

**United States Army Corps of Engineers – New England District  
Cold Regions Research and Engineering Laboratory (CRREL)  
Restoration Advisory Board**

**Minutes of Meeting #17**

**Wednesday, January 11<sup>th</sup>, 2017  
Richmond Middle School (RMS) Library  
Hanover, New Hampshire**

Attending: Chief Martin McMillan – Hanover fire Dept. [Martin.McMillan@hanovernh.org](mailto:Martin.McMillan@hanovernh.org)  
Jeff Pickett - Amec Foster Wheeler – [Jeffrey.Pickett@amecfw.com](mailto:Jeffrey.Pickett@amecfw.com)  
Rod Rustad - Amec Foster Wheeler – [Rod.Rustad@amecfw.com](mailto:Rod.Rustad@amecfw.com)  
Scott Calkin - Amec Foster Wheeler – [Scott.Calkin@amecfw.com](mailto:Scott.Calkin@amecfw.com)  
Darrell Moore (Chair) – USACE - [Darrell.A.Moore@usace.army.mil](mailto:Darrell.A.Moore@usace.army.mil)  
Ken Richards – NHDES – [Kenneth.Richards@des.nh.gov](mailto:Kenneth.Richards@des.nh.gov)  
Kristine McDevitt – Community Member – [Kristinemcd@hotmail.com](mailto:Kristinemcd@hotmail.com)  
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Larry Cain – USACE  
Gary Pasternak – CRREL

Agenda:

- Review/Accept October 12<sup>th</sup> Meeting Minutes
- Soil Vapor Extraction Pilot at AOC 9 and AOC 2
- November 2016 Synoptic Soil Gas Sampling
- Connecticut River Sediment/Soil and Bedrock Sampling
- Remedial Investigation Report Review Process
- Upcoming Work
- Schedule Next Meeting
- Adjourn

Capture Notes

Introductions of members and presenters. Darrell Moore leads as the board chair.

Darrell kicks off the meeting with review of the October 12, 2016 meeting minutes and makes a motion to accept meeting minutes. Motion is seconded and the meeting minutes are accepted.

Darrell Moore summarizes the meeting agenda for today and discusses status of the RI Report. USACE reviews who has reviewed the RI Report. List includes CRREL, USACE, Omaha CX, and the Army Public Health Command.

Army has provided some internal comments on the RI Report. Consensus is that there are no 'show stopping' comments from the current list of reviewers. However, the document will need some clarifications on the use of the HAPSITE GC/MS data in the risk assessment and how the HAPSITE data was used in the RI Report.

Draft RI report to go out to NHDES and RAB after comments have been addressed and reviewed by the USACE.

USACE Looking for suggestions from the RAB on how best to review the RI Report with the RAB.

Mr. Versteeg suggests providing a road map of the RI report, may want to provide an executive summary of the RI report. RI Report may be ready late May 2017 for RAB review and comment. It is a very large document and will not be easy to review.

Amec Foster Wheeler provides a discussion of the process for starting the soil vapor extraction (SVE) Pilot work at AOC 9.

Currently in the process of moving the GEO C3 system (system which removes TCE from vapor) from AOC 2 to AOC9. The project team just completed the installation of two vapor extraction wells and some addition soil gas monitoring points at AOC9 during the first week in January.

Amec Foster Wheeler reviews the layout of AOC 9 area and what wells have been installed at the AOC9 area.

Amec Foster Wheeler indicates the SVE pilot at AOC 9 will be run to determine differences in soil vapor extraction between AOC 9 and AOC 2 area and to assist with the design of an interim vapor extraction and treatment system. May see similar effects at AOC 9 on groundwater as at AOC or we could see some differences that will help us to adjust the design for an interim system.

Amec Foster Wheeler continues with a discussion of the November 2016 synoptic soil gas sampling and analysis effort both on and off the CRREL property. Over 250 sample collected and analyzed by HAPSITE. The latest soil vapor data in the vicinity of AOC 2 is approximately 5 times lower overall than the pre-SVE pilot test soil gas data prior to June 2015.

Amec Foster Wheeler provides figures showing pre and post SVE soil gas sampling data and discusses with the RAB the pre and post soil gas sampling gas results.

Some of the shallow points across the street from CRREL near RMS were a bit higher in the November data set than in previous data sets

Discussion of latest December and the August RMS sampling. The elevated detects may have been related to a dry summer, the cause is not definitive.

Amec Foster Wheeler describes the potential process dry summer and lack of infiltrating rainwater as to why shallow soil gas concentrations may have been a bit higher in the November sampling event.

RMS was last sampled in December 2016 school vacation week. Just issued a synoptic soils gas sampling data report for the COE NAE review. NHDES indicates that the agency would like to also see a copy of the November soil gas Report that was issued to the COE NAE by Amec Foster Wheeler.

NHDES asks if we are seeing similar things at the Rivercrest. COE NAE mentions that the SVE Pilot has had an effect of generally decreasing the concentrations of soil gas on the Rivercrest property.

Amec Foster Wheeler provides an overview of the actual soil gas data from the November soils gas sampling results for the shallow school sample points. Amec Foster Wheeler went back in mid- December and pulled additional soils gas data from the school property. The results changed and were lower in December vs November.

Question asked regarding how many soil gas data sets we have off site on the school property. Amec Foster Wheeler replies that we do not really have a base line for the offsite on the school property due to the low number of samples, constantly changing flux of soil gas and barometric changes as well as other factors such as infiltration of precipitation.

COE NAE provides an overall comparison to the state of the art relative to soil gas sampling.

A RAB member provides a further description of some of the issues with the state of the art for soil gas sampling. NHDES states it is not as worried about the variability. However there is some concern about the “flipping” of the shallow data and what it is saying to us right now and potential in the future. There is some concern about the risk factors relative to the school sub slab samples however the sub lab results do not seem to be going up. In fact August data was completely non-detect. Need to look closely at the December sub slab data and the ambient data that was collected at the RMS when that data is available

Amec Foster Wheeler does collect base line meteorological data when we collect the soil gas data as well as collection of O<sub>2</sub> and CO<sub>2</sub> data when we collect the soil gas data. CO<sub>2</sub> and O<sub>2</sub> data are collected to provide some confidence that we don't have short-circuiting to the atmosphere from the soil gas monitoring points. CO<sub>2</sub> and O<sub>2</sub> are collected down hole and from the atmosphere prior to and immediately following sampling of the soil gas points.

NHDES point is noted about the changing conditions in the soil gas sampling at the RMS.

Amec Foster Wheeler provides an over view of the Connecticut River sampling and the results of the soil/sediment boring sampling and analysis and the bedrock coring. Twenty-six sediment borings and 3 bedrock core holes were advance and sampled in the river. Slide provides numbers of samples collected and locations where the river borings were completed

Amec Foster Wheeler reviews bathymetry and locations of the sediment borings. Amec Foster Wheeler provides an overview of the till core from which the highest concentrations of TCE were detected in the river borings. The highest concentrations of TCE were detected in very fine grained soils that appear to be a rock flour/glacial till.

There is a discussion of the bedrock locations and collection of rock samples that are currently being analyzed off site with a microwave extraction technique. Amec Foster Wheeler explains the rock structure and describes the general quality of the rock core as being much more fractured than the bedrock below the CRREL property. Fractures in the bedrock on west side of

the Connecticut River most likely had an impact on the distribution of TCE previously released to the river from the CRREL outfall in July 1970.

Amec Foster Wheeler provides an overview of the site conceptual model related to the CT River and how the 1970 release of TCE could have migrated into the bedrock and the wells in VT.

There is a discussion about the effect of the 1970 spill versus the results of TCE that we are seeing in the river today.

NHDES adds that the Army has gone above and beyond the call of duty relative to the CT River investigation and the current and potential future work in VT and the CT River.

A RAB member mentions that the CT river work is important to the public and re-emphasizes this fact, it is important that the Army include the Connecticut River in the RI.

There is a follow up discussion of the RI report and RI addendum timing and the schedules for these reports by the COE NAE.

There is also additional discussion about the additional soil gas data and IA sampling at RMS. It is important to note that there is additional ambient outside air data that is being analyzed and reported with each IA SS sampling event at RMS and there have been no detect of TCE in the ambient outside air samples.

There was an additional discussion of the soil gas data and what has been recently seen over at the school in the soil gas data.

A question was asked about additional soil gas monitoring points being installed on the Rivercrest property and the answer to this question was yes. There are approximately 4 data points going in on the Dartmouth property at the request of Dartmouth.

What about Fletcher Circle and additional sampling at Fletcher Circle? The IA results the Army COE NAE did not match the Dartmouth College's data or Dartmouth College's contractor data. The date that the Army NAE COE contractor collected did not show any IA or SS impacts to Dartmouth housing at Fletcher Circle.

A RAB member indicated that there may be some additional concerns relative to the Fletcher Circle going forward in the future and the Army COE NAE acknowledged that suggestion.

A RAB member indicates that Dartmouth College did not get out in front of the Rennie Farm site and this continues to be an issue for Dartmouth College.

A RAB member asks if future soil gas or indoor air reports will address some of the basic questions like how does the site affect my property values. Is it safe to go to school at RMS, etc? These are the type of questions that the public are asking. Very similar questions like this are being asked by public at the Rennie Farm site.

COE NA had numerous meetings with Valley news to provide some of the basic answers and data that are in the RI Report. Possible that the COE NAE may need to re-engage with Valley News to provide some additional community relations updates now that more data about CRREL is available and in the public record.

There were no questions from the public.

Need to have the next RAB meeting in early May 2017 and to be timed with the next CCREL Town Hall meeting. No fixed date was chosen and meeting was adjourned at approximately 1830 hours