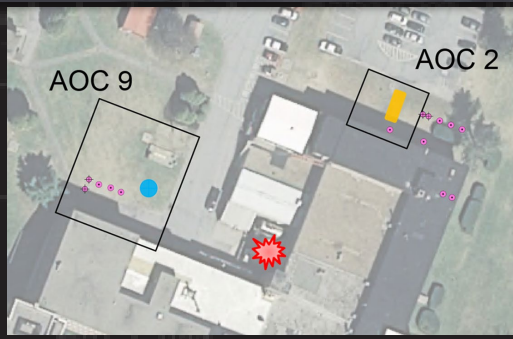
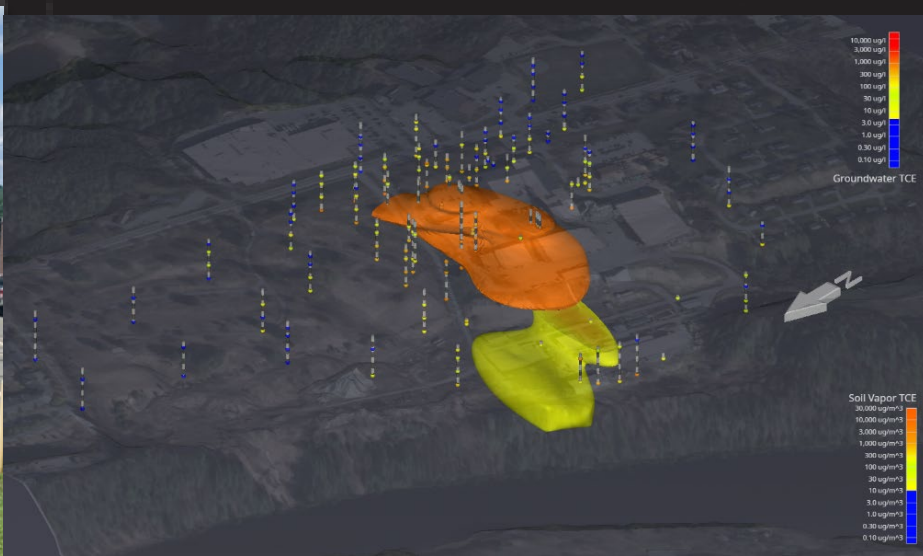


COLD REGIONS RESEARCH AND ENGINEERING LABORATORY RESTORATION ADVISORY BOARD MEETING

Christopher Kane, USACE Project Manager
Date: 15 January 2025



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."

- Introductions
- History/Background of Trichloroethene (TCE) Use at CRREL
- On-Site Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Investigation Status
- Connecticut River Remedial Investigation Status
- Administrative Record Update
- Upcoming Work
- Adjourn





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INTRODUCTIONS



Members

- Christopher Kane, RAB Chair and USACE Project Manager
- Kristine McDevitt, Community Member
- Bree Carlson, Member Representing Dartmouth
- Roelof Versteeg, Community Member
- Deputy Chief/Fire Marshal Michael Gilbert, Member Representing Town of Hanover
- Tony Daigle, Member Representing SAU 70

Support

- Laurie Haines-Eklund, USAEC Team Lead
- Roberto Rivera - USAEC Environmental Support Manager
- Julia Rupp – USACE Technical Lead + COR
- Amy Rosenstein, USACE Risk Assessor
- Dan Groher, USACE Engineer
- Whitney Sauve, USACE Engineer
- Dr. Steve Potts, USACE Geologist
- Katherine Miller, USACE Chemist
- Terry Harwood, ERDC-CRREL IRP Manager
- Dr. Samuel Beal, ERDC-CRREL Deputy IRP Manager
- James Wieck, GZA/Dartmouth
- Scott Calkin, WSP PM
- Wolfgang Calicchio, WSP Chemist
- Amy Quintin, WSP Risk Assessor
- Ryan Ordnung, WSP Hydrogeologist
- Jack Besse, WSP Engineer

Regulatory Agencies

- Drew Hoffman, NHDES POC
- Rene Nahlik, NHDES PM
- Richard Spiese, VTDEC POC





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HISTORY/BACKGROUND

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TCE used as an industrial chemical from 1960 – 1987

TCE first detected in groundwater in 1990

Water Treatment Plant constructed in 1994

TCE Vapors first detected in 2010

- Indoor air sampling began

USACE involvement began in 2011

- Sampling intensified to determine extent of TCE in indoor air
- Soil Vapor Extraction Pilot from May 2014 to November 2021
- On-Site Remedial Investigation (RI) Report completed June 2018
- On-Site Feasibility Study (FS) Report completed January 2021
- CT River Investigation began in 2015, separate RI/FS underway

Current indoor air sampling conducted during the work week in the Main Lab and intermittently in other CRREL buildings.



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PRIMARY AREAS OF CONCERN (AOCS) FOR TRICHLOROETHENE (TCE)



Underground Storage Tank



Ice Well



Soil Vapor Monitoring Well



Soil Vapor Extraction Well



Aboveground Storage Tank Deflagration



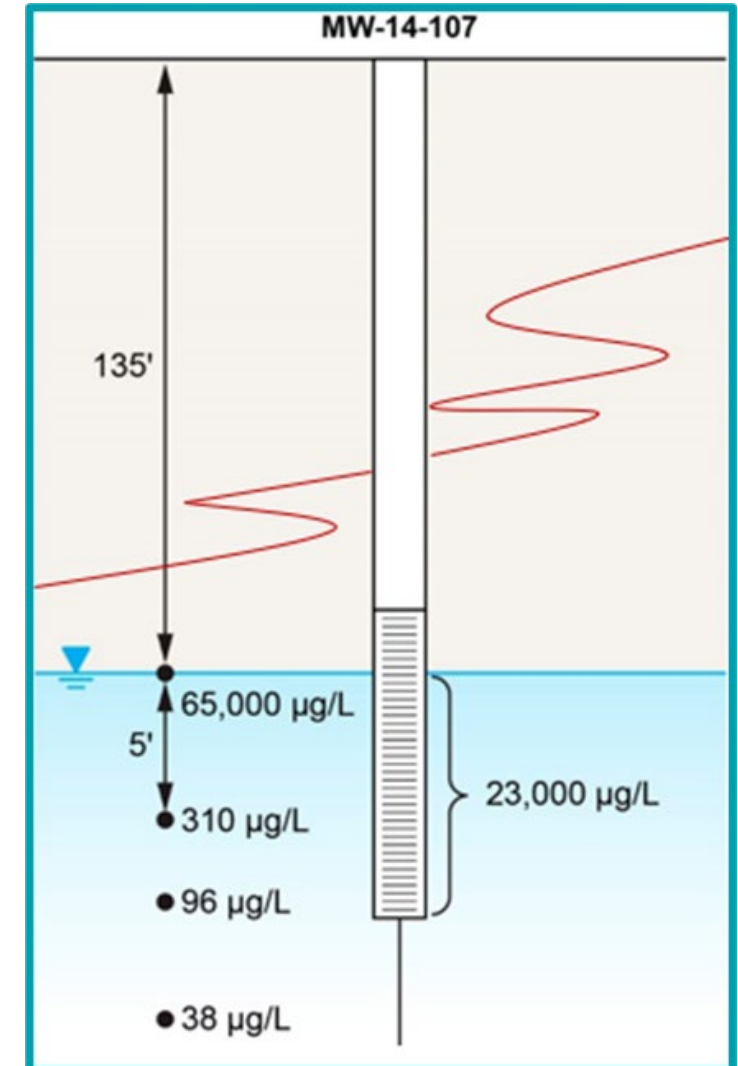
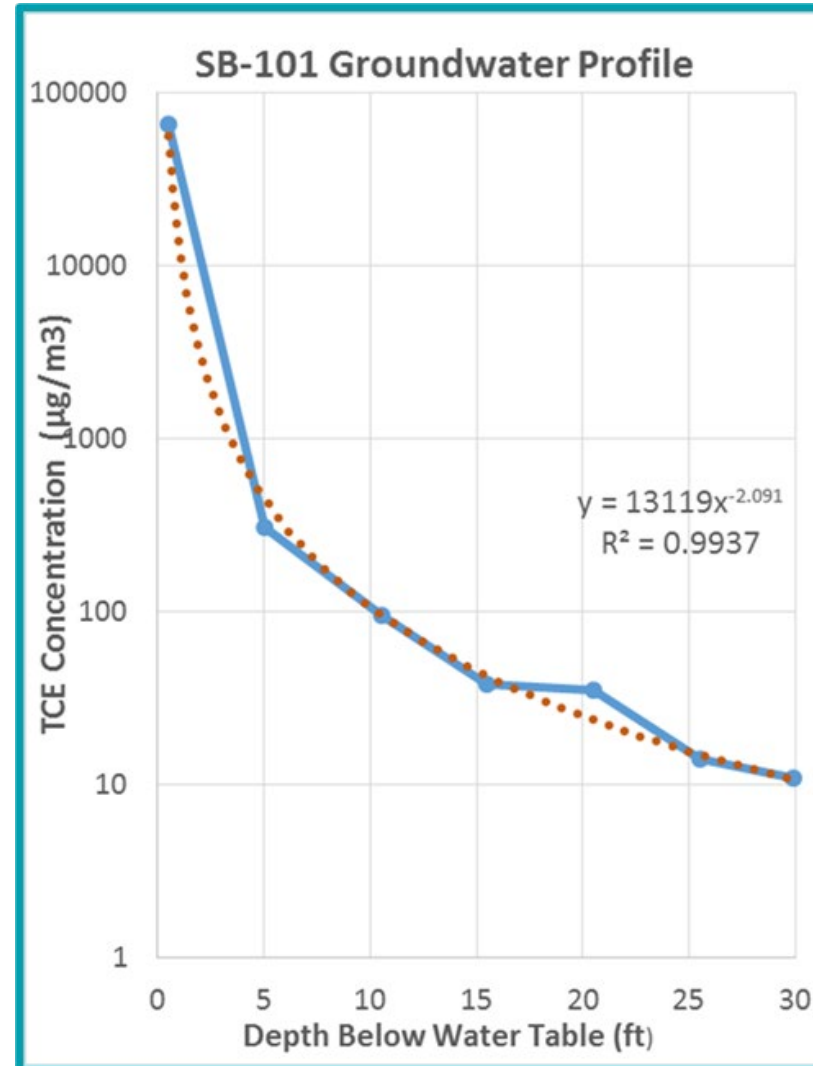


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SOIL GAS PLUME GENERATES THE GROUNDWATER PLUME

Remedial Investigation identified Soil Vapor/Groundwater contamination connection:

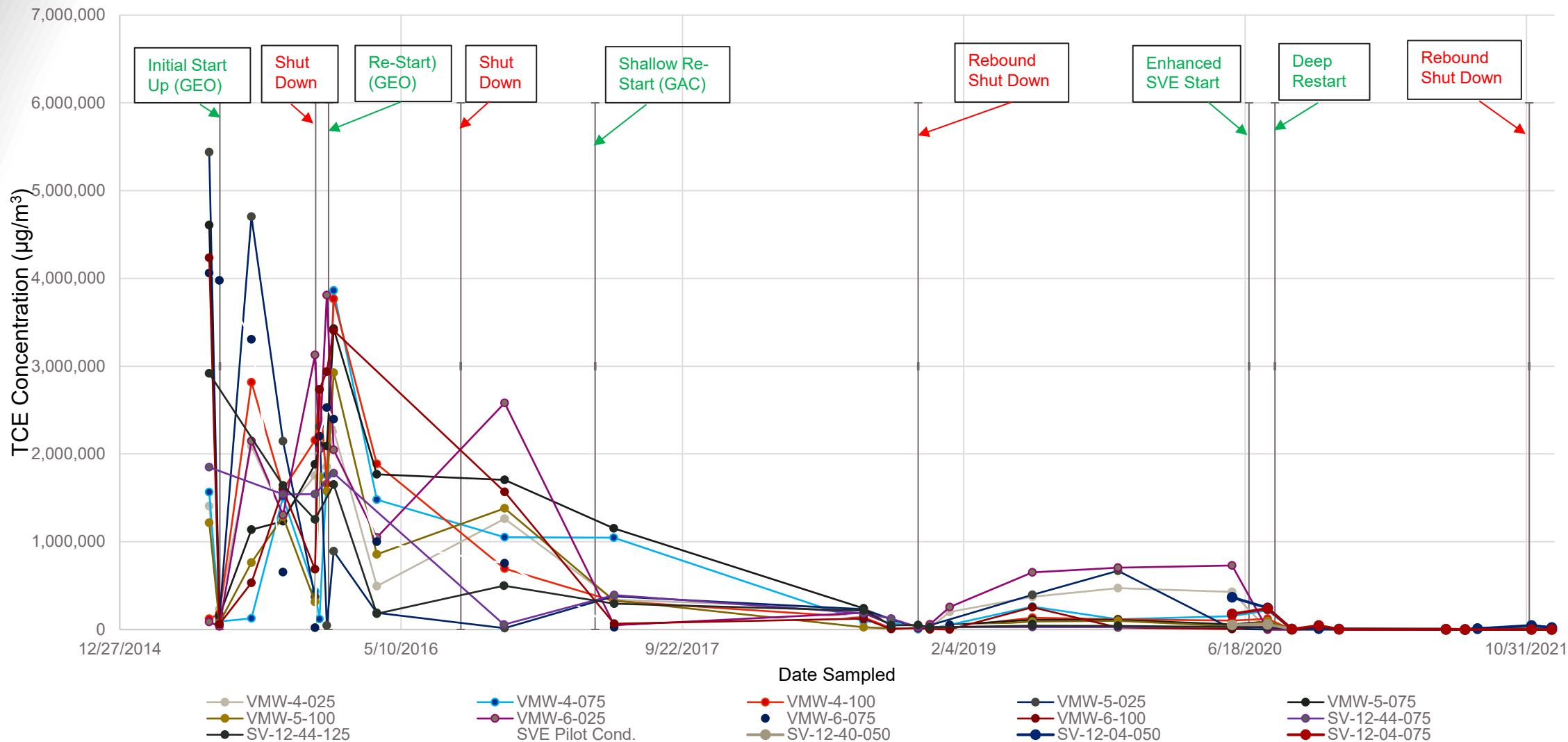
- Pre-SVE (2011-2014) soil gas TCE concentrations in source areas up to 10,000,000 $\mu\text{g}/\text{m}^3$ (1,850 ppm_v)
- TCE in groundwater at the water table at 65,000 $\mu\text{g}/\text{L}$ (groundwater profiler data)
- Monitoring well (10 ft screen) TCE at 23,000 $\mu\text{g}/\text{L}$
- Groundwater and soil gas are in equilibrium based on Henry's law.
- Groundwater velocity is 0.5 to 1 ft/day





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SVE REMOVED ~3,600 KILOGRAMS (~7,940 POUNDS) OF TCE FROM SOIL GAS



SVE Pilots shutdown on 11/09/2021



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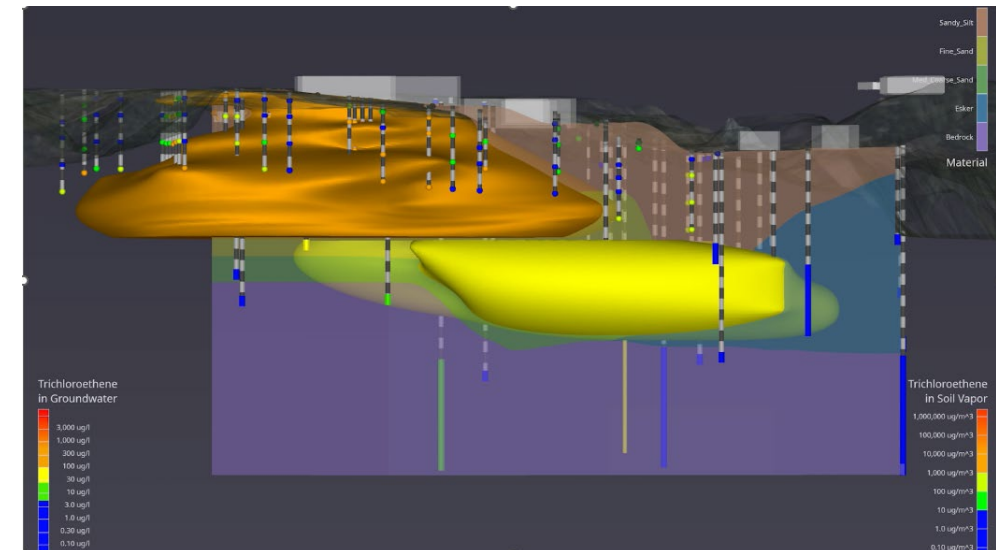
ON-SITE CERCLA INVESTIGATION STATUS

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Next Steps:

1. Resolve NHDES Feasibility Study comments regarding Applicable or Relevant and Appropriate Requirements (ARARs)
 - NHDES evaluating in conjunction with CT River RI as part of holistic review
 - May result in an Addendum to the Final Feasibility Study
2. Once resolved, Proposed Plan and Decision Documents will follow thereafter
 - Provides public and stakeholders an opportunity to comment on selected remedy(s) per CERCLA, including public meetings as part of each document cycle.
 - Provides formal record and rationale for the selected remedy(s) and commits parties to the remedy(s).





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CONNECTICUT RIVER REMEDIAL INVESTIGATION REPORT

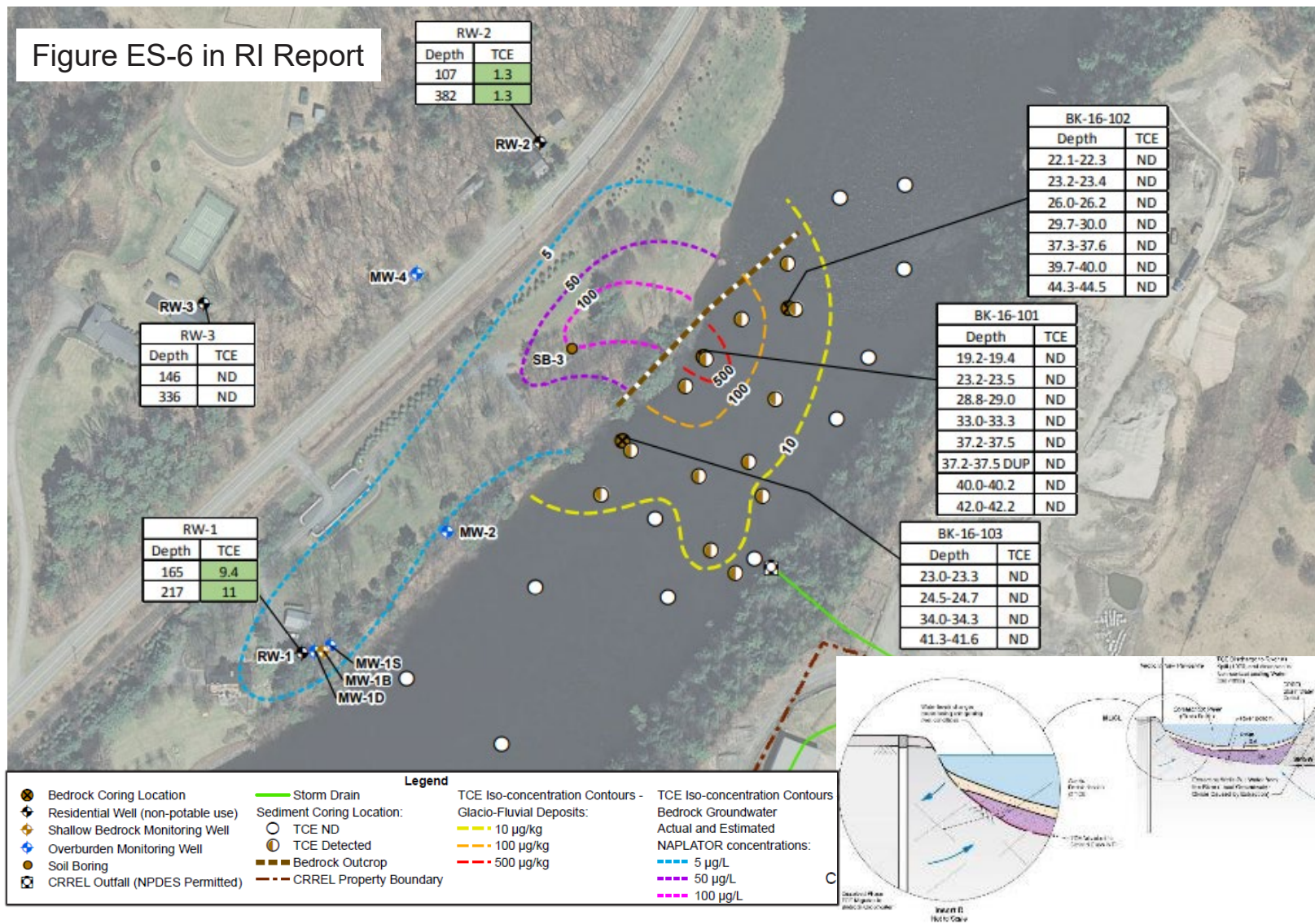


In Draft Final Status – Vermont DEC approved the report to issue as final in July 2023.

NHDES provided initial comments October 3rd, 2023, and a response to comments was issued by USACE, which then held two calls with NHDES May 23rd and July 9th, 2024. The first call was a chance for USACE to provide a detailed technical briefing on the CSM both on-site and for the CT River, and the second call served as NHDES's opportunity to present their understanding and to seek clarification on certain details. The goal of the calls was to seek consensus on the path forward for these CERCLA documents.

NHDES revising/consolidating comment documents based on 2024 meetings. Once comments are resolved the document will be finalized.

A Draft Feasibility Study will be revised for review following RI comment resolution.





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ADMINISTRATIVE RECORD UPDATE

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The Administrative Record is available for review:

- CRREL library (hard copies)
- CRREL SharePoint (digital copies) site and
- Howe Library in Hanover (digital copies)
 - Includes all final reports
 - See the information desk to access the files

January 2025:

- 4 documents added
- 2024 up to present including:
 - groundwater reports





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UPCOMING WORK

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Indoor Air

- Continued HAPSITE® monitoring of the Main Lab, FERF, and LMO as well as other CRREL buildings
- Plan to complete second round of sampling all indoor air spaces on campus in January-March 2025
- Tentative restart/expansion of VaporSafe® monitoring – Summer 2025
- Roof Sampling and Analysis – Winter/Spring 2025
 - Aiming to quantify amount of TCE adsorbed into roofing materials
- Plenum Study Approach and Work Plan - Spring 2025
 - Designed to determine exact plenum space layout, identify airflow pathways, and advise potential mitigation measures
- CRREL/NAE planning removal of TCE impacted glycol discovered in a pipe within the Mechanical room



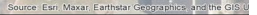


Soil Gas

- Finalize Synoptic Soil Gas/Rebound August 2023 Report
- SVE Pilot Re-Start pending task award
 - New SVE pilot testing designed to test for potential connections between 2nd floor/plenum TCE and the subsurface.
- Synoptic Soil Vapor sampling tentatively scheduled for spring/summer 2025.

Groundwater

- Continue quarterly sampling of GMZ wells, sampling scheduled for week of January 13th, additional rounds in April and July 2025.





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UPCOMING WORK - CONTINUED

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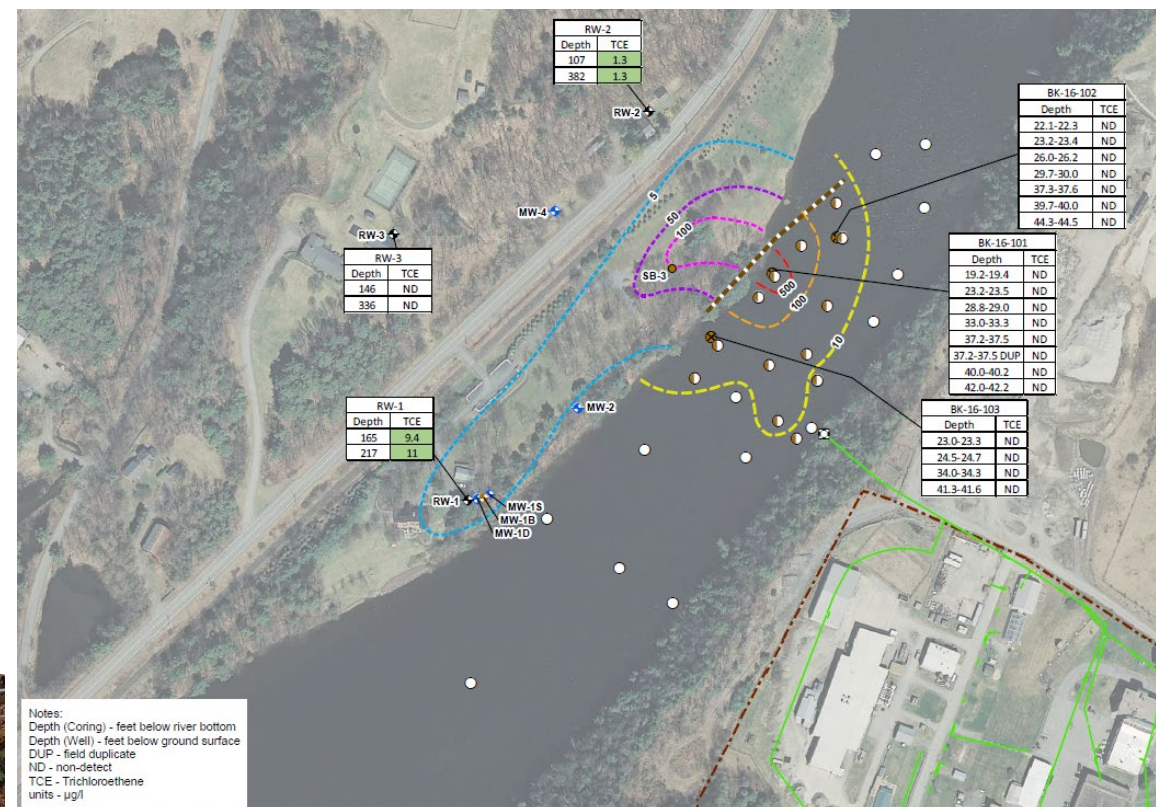


CRREL RI/FS/Proposed Plan/Decision Document

- Resolve NHDES Feasibility Study Comments
- Draft Proposed Plan and Decision Document
- Conduct a public meeting during Proposed Plan comment period

Connecticut River RI/FS

- Prepare Final RI incorporating NHDES Comments
- Submit revised Draft Feasibility Study after the RI is finalized for USACE Review
- Draft Proposed Plan and Decision Document
- Conduct a public meeting during Proposed Plan comment period

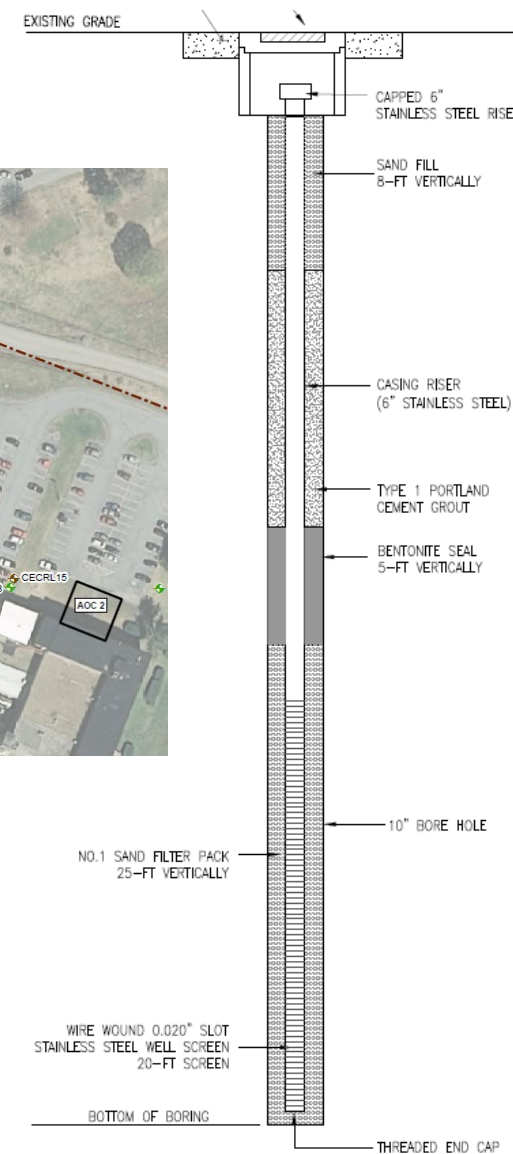
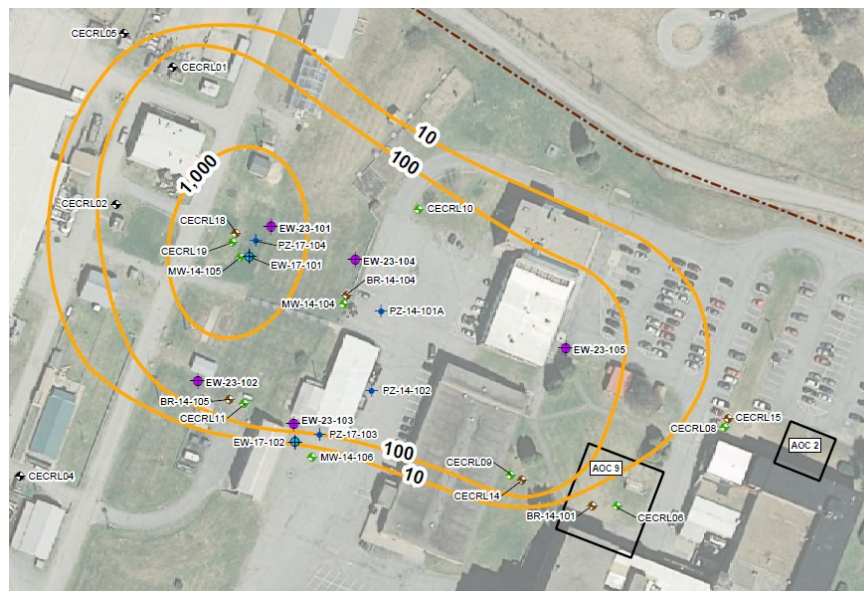




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UPCOMING WORK - CONTINUED

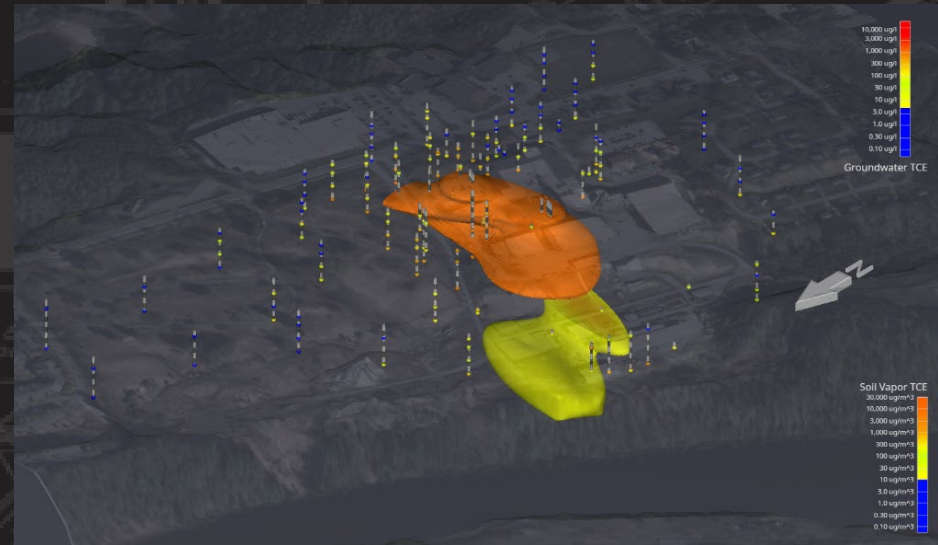
- Treatment plant design on hold pending completion of the ROD.
- Pilot extraction well design completed in spring 2023. Pilot extraction work plan to be completed as a 2025 activity
- The work plan will cover the installation and operation of groundwater extraction wells to further our understanding of aquifer characteristics, demonstrate capacity to limit migration of TCE to production wells, and provide design clarity for final remedy.



QUESTIONS OR COMMENTS

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