



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

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2018 Long-Term Stewardship Conference

Vapor Intrusion Mitigation
for Building 100 at the
Young - Rainey Science, Technology, and Research Center
Largo, Florida - 119

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Session 3: How Regulators Shape Emerging Issues with
Vapor Intrusion

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LMATA

Background

- 100-acre facility constructed and operated by DOE and predecessor from 1956 until 1997
- Ownership transferred to Pinellas County in 1995
- Successfully transitioned to a technical business park
 - Science, Technology, and Research (STAR) Center
- Facility is thriving under Pinellas County ownership
- DOE retains environmental restoration responsibility
- Contaminants of potential concern:
 - Chlorinated solvents
 - 1,4-dioxane

Background, Continued

- Known groundwater contamination exists beneath Building 100, an occupied 11-acre building
- DOE is actively managing two groundwater contaminant plumes that originate from sources beneath the building
- There is little to no potential for human exposure to contaminated groundwater
- There is potential for vapor intrusion from contaminated groundwater into the overlying building

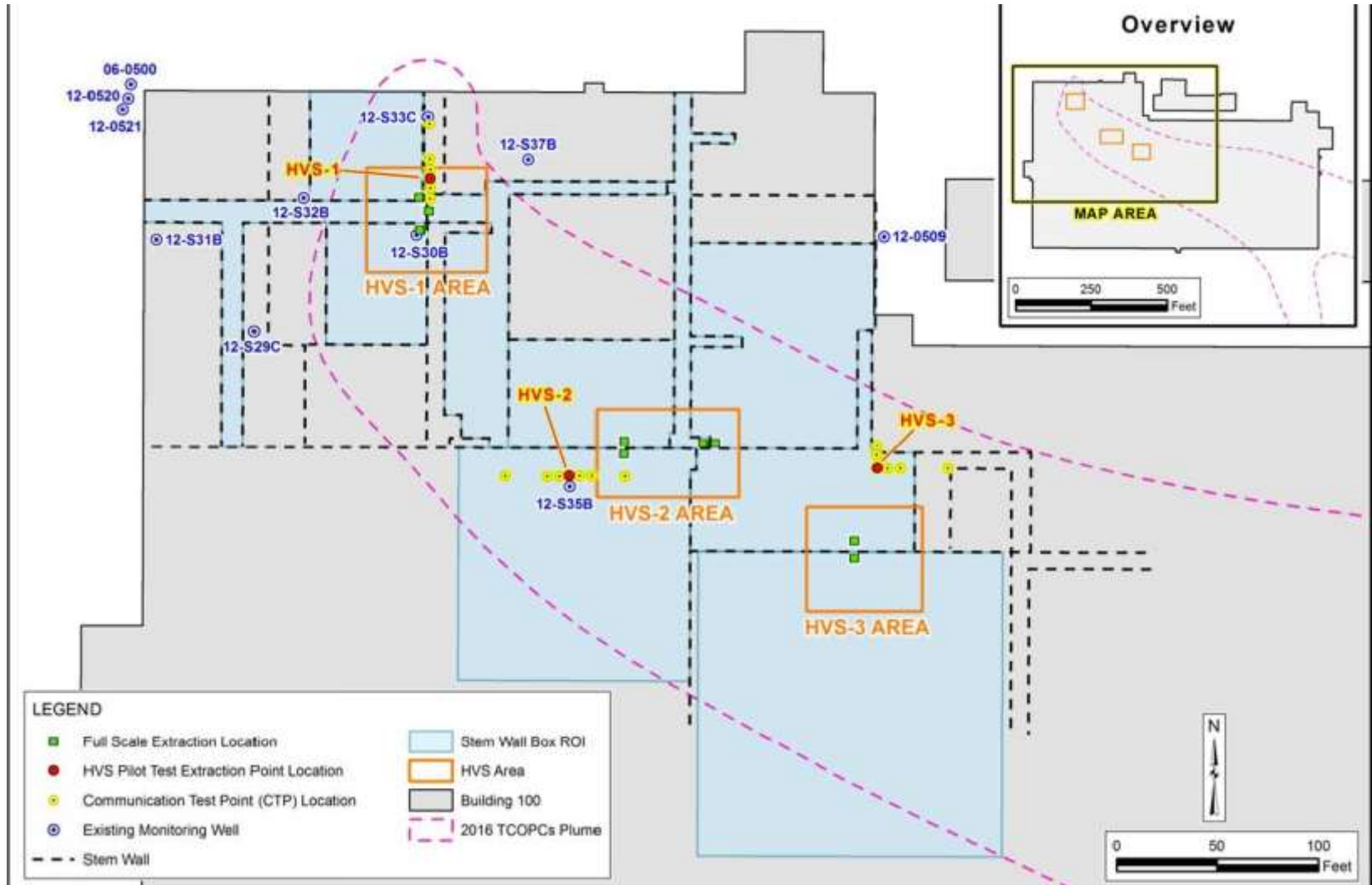
Regulatory Setting

- Florida Department of Environmental Protection (FDEP) oversees environmental restoration
 - Hazardous and Solid Waste Amendment (HSWA) permit
- Groundwater cleanup is being addressed under Florida Risk-based Corrective Action rules
- Florida has neither regulations nor guidance pertaining to vapor intrusion from contaminated groundwater
- USEPA Region IV has prepared guidance for addressing potential vapor intrusion from groundwater into nearby buildings
- LM has chosen to proactively address potential vapor intrusion into Building 100

Building 100 Vapor Intrusion Pilot Study

- Consisted of six sub-slab high-volume vapor sampling locations along the axis of the groundwater plume
- Test results indicate a potential for vapor intrusion in the northwest portion of the building
- DOE elected to proactively address this potential risk by designing and installing a vapor intrusion mitigation system

Sub-Slab Vapor Extraction Locations



Objectives

- Coordinate with landlord and tenant to get concurrence on proposed approach
- Develop a VI mitigation design with interactive input from landlord and tenant
- Implement actions without disrupting tenant activities

Technical Approach:

- Install vacuum points at selected locations to capture sub-slab vapor in the plume vicinity
- Install piping to convey the sub-slab vapor through the building to the roof for discharge
- Provide power with emergency backup for uninterrupted operation
- Include instrumentation for interface with the building monitoring system for automated system monitoring

Lessons Learned - Design Challenges

- The presence of foundation walls at the perimeter of each individual building created barriers to horizontal vapor flow to the vacuum points
- Floor and roof penetrations, power sources, and conduit and piping runs had to be designed based on minimizing tenant impacts
- Prior source treatment via bioinjection created the potential for accumulation of explosive gases beneath the floor slab
- The tenant has rigorous dust and debris control policies due to the potential adverse impact on their electronics production activities

Lessons Learned - Construction Challenges

- Most work had to be performed during second or third shift and weekends
- All construction workers were required to have security badges or have security escorts at all times due to the sensitive and/or secure nature of the tenant's activities
- Floor and roof penetrations had to be performed on weekends and be completed prior to the start of the workday on Mondays

Current Status

- Construction was completed on October 31, 2016 and the system was started on November 3, 2016
- Additional testing and balancing events were conducted weekly for the first month, and monthly inspections are ongoing
- System operation is monitored automatically via connection to the building monitoring system with automated call outs in the event of malfunction

HVS-1 Area Risers



2018 LTS Conference

HVS-1 Area Manifold



HVS-2A Area Sub-Slab Screen



