**Cold Regions Research and Engineering Laboratory**

**Restoration Advisory Board (RAB) Meeting Minutes**

**September 20, 2023, 1600 HRS**

Hybrid Meeting: Held In-Person at the Richmond Middle School Library and Virtually, via Microsoft Teams

**Attending:**

Chris Kane (USACE-NAE)

Amy Rosenstein (USACE-NAE)

Scott Calkin (WSP)

Amy Quintin (WSP)

Jack Besse (WSP)

Wolfgang Calicchio (WSP)

Mateo Rivera (WSP)

Katy Sarsfield (WSP) (*virtual*)

Terry Harwood (CRREL)

Laurie Haines-Eklund (USAEC) *(virtual)*

Peter Sandin (NHDES) Member

Drew Hoffman (NHDES)

Kristine McDevitt (Community Member)

Roelof Versteeg (Community Member)

Bree Carlson (Dartmouth) Member

Steven Lamb (GZA)

James M. Wieck (GZA)

Presentation file: 2023-09\_20 CRREL RAB Meeting\_Rev1.pptx

Mr. Chris Kane of the United States Army Corps of Engineers-New England District (USACE-NAE) called the meeting to order at 1611 hours on September 20th. He welcomed everyone to the first in-person RAB for the Cold Regions Research and Engineering Laboratory (CRREL) Remedial Investigation/Feasibility Study project since early 2020. Mr. Kane introduced supporting staff and invited meeting participants to introduce themselves and state their role on the RAB. All participants gave introductions.

Mr. Kane reviewed the meeting agenda from the PowerPoint presentation which included Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents status, Groundwater Management Zone (GMZ) sampling, Synoptic soil gas sampling results change over years, Groundwater Treatment Plant (GWTP) design status, remedial systems updates, and upcoming work.

Mr. Kane reviewed the status of the on-site CERCLA documents, stating that there was no change in status since the previous RAB meeting, and that comment responses on the Feasibility Study (FS) were still under final review by the New Hampshire Department of Environmental Services (NHDES). He stated that a draft final Proposed Plan was ready to be distributed once regulatory review of the FS was complete. Mr. Kane handed the presentation to WSP personnel to provide project updates.

Mr. Scott Calkin stated that the Connecticut (CT) River Remedial Investigation (RI) was still under review by NHDES. Comments were received by Vermont Department of Environmental Conservation (VTDEC) and will be addressed. Once comments from NHDES are received, the RI will be revised and finalized, and appropriate revisions to the CT River FS will be made before USACE-NAE review, followed by RAB and NHDES review.

Mr. Calkin reviewed slides depicting synoptic soil gas results in 3D view between 2015 and 2023 including an animation of the decreasing soil vapor plume. Mr. Calkin pointed out that the 12,000-kilogram reduction in TCE from the Soil Vapor Extraction (SVE) system has caused a significant reduction in the soil vapor plume area and concentrations, as well as a parallel reduction in the groundwater plume. Mr. Calkin discussed the rebound shown since the SVE system was shut off in October 2021, evident in the 2023 sampling event as a larger plume size.

NHDES asked what the source is for the rebound if soil vapor is the source. WSP responded that the larger plume size is the result of concentrations diffusing outwards from higher concentration gradients at the core, or center of the plume. There has been no increase in sub-slab concentrations.

Kristine McDevitt asked for additional clarification on the source of the TCE vapors and asked whether the plume expanding will make it more difficult to recapture vapors. WSP confirmed that diffusion gradients are believed to be the primary source of the expanded plume size and that the capture zone for this system was sufficiently large that if the SVE system were turned back on the vapors would be recaptured. WSP continued to explain that there is currently no concern in allowing the vapor to expand to a larger size regarding the ability to implement the final remedy, and that this rebound exercise is likely to be useful in fine-tuning the final remedy to ensure the final concentrations are below the remedial goals despite eventual diminishing returns on the SVE system.

Mr. Calkin updated the RAB on the status of recent GMZ sampling. Sampling events during 2022 and early 2023 had seen exceedances of the NHDES ambient groundwater quality standard (AGQS) for TCE of 5 μg/L at two deep boundary wells, specifically at the downgradient boundary well MW-14-103B (with detects of 15 and 19 μg/L) and the upgradient boundary well CECRL-07 (with detects of 6.8, 31 and 35 μg/L). Both wells were below the NHDES AGQS during the last two to five sampling events.

Jack Besse stated that the GWTP design was still tabled to remain consistent with the CERCLA process as discussed during the previous RAB meeting. However, the Draft Final Pilot extraction well design was submitted to USACE and is under additional review to establish methods of groundwater conveyance during pilot testing. Installing and operating pilot wells will deepen understanding of aquifer characteristics and demonstrate capacity to limit migration of TCE to production wells. A schedule for extraction well installation and pilot testing of the wells has not been established.

Mr. Besse continued by discussing the status of interim remedial systems including the sub-slab depressurization systems, HealthMates®, use of HAPSITE® to perform daily indoor air sampling, and discussed upcoming work. Mr. Besse concluded the slide presentation.

GZA asks how the decision will be made whether to turn the SVE system back on. USACE clarifies that the decision has already been made. The process has been started, and it is just a matter of getting this work funded. The pilot study for the groundwater extraction is more complicated, because this may be viewed as part of the remedy. The SVE start-up is decided already and implementing it is a work in progress.

NHDES comments that the maps are showing the extent of the plume at 10,000 ug/m3, but what about the full plume? WSP clarifies the 10,000 ug/m3 threshold was selected in the FS as protective of all exposure pathways and therefore this is the most appropriate threshold to view.

Ms. Kristine McDevitt asked where is the line we should be concerned about, if there is a construction development? The town is redoing their master plan and construction in this area is anticipated. When will the public have input? USACE clarified that soil > 15’ below ground surface is typically not considered a risk.[[1]](#footnote-1) The 10,000 ug/m3 threshold was selected in the FS as protective of all exposure pathways. The selected final remedy may include continued monitoring; all potential remedies will be outlined in the FS, which evaluates the various alternatives and selects a preferred alternative. Once the FS is finalized, the Proposed Plan will be drafted and will go out for public comment.

Ms. McDevitt continued by requesting clarification about funding. She indicated that the public does want to see monitoring funded and inquired about what was needed from the community to ensure this happens. USACE indicated that the FS, which includes the remedy selection, as well as the Proposed Plan, require public input, including the RAB and regulators. This is a process that is currently ongoing.

NHDES asked what is the monitoring frequency of the “soil gas” boundary wells? WSP clarified that soil gas monitoring is conducted on a technical-needs basis, there is no set schedule and it has been monitored with less frequency than previously as the concentrations have decreased. If the SVE system is turned back on, this will likely instigate more frequent sampling. WSP additionally clarified that a full synoptic round is typically done using the HAPSITE® which is a large effort, and that the sample points shown on figures are frequently nested locations, with multiple sampling points per location. WSP further clarified that winter events are extremely difficult due to the presence of vapors in the lines that freeze. NHDES clarified that only hitting boundary wells on a schedule would be a reduced effort compared to a full synoptic round and may be beneficial.

Mr. Kane stated that follow-up questions can be submitted via email. Contact information provided below for questions: [Christopher.g.kane@usace.army.mil](mailto:Christopher.g.kane@usace.army.mil) or via phone 978-318-8025 (USACE PM).

Mr. Kane motioned to approve the May 2023 (RAB) meeting minutes, the motion was seconded and approved unanimously.

Mr. Kane adjourned the meeting at 1703 hours.

1. As presented at the September 21, 2022 CRREL RAB meeting, although risk assessments for Rivercrest using 2021 and 2022 data concluded there are no unacceptable risks to construction workers and low potential risk to future residents if no mitigation measures are used, USACE recommended that adjacent off-site property owners consider precautionary mitigation measures for new construction, such as vapor barriers, and, once future building plans are finalized, potentially conduct a focused sampling effort designed around an approved construction build plan. [↑](#footnote-ref-1)