Former Twin Cities Army Ammunition Plant (TCAAP)
Restoration Advisory Board Meeting
Conducted Virtually using Microsoft Teams
December 14, 2021

Time/Place: 7:00 pm, December 14, 2021 – Microsoft Teams

Attendees: Approximately 24 people attended the meeting including six Restoration Advisory Board (RAB) Community Members and six Government RAB Members. Names of known attendees are included in the attachment.

Agenda: Review/Approve Minutes from Last Meeting, Old Business, Cleanup Status Update, New Business, Next Meeting Agenda and Public Comments.

Introduction: Ms. Cathy Kropp took attendance. The Army Community Co-Chair called the meeting to order and provided plans for the evening.

Review/Approve Minutes of Last Meeting

- Draft minutes from the previous RAB meeting were sent out to RAB members. No edits or changes were requested.

Old Business

- The RAB voted to accept meeting minutes without change. The meeting minutes will be posted to the website as final.
- The Army received concurrence from the U.S. Environmental Protection Agency (USEPA) and Minnesota Pollution Control Agency (MPCA) on the TCAAP Well Inspection Report.
- The Army resampled 11 offsite irrigation/industrial wells. Of the 11 wells, four wells had previously exceeded cleanup standards. The same four wells exceeded the cleanup standards during the confirmation sampling. One additional well (the Midland Hills Country Club Golf Course well) had previously exceeded cleanup standards but was below the standards during the resampling.
- The Army notified the four well owners and asked them if they wanted to abandon the wells and connect to city water. Two of the four well owners want to connect to the city water.
- The Army will discuss options with USEPA and MPCA for the two well owners that do not want to connect to city water.

TCAAP Cleanup Status Update

Groundwater Sampling:

- Annual groundwater sampling was completed in September 2021.
- At Operable Unit 1 (OU1), 1,4 dioxane exceeded cleanup standards at five locations (04U839, 04U855, 04U871, 04U872 and 0RU873). Increases of 1,1- dichloroethane (DCE) and trichloroethylene (TCE) were detected at 04U871, with concentrations for both exceeding cleanup standards. TCE at 04U872 dropped below cleanup standards. Other VOC results were generally consistent with 2020 concentrations.
- Site A – increases of 1,2-DCE exceed cleanup standards at 010U139 and 01U902.

- Site C – Dissolved lead at 01U573 and 01U574 exceed cleanup standards. Previous exceedance at 01U563 is now non-detect.
- Building 102 – decrease of TCE at 01L581, 01L584, 01U581, and 01U584. The first three exceed cleanup standards. Detections of vinyl chloride (VC) at 01U580 (previously non-detect) and 01U584. Previous exceedance of VC at 01L584 is now non-detect.
- EA Engineering is currently working on the 2021 annual performance report. The report will be sent to the Army for review in January 2022.

What has the Army done since September 2021?

- The Army has been preparing the Annual Performance Report which is due to the regulators in February 2022.
- The Army held meetings for the Round Lake Technical Working Group (TWG), Round Lake Applicable or Relevant and Appropriate Requirements (ARARs), Round Lake Stakeholders and Groundwater Stakeholders.
- The RAB Community Co-Chair sent out notes on the Round Lake TWG meeting.
- The next scheduled meeting for Groundwater Stakeholders is on December 15, 2021.

OU1 Optimization

- The Army's objective was to increase the amount of contaminants removed by installing a new well more central to the plume and abandoning some of the old wells that are now on the edge of the plume.
- A well location has been approved by stakeholders. The Army will fund and New Brighton will install the new drinking water supply well. The installation is tentatively scheduled for May 2022.
- The Army will continue to work with New Brighton to ensure drinking water treatment operations are not affected.

OU2 Optimization

- The Army is still working on the new Source Groundwater Recovery System (SGRS) building and expects completion in May 2022.
- Asbestos was found during excavation and a new specially trained contractor was hired to properly remove, contain, and dispose of the asbestos.
- Construction of pump houses has begun at Sites G and I.

OU2 - Site A Site Investigation

- The Site A investigation is complete.
- The vapor intrusion (VI) study is complete. No VI risk found.
- In response to the plume shifting, the Army installed three new monitoring wells.

OU2 - Site K US Geological Survey (USGS) Treatability Study (Dr. Michelle M. Lorah, USGS)

- The purpose of the study is to devise a bioremediation method to improve shallow groundwater remediation of TCE at Site K.
- Building 103 was constructed at Site K to produce small caliber ammunition in 1942. The building was used intermittently from 1945-1998. The primary chemicals used at the building were chlorinated solvents and degreasers, including TCE.

- Bioremediation uses natural microbes that can live and grow by breaking down contaminants, and some like to eat TCE.
- In bioremediation, microbes are stimulated to increase their activity/population size. Bioremediation involves adding “amendments” to the groundwater to stimulate the microbes. Bioremediation generally includes two primary methods. Biostimulation adds nutrients and carbon sources (food) such as molasses or vegetable oil. Bioaugmentation involves adding to the groundwater actual microbes that are known to break down TCE and its by-products. With both methods, a food source is added.
- The treatability study included a site evaluation, identifying natural degradation processes currently happening at the site, lab treatability tests to determine what bioremediation method to use, and a field treatability test.
- USGS completed the site evaluation, natural degradation lab test, and the lab treatability test in 2021. USGS has begun the field treatability test and is currently starting the performance monitoring.
- Sampling during the site evaluation indicated that little or no complete degradation of TCE was naturally occurring.
- Lab results indicated that natural degradation of TCE did not occur or resulted in low production of DCE only. Partial degradation of TCE to DCE was observed with the addition of a carbon source.
- USGS proceeded to test bioaugmentation (adding microbes) in the laboratory. Adding a carbon source and then microbes after a delay was the best strategy to achieve the most rapid degradation of TCE and by-products. The most efficient carbon source was a slow-release emulsified vegetable oil with fast-release lactate.
- On August 6, 2021, USGS submitted a work plan/quality assurance project plan (QAPP) for field testing and has since installed injection and monitoring points, conducted baseline sampling and hydrological data collection, injected a carbon source for biostimulation and post-biostimulation monitoring. Pre- and post-bioaugmentation sampling and microbe injection will be completed by December 17, 2021. Quarterly full sampling is scheduled to begin near the end of January 2022, or possibly the first week of February 2022.

OU3 Plume

- The Army continues monitoring the OU3 Plume. It is still naturally attenuating.
- Sampling results show the plume is stable.

Round Lake – Next Steps

- The Army has completed the responsiveness summary and is currently working on the Record of Decision (ROD). The Army intends to submit the ROD to MPCA and USEPA in Spring of 2022 and release to the public once accepted by MPCA and USEPA. The responsiveness summary will accompany the ROD.
- A TWG meeting was held in September and a Stakeholder meeting in early December. The Community Co-chair represented the RAB at the TWG meeting.
- The Community Co-chair sent out a summary and presentation to the RAB members.
- The intent is for the next RAB meeting to be held after the ROD is released. A date has not yet been determined.

Next Steps

- **OU1 -** In the spring the Army will fund and New Brighton will install a new drinking water supply well.
- **OU2-** The Army will begin and complete abandoning 40 monitoring wells that are no longer needed. Three new monitoring wells will also be installed to replace the ones removed during construction. The Army will also begin optimizing the monitoring well network, including redoing the statistical survey and determining if all the wells are appropriate/needed or if new wells are needed.
- The Army will conduct a Risk Assessment for the unrestricted land use. This is mainly the Arden Hills Army Training Site (AHATS) property.
- An engineering evaluation and cost analysis will be completed for the 135 Primer Tracer area. This area will be offered for sale through General Services Administration (GSA).
- Before the Army can release property to be sold or transferred to another, a Finding of Suitability to Transfer (FOST) must be completed. This has been prepared and is currently out for a 30-day public comment (as of December 4, 2021). A copy is available in Mary Lee's office (at AHATS) if anyone would like to set up an appointment to review. The FOST is not handled through remediation but because it was just released, the Base Realignment and Closure (BRAC) office asked USAEC to make an announcement so everyone would know in case there was an interest.
- One RAB member commented that on Friday, December 10, 2021, GSA posted a sign at the primer tracer area that the 62 +/- acres was up for sale. Kevin Legore, the project manager at GSA, indicated that there will be an industrial onsite day in the Spring and the land will be offered via an online auction sometime Summer 2022. The RAB member also noted that whoever is doing the engineering analysis, they should review the conclusion in the 2015 Integration Resilience Framework, where it notes that the Primer Tracer Area presents a good opportunity for the construction of a solar site.
- **OU3 -**The Army will continue doing groundwater monitoring.
- **Round Lake -** The Army will publish the ROD.

<u>New Business</u>

- USGS is working with the Army to do a site-wide groundwater model. The Army would like USGS to give a presentation at the next RAB.
- The Army Co-Chair asked the RAB if there were any topics for future RAB meetings that the RAB or public wanted, any RAB administrative tasks, or any suggestions for improving the RAB.
- No comments or suggestions were presented.

<u>Next Meeting Agenda (The next meeting is scheduled for March 15, 2022)</u>

- Review/Approve minutes of last meeting
- Old Business
- Cleanup Status Update
- News Business
- Next Meeting Agenda
- Public Comments

<u>Public Comments</u>

- No comments

Closing

- The RAB Community Co-Chair adjourned the meeting at 8:33 PM.

Questions and Answers

- **Q: Which two well owners [with irrigation/industrial wells exceeding cleanup standards] accepted the option to connect to city water?**
- **A:** One of them was classified as industrial/paper making and the other is RD Technical which is right across from TCAAP. The two that accepted show up as industrial or out of service (Linda Albrecht, USAEC).
- **Q: Do you have a figure where you can show where those exceedances occurred (2021 groundwater sampling)?**
- **A:** Maps for the sampling events have not yet been produced (Arthur Peitsch, EA Engineering).
- **Q: Why were there so many increases [in groundwater exceedances]?**
- **A:** For OU1, as the plume is moving, a hotspot has likely shifted further down and different wells are now having exceedances. Now that the data has been collected, EA Engineering will be doing a statistical analysis. The analysis will be included in the annual performance report. After the regulators review the report in January, it will be published (Linda Albrecht, USAEC).
- **Q: Was this [SGRS] for treating the boundary well water?**
- **A:** This is for treating the source control. It will only treat the water from Sites D, I, and G. The TCAAP Groundwater Remediation System (TGRS) will continue to treat the boundary wells (Linda Albrecht, USAEC).
- **Q: One attendee noted that the Site A contamination was only due to a few barrels of solvent and asked why the contamination is still causing a problem.**
- **A:** It is only naturally attenuating which is not a quick cleanup. For the next meeting, the Army can present the plume “by time” so the RAB can view how the hotspot has changed and how its size has reduced (Ms. Albrecht, USAEC).
- **Q: Site A is just shallow groundwater?**
- **A:** Yes, Site A is a very shallow groundwater plume (Linda Albrecht, USAEC).
- **Q: The laboratory testing (with reference to bioremediation) is conducted to determine what will work best in the field?**
- A: Yes, it is a less expensive more controlled environment to test a variety of product (Dr. Michelle M. Lorah, USGS).
- **Q: Does the weather affect the microbes?**
- **A:** The microbes do operate slower at lower temperatures. USGS does expect to see lower removal rates over the winter. This is one reason that monitoring is done for a full year, to get that seasonal difference and change (Dr. Michelle M. Lorah, USGS).
- **Q: How long do the microbes live?**
- **A:** The population will continue to live generally as long as they have an appropriate food source (Dr. Michelle M. Lorah, USGS).
- **Q: You are finding TCE in the aquitard, in the silty layer, which has permeability. Does that mean there are going to be problems trying to get it to fuse out to be treated in your system?**
- A: It is a potential problem, and it is one thing that USGS will be looking for (Dr. Michelle M. Lorah, USGS).
- **Q: Is iron a problem?**
- **A:** There was very low oxidized iron present in the groundwater, and some on the sand. Increases in ferrous in the ground water were observed with the first carbon source

injection. That generally is not a problem. It will then often precipitate out as other minerals. Sometimes there is fouling of well screens if there is too much production and precipitation of those minerals and that is something USGS will be monitoring (Dr. Michelle M. Lorah, USGS).

- **Q: How do you know that it [bioremediation] is working but maybe needs more time, or it is not working, and it is only going to a certain level? You will only be doing this for a year right?**
- **A:** Yes, for one year. The monitoring points are laid out so we can see the groundwater as it moves from where amendments were added down gradient. In this way, rate can be calculated. Within a year we should see enough movement to obtain complete data for each zone according to our calculations (Dr. Michelle M. Lorah, USGS).
- **Q: At the end will you be able to say to the Army, we recommend this and to do the entire area it will take this many injection wells, injected this often to potentially remove the carbons completely?**
- **A:** Yes, that is the goal. USGS may not be able to tell the exact timing of injections and so forth with only a year of monitoring but there will be some amount of information. How much information depends on how fast everything happens out there. USGS thinks those key points will be answered in that year of time (Dr. Michelle M. Lorah, USGS).
- **Q: TCE has been a contaminant for a lot of sites. Has USGS collected enough information? Based on previous USGS studies, this type of sand site is probably a good candidate already for continuing the remediation like this.**
- **A:** Yes, there is information from other sites that this type of sand is uniform and in terms of the actual flow of the groundwater it should be amenable to treatment. The primary disadvantage of the site that can cause issues in the actual performance is the fact that there are some high concentrations of TCE remaining that indicate some source material in the silty clay layer needs to be removed to make it successful and not have that continuing source of added material into the groundwater. Otherwise, USGS has every reason to believe that it will be successful based on lab tests and what is known from other sites (Dr. Michelle M. Lorah, USGS).
- **Q: Is it the conclusion of the USEPA, MPCA and the MDNR [to construct a solar array in the 135 Primer Tracer area]?**
- **A:** It is not a conclusion of the regulatory agencies, what the land should be used for. It is a GSA and BRAC decision (Linda Albrecht, USAEC).
- **Q: Would it be positive for the RAB to support or not support the conclusion?**
- **A:** The RAB is specifically for restoration, but any RAB member is welcome to provide comments. It is a public comment period, open to anyone. The comments do not go to USAEC, they go to the BRAC office. It really does not have anything to do with the RAB (Cathy Kropp, USAEC).
- **Q: Will the USEPA or the MPCA have influence on the Engineering Study?**
- **A:** If GSA sells the land as quickly as they think we will not do an Engineering Evaluation and Cost Analysis (EE/CA). The EE/CA is a place holder for if they don't sell it and the Army has to do something to help with the industrial use (Linda Albrecht, USAEC).
- **A2:** They have already found it as suitable for transfer but if no one will take it then it is not suitable enough for transfer and that is when we would do the EE/CA (Cathy Kropp, USAEC).

ATTENDEES

Government RAB Members Present

1. Linda Albrecht (Army Co-Chair)
2. Brigitte Hay (MPCA)
3. Mary Lee (MN ARNG)
4. Melissa Collins (WDNR)
5. Nicole Menard (USFWS)
6. Viral Patel (USEPA)

Community RAB Members Present

1. Forrest Kelley (Community Co-Chair)
2. Kristine Poelzer
3. Lyle Salmela
4. Marie Culhane
5. Paul Bloom
6. Tim Donakowski

Army and Army Contractors Present

1. Arthur Peitsch (EA Engineering)
2. Cathy Kropp (USAEC)
3. Joel Janssen (Spec Pro Services)
4. Kay Toye (ERG)
5. Robert Reine (USAEC)
6. Susan Elrod (USAEC)

Visitors

1. Jeff Port (Bethel University)
2. Matthew Pajerowski
3. Michelle Lorah (USGS)
4. Rich Straumann
5. Robert J. Young