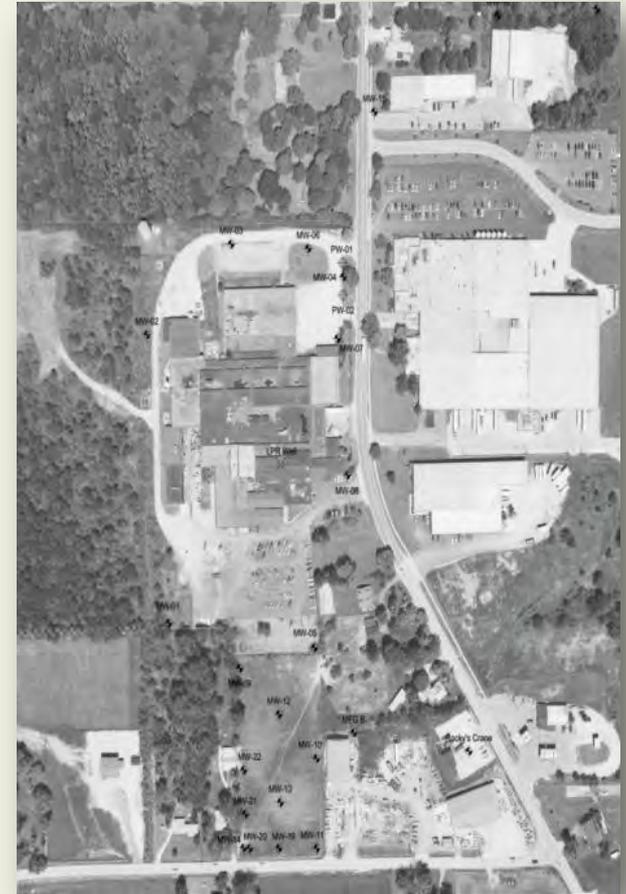
and

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Site Location and History

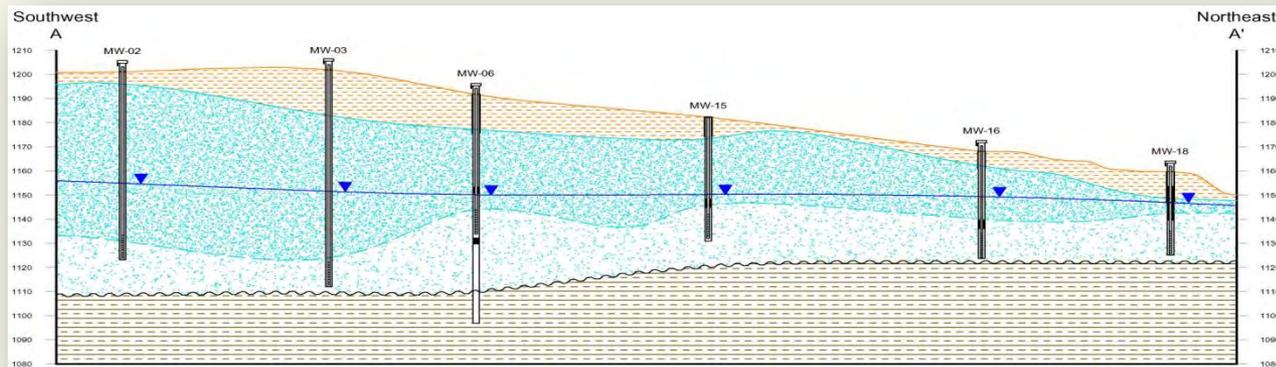
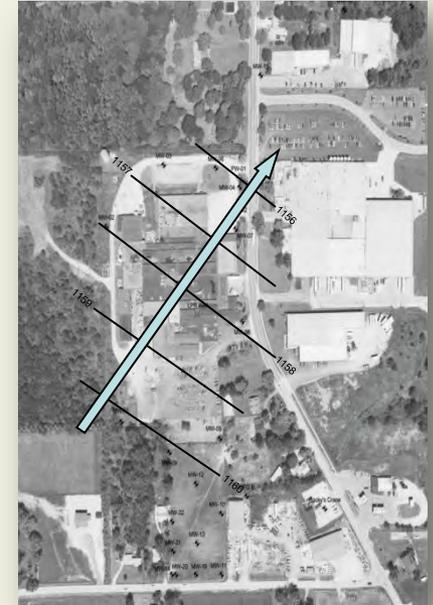


- Middlefield, Geauga Co., Ohio
- Former rubber manufacturing facility for auto industry
- Operations began in 1945
- Operations cease in 2006 and property goes on the market
- Surrounding use: industrial and residential
- Active and distrusting public



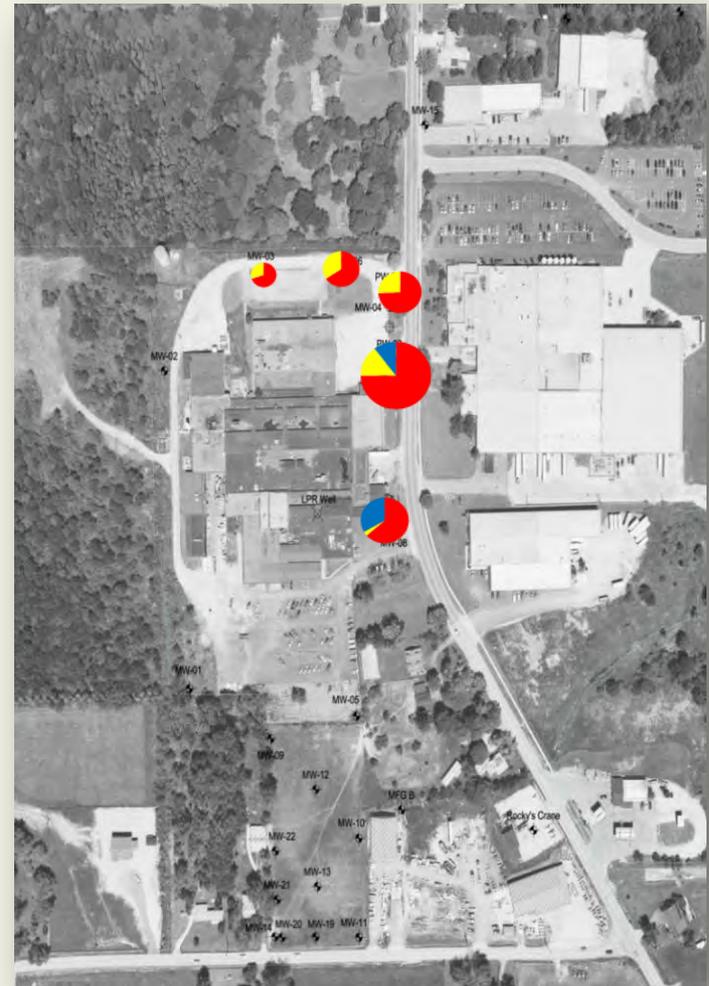
Hydrogeologic Conditions

- Glacial till (5 to 20 ft. thick) overlying Pennsylvanian-age bedrock
- Depth to groundwater varies from 20 to 50 ft. bgs
- Groundwater flow direction to the northeast



Groundwater Contamination

- Historical use of solvents prior to RCRA regulations resulted in groundwater contamination
- Contaminants include primarily TCE and Cis-1,2-DCE
- Concentrations exceeding MCLs at downgradient property boundary
- Properties to the north and downgradient on public supply
- Properties to the west and upgradient use private wells



Project/Regulatory History

- 1994: multi-agency EPA lead Integrated Assessment
- 1994: Ohio EPA CEI identified need to conduct generator closure of two <90 day drum storage area
- 1998: IM for groundwater proposed
- 1999: IM Pre-design investigation and remedy design
- 2000: applications for groundwater containment and treatment system PTI and NPDES submitted
- 2001: PTI issued with requirements for additional groundwater investigation, source investigation, and source remediation

Novel Use of PTI



In addition to providing authority to install and operate IM treatment system and discharge through NPDES permit, PTI required O/O to:

- Determine nature and extent of groundwater contamination
- Submit remediation plan within 90 days of Ohio EPA agreement that nature and extent adequately determined
- Remediation plan to include source area investigation phase and a source area remediation system
- Monthly progress reports

Result-Based Approaches

Emphasize outcomes and results rather than the process used and involves setting goals, and where appropriate, allowing O/O to move towards these goals without the implementing agency unnecessarily dictating how the O/O attains the goals

- Encourage technical and administrative innovation to achieve cleanups
- Provide greater focus on end goals
- Tailor process requirements to the specific project
- Reduce time-consuming traditional comment and response cycle
- Require trust

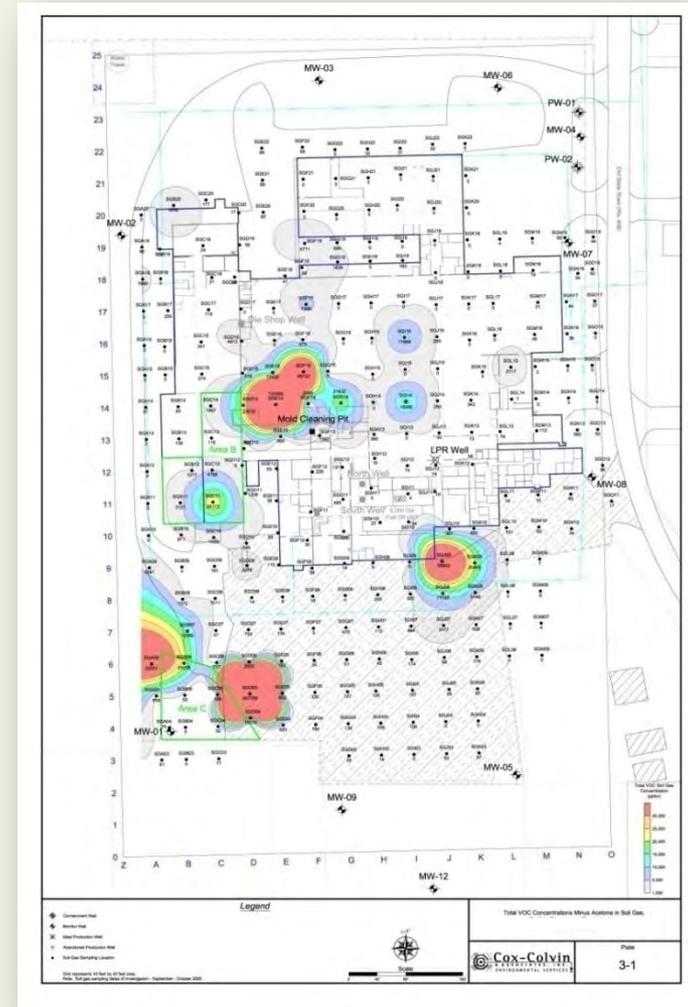
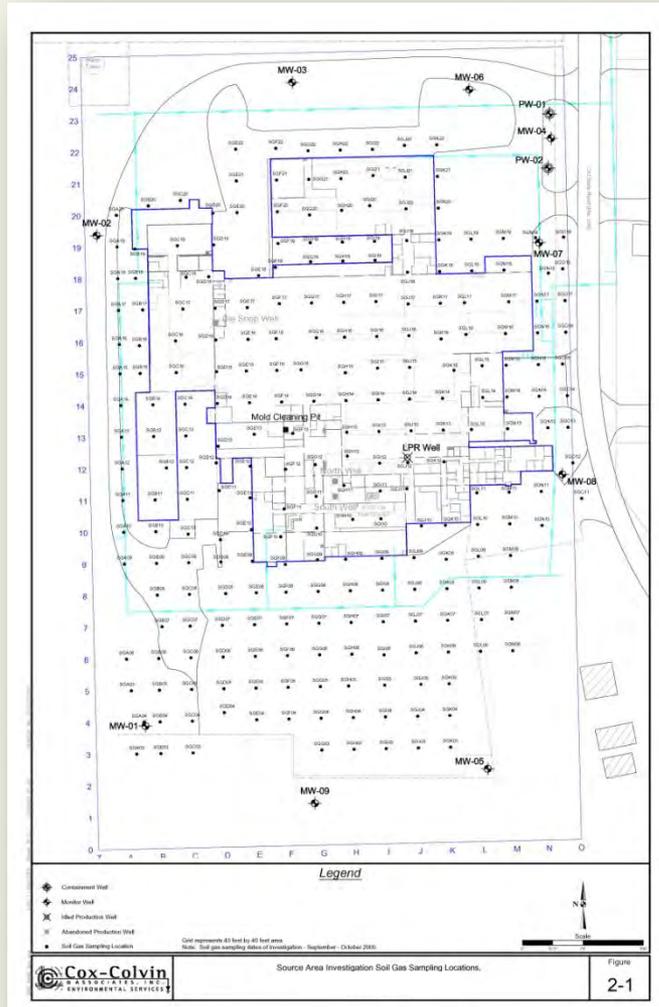
Core approaches

- *Holistic approach*
- *Performance standards*
- *Procedural flexibility*
- *Targeted data collection*

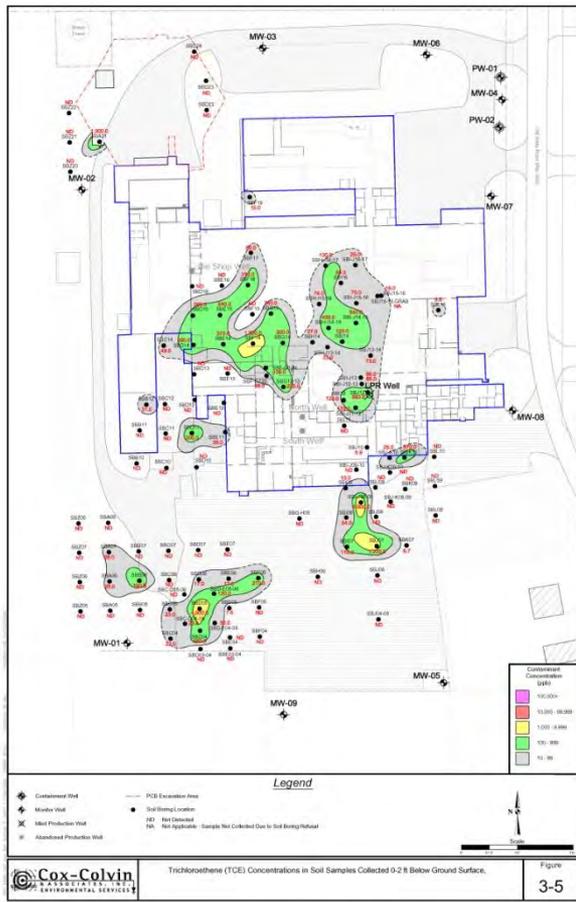
Where's the Source?



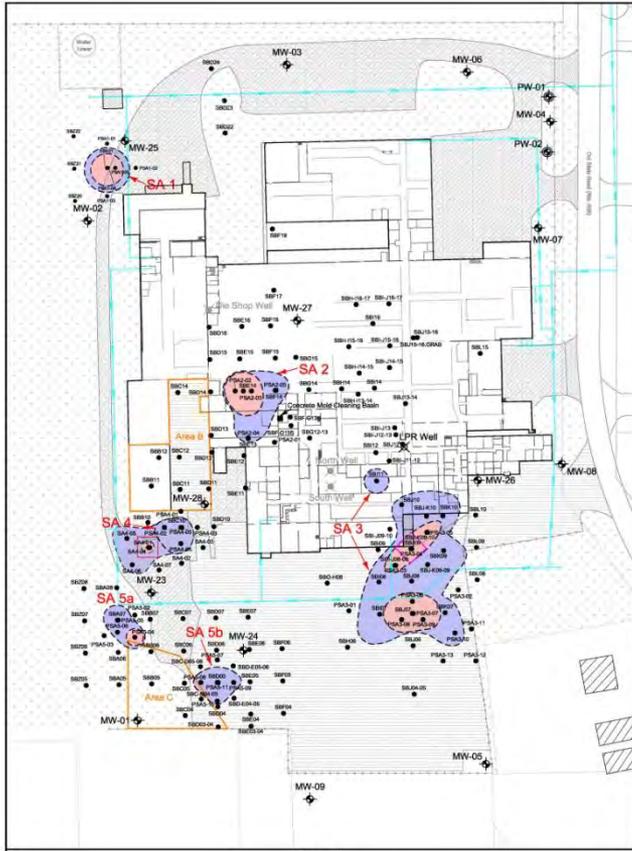
Locating Sources



Nature and Extent in Soil



Source Removal

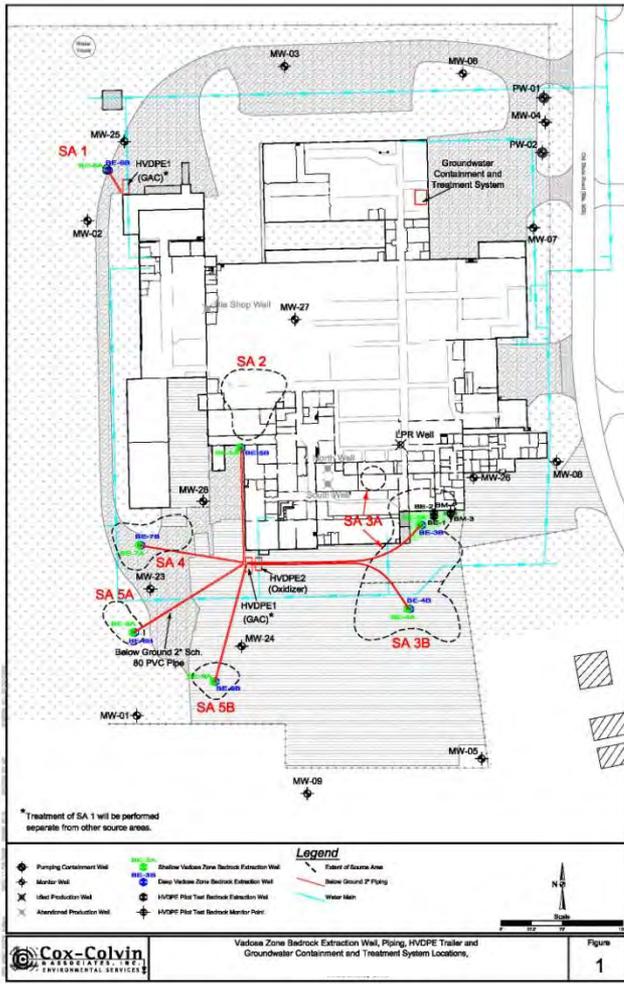


Source Areas, Soil Boring, and Monitor Well Locations.

Figure
2-1



Bedrock Vadose Zone Treatment



Incorporating Life Cycle Design and GSR into Remedy

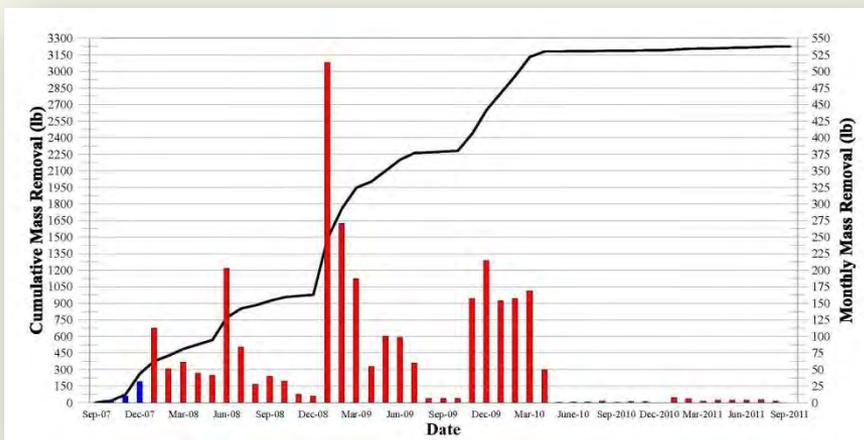
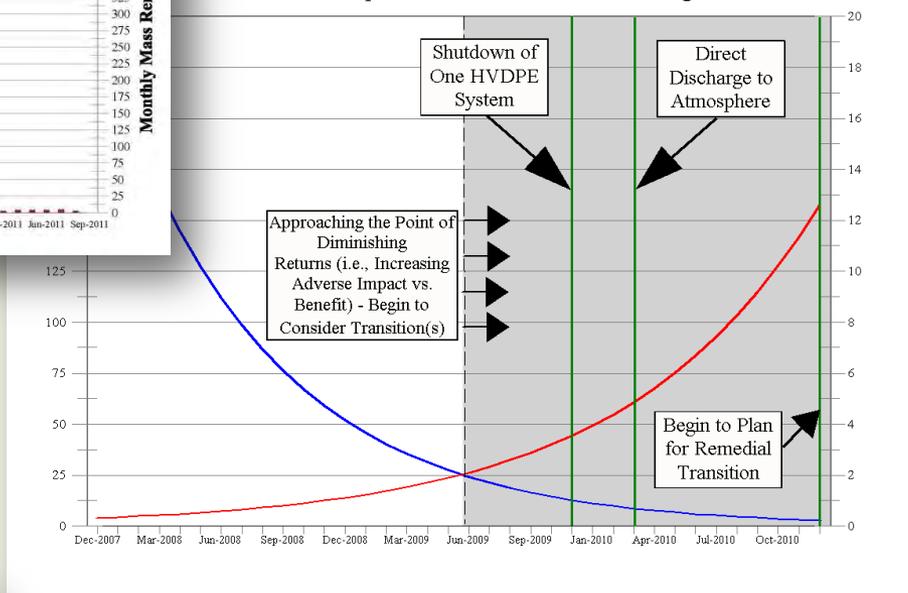
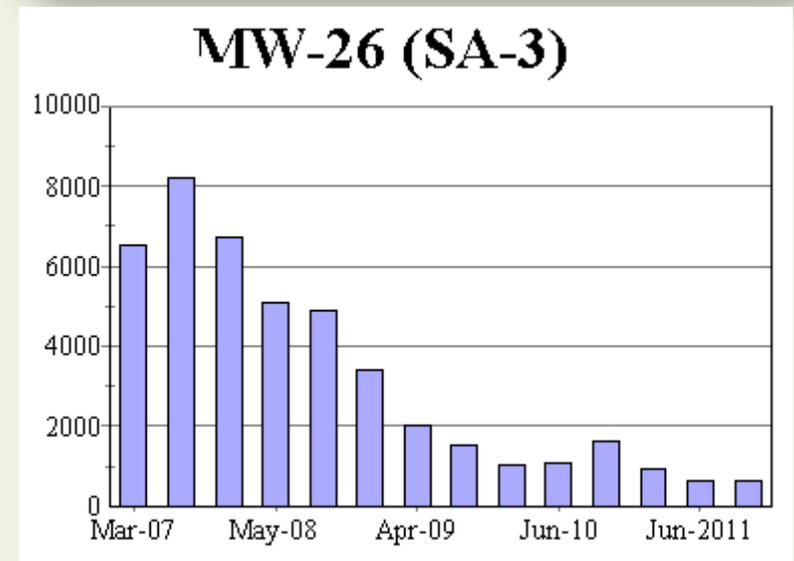
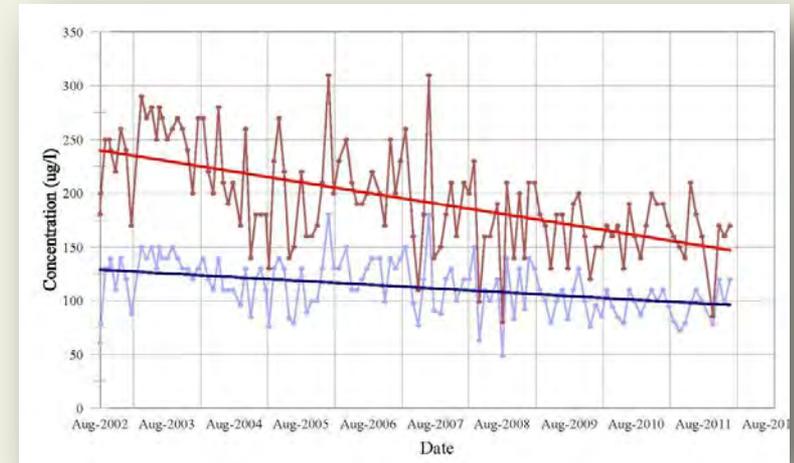


Figure 1: HVDPE Operation - Point of Diminishing Returns



Back in Productive Use

- Cleanup conducted to point that risk for new owner was manageable
- Redeveloped and sold in 2010
- Property back in productive use



Elements to Success



- Incentive
- Initial lack of a clear regulatory mechanism
- Use of results-based approaches and performance standards
- Public involvement
- Focus on remediation
- Forward thinking regulator
- Trust

Questions?

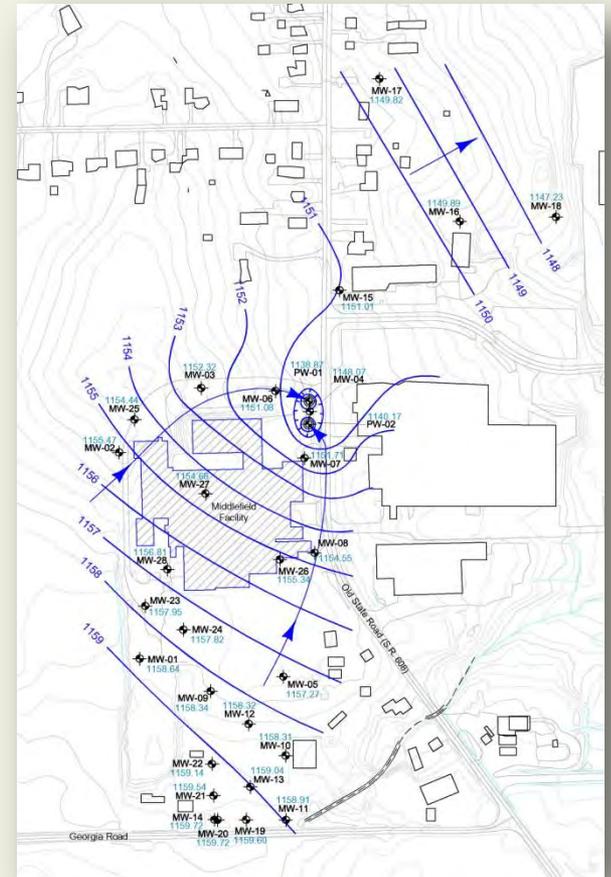
Parallels to RCRA Corrective Action Program

- Traditional drawn out command and control process
- RCRA Cleanup Reforms and 2020 Initiative
- Utilizing the full range of regulatory mechanisms
- Capitalizing on redevelopment potential
- Results-based approaches

Holistic Approach

“Big picture” look which allows regulator and O/O to prioritize resources based on risk to human health and the environment

- Address current risk
- Limit migration and growth of groundwater plume
- Identify and address sources



Performance Standards



“Regulator establishes clear, reasonable, and protective performance standards, while facility (with an appropriate level of regulatory oversight) determines how these standards are met¹.”

1: Results-Based Approaches and Tailored Oversight Guidance for Facilities Subject to Corrective Action Under Subtitle C of RCRA, EPA, 2003

Procedural Flexibility

Encourages regulators and facilities to focus on the desired result over the generic step-by-step cleanup process that may not reflect site-specific circumstances



Targeted (Focused) Data Collection

- Collect only the data you need
- Utilize site conceptual model
- Utilize DQOs to identify the amount, type, and quality of data needed to support critical cleanup decisions
- Utilize innovative site characterization techniques