Former Twin Cities Army Ammunition Plant (TCAAP)
Restoration Advisory Board (RAB) Meeting
Conducted Virtually on Microsoft Teams
February 21, 2023

Date/Time: February 21, 2023, at 6:30 pm

Place: Virtual Microsoft Teams meeting.

Attendees: Approximately 33 people attended the meeting including six Community Restoration Advisory Board (RAB) Members and eight Government RAB Members. Names of attendees are included in Attachment A.

Agenda: Old Business, Cleanup Status Update, New Business, Next Meeting Agenda and Public Comments.

Introduction: Ms. Cathy Kropp took attendance. The Army Co-Chair provided plans for the evening.

Old Business

- Draft minutes from the previous RAB meeting were sent to RAB members. The RAB voted to accept meeting minutes as final.
- The US Army Environmental Command (USAEC) held a tour of the new Source Groundwater Recovery System (SGRS) on 16 August 2022.
- A Record of Decision (ROD) for Round Lake was finalized and signed in September 2022. The ROD is available for review at www.tcaaprab.org. The ROD can be accessed by clicking here.
- Round Lake Technical Working Group (TWG) meetings were held on 25 October and on 7 December 2022.
- The Army held a groundwater stakeholder meeting on 16 August 2022 and 21 February 2023.

TCAAP Cleanup Status (Linda Albrecht, USAEC)

- The Army finalized the 2021 Annual Performance Report (APR) post August 2022. Report comments were addressed, and a final report was distributed in January 2023.
- Groundwater sampling was completed in May and June 2022 and the lab data was included in the FY 2022 APR.
- The Army met with the Groundwater Stakeholders on 16 August 2022 and 21 February 2023.
- Round Lake ROD was finalized and signed in September 2022.
- Round Lake Technical Working Group (TWG) meetings were held on 25 October and on 7 December 2022.
- Current plume maps are available in the FY 2022 APR.
- SGRS full operation-initiated February 2023.

Groundwater Sampling Update (Linda Albrecht, USAEC)

- Land use control inspections were completed in June 2022.

- Groundwater data was validated and incorporated in the FY 2022 APR. The draft final APR is with the United States Environmental Protection Agency (USEPA) and the Minnesota Pollution Control Agency (MPCA) for review.
- The Army is working on the statistical evaluation of the monitoring well network. The evaluation is scheduled for completion in FY 2023. The current groundwater operating strategy uses 2001 plumes as a guideline for containment. The Army plans to reevaluate the well network efficacy due to different flow/pumping rates and new well installations at the source control areas.
- Groundwater sampling is the Army method used to monitor plume location and to update the plume maps. Annual plume maps are available in corresponding APRs and will be updated for FY 2022.
- Plume data from FY 2022 indicate Prairie du Chien Plume remains stable compared to FY 2021, with minor increases throughout the plume. The plume minimized into two distinct areas.
- The Jordan plume is relatively stable compared to FY 2021. The higher concentration area of Trichloroethylene (TCE) is comparable to FY 2021. Downgradient wells are now non-detect.
- The Operable Unit 2 (OU2) Unconsolidated Sediments Plume remains stable compared to FY 2021 results. Minor increases spread throughout the plume. The higher concentration area is smaller FY 2021.

Operable Unit 1 (OU1) Optimization (Linda Albrecht, USAEC)

- In FY 2021 the Army initiated a study to identify potential system optimization to collect more mass (increase amount of contaminant removal). The Army determined a centralized plume well relocation strategy will increase contaminant removal.
- The optimization study identified the need for a new well in New Brighton.
- The Army and New Brighton are still discussing funding for the well. No progress has been made on installing the new well. No changes identified since last meeting.

Operable Unit 2 (OU2) Optimization – TGRS Layout – TCE (Shawn Horn, GHD)

- Construction of the Source Area Groundwater Recovery System (SGRS) was completed in FY 2023. The boundary groundwater system (BGRS) along the southwest border of the TCAAP property in combination with the SGRS is now the TCAAP Groundwater Recovery System (TGRS). This includes all the extraction wells in the deep TCAAP aquifer.
- The TCE plume has shrunk significantly since 2001. The highest concentrations of TCE along the southwest border are less than 100 micrograms per liters.

OU2 Deep Groundwater Remediation (Shawn Horn, GHD)

SGRS Update

- Full scale operation of the SGRS initiated on 6 February 2023.
- The SGRS is operated at approximately 415 - 430 gallons per minute (gpm) of extraction in the source areas.
- Ozone and peroxide dosing for the advanced oxidation reactor was adjusted from the original design. Equalization tank water entered the air stripper (final treatment stage downstream) and short circuiting in the air stripper triggered detectable TCE

concentrations in the discharge. The equalization tank exhaust line was moved from the air stripper inlet to prevent short circuit TCE contamination.

- Extraction wells were non-operational several days due to a transformer failure at Building 116 in August 2022. SGRS construction caused delays periodically throughout the year. The combination of transformer failure and construction delays generated an annual extraction rate of 98.7% of the groundwater operating strategy (GOS) operational minimum (1,745 gpm). The operational minimum is based on the 2001 plume concentration. The FY 2021 TCE plume is 83.7% of the 2001 TCE plume. More than 20 tons of VOCs have been removed since 2001.
- Discharged water from the BGRS and SGRS was sampled and analyzed. All discharge standards have been met.
- The SGRS sampling results confirmed SGRS emissions are below the State of Minnesota inhalation risk levels for acute, sub-chronic, chronic and cancer exposures. The SGRS start up air emissions sampling results were lower than originally modeled. The sampling results no detectable ozone in. The TCE in the air stripper was significantly lower than predicted.

OU2 Deep Groundwater Remediation – FY 2023 Scope

- The Army will analyze the hydraulic capture of each individual source area. The 2001 global operating strategy (GOS) document will be updated upon completion of the containment evaluation.
- Additional air sampling and modeling will be conducted for Building 116 emissions after establishing new TGRS operational flow rates. The Army will identify which wells must remain in operation.

<u>OU2 Shallow Groundwater Plumes (Linda Albrecht, USAEC)</u>

OU2- Site A Monitoring

- The main plume at Site A remains stable compared to FY 2021 and is migrating slightly northeast. Three new sentinel wells were added in FY 2021 to track the plume.
- The distal (outer) portions of the small plume have minimized. This plume is treated by monitored natural attenuation with no active treatment. The plume is monitored to track expected decay.

OU2 Site C Monitoring

- The plume extent is minimizing, and the Army continues monitored natural attenuation.
- One location exceeded the cleanup level in FY 2022 versus two locations in FY 2021.

OU2 – Site K USGS Treatability Study

- There were no significant changes since RAB presentation in August 2022.
- USGS collected all the samples from the first phase of the treatability study. The Army is working through the funding process to continue the treatability studies due to positive results. TCE degradation was present in test areas. The Army plans to secure funding by summer FY 2023.

OU3 Plume

- Plume migration to the south exists, but higher concentrations are diminishing.

- The Army continues to monitor natural attenuation.
- The annual sampling was completed in June 2022.

Round Lake

- Next Round Lake TWG meeting will be 28 February 2023 to review the Performance Work Statement for the new Third Quarter FY 2023 contract.

What is Next? (Linda Albrecht, USAEC)

- **OU1**
  - The Army plans a new well installation in New Brighton due to need and remediation optimization. Well installation is unlikely to happen in FY2023.
- **OU2**
  - The Army will initiate 40 monitoring well abandonments.
  - Three new monitoring wells will be installed to optimize the monitoring network. The wells were abandoned due to interference with construction plans. Well installation will occur as construction is complete.
  - The Army will initiate the Risk Assessment for the unrestricted land use.
  - The Army will initiate the Engineering Evaluation/Cost Analysis for the 135 Primer Tracer Area pending GSA auction results notification. The GSA auction results will be known before the next RAB meeting.
- **Optimization Unit 3 (OU3)**
  - The Army will continue groundwater monitoring.
- **Round Lake**
  - The Army will issue a remediation contract during Third Quarter FY 2023 to initiate remedial design.
- **Administrative Record/Information Repository**
  - Army is working with Arden Hills Army Training Site (AHATS) to expand the space.

New Business (Linda Albrecht, USAEC)

- The Army recommends the next RAB meeting take place on 19 September 2023. The Round Lake contract will be issued by then and analytical data from summer sampling should be available by then as well.
- RAB members agreed to hold the next RAB meeting 19 September 2023. The Army plans to provide a USGS groundwater modeling and site K treatability study briefing.
- The Army suggested the following agenda items for the 19 September RAB meeting:
  - Review/Approve minutes of the last meeting
  - Old business
  - Cleanup status update
  - Groundwater modeling update
  - New business
  - Next meeting agenda
  - Public comments
- Current plans indicate a hybrid RAB meeting on 19 September 2023 with in person or virtual (Dial-in) options.

Questions and Answers:

Groundwater Sampling Update (Linda Albrecht, USAEC)

- **Q: How many wells were abandoned and capped after the new pumping system was installed? Will unused extraction wells ever be for sale or available for any other use, like geothermal systems?**
- **A:** The new pumping system added extraction wells, but no extraction wells were abandoned. Unused wells are still connected to the network in case they are needed. The Army is currently evaluating the groundwater operating strategy to determine if unused extraction wells require abandonment in the future, but the study is not complete. Monitoring wells were not abandoned in FY 2022. Forty monitoring wells and three industrial wells are scheduled for FY 2023 abandonment. The Army will not sell available wells for geothermal systems because they lie on private property. The wells are narrow (2-4 inches), and inadequate for geothermal systems use (Linda Albrecht, USAEC).
- **Q: Does the Army or the Minnesota Department of Health have jurisdiction over geothermal wells that would be located within the Rice Creek Commons development?**
- **A1**: The Army would not issue a permit for geothermal (Linda Albrecht, USAEC).
- **A2:** The Minnesota Department of Health (MDH) has jurisdiction over all wells. The well installer is the well owner, but the well approval authority comes from the MDH. There is a specific well and boring construction area overlaying the TCAAP site which has specific rules regarding Department of Health interaction, securing permission for different well types and the permit process. Permit approval from the MDH requires property owner permission and depends on water use, the aquifer, water appropriation and other factors (Brigette Hays, MPCA).

OU2 Deep Groundwater Remediation (Shawn Horn, GHD)

SGRS Update

- **Q: Where does the SGRS discharge go?**
- **A:** It goes to the gravel pit once it joins the BGRS system discharge line (Shawn Horn, GHD).
- **Q: What was the ultimate source of the 1-4 Dioxane [at Site G]?**
- **A:** The activities occurring at Site G were the source of 1,4 Dioxane, which is a byproduct of some solvents (Shawn Horn, GHD)
- **Q: Can you go through a very simple version of what an air stripper does?**
- **A:** Air stripping is the process of moving air through contaminated water in an aboveground treatment system to remove chemicals called “volatile organic compounds” or “VOCs.” VOCs are easily changed from a liquid to a vapor (a gas). The air passed through contaminated water helps evaporate VOCs faster. The chemical vapors are collected, and either treated or vented outside if VOC levels are low enough. Air stripping is commonly used to treat groundwater as part of the pump and treat cleanup method (Linda Albrecht, USAEC).
- **Q: Does this new facility eliminate the old facility?**
- **A:** The new system is complimentary to the old system. The old system was boundary focused with some source area wells. More existing source area wells allow for maximizing contaminant mass removal by pumping the source areas with unprecedented force. (Shawn Horn, GHD).

- **Q: The boundary wells still go to the old system, right?**
- **A:** Yes, and because all the source areas are treated by the SGRS, the influent of TCE into the BGRS has dropped approximately 80%. The emissions from the BGRS have dropped approximately 80% from two years ago. The higher concentration of TCEat the source areas is being destroyed through the SGRS system (Shawn Horn, GHD).
- **Q: Was the transformer that failed in FY 2022 new [at Building 116]?**
- **A:** Yes. The old transformer that failed was at Building 116. (Linda Albrecht, USAEC).

OU2 Shallow Groundwater Plumes (Linda Albrecht, USAEC)

OU2- Site A Monitoring

- **Q: How often does the Army collect vapor and groundwater samples at site A.**
  A: Two vapor intrusion studies have been completed. One in 2013 and one in 2019/2020 timeframe. Both studies identified zero potential. Generally, this study does not require retesting. Groundwater samples are collected annually (Linda Albrecht, USAEC).
- **Q: Are the reports from these sampling events available online?**
  A: Yes, they are included in the APR. Each site is discussed individually (Linda Albrecht).
- **Q: Is site G a burn pit?**
  A: There is a burn pit and a dump (Linda Albrecht, USAEC).
- **Q: To confirm, do the most recent FY 2021 results indicate the plume is moving in the northeast direction, or did the FY 2022 results show that the plume has stabilized?**
  A: The new wells show the plume has migrated some, but mainly stable. The levels are decreasing with monitored natural attenuation (Linda Albrecht, USAEC).
- **Q: For Site A, is there currently only monitored natural attenuation and no extraction?**
  A: Yes, it is a very shallow plume (Linda Albrecht, USAEC).

OU2 – Site K USGS Treatability Study

- **Q: Was the concrete slab permanently removed (at Site K)?**
  A1: Yes, the slab was removed in 2015 (Linda Albrecht, USAEC).
  A2: The Installation Action Plan (IAP) is a good resource to review the site history, site use, and executed actions at the sites. The plan can be viewed on the Army's website at the following link: https://aec.army.mil/application/files/2216/6396/4751/FY22IAP-MN-TCAAP.pdf (Cathy Kropp, USAEC).

What is Next? (Linda Albrecht, USAEC)

- **Q: For the remedial design contract what do you anticipate the schedule to be?**
  A: Once the Army awards the contract, they will complete their base plans both Project Management plans and Health and Safety plans. The first draft is due within 30 days and final plans within 60 days. They will begin the design and design will be evaluated at a 30, 60 and 90 percent design completion before proceeding to construction. The Army anticipates completing 90% design in approximately 18 months. The contractor will propose a schedule when they bid on the work and the schedule will shift pending their

proposal. Generally, the Army allows 18 months to go from design to construction (Linda Albrecht, USAEC).

- **Q: Is it a Design Build Contract, or a Design, Bid, Build contract?**
  A: It is a Design Build contract (Linda Albrecht, USAEC).
- **Q: Will the Army have any jurisdiction over the 135 Primer Tracer Area land once it is sold? Will it revert to city property?**
  A: It may become City or County land. Other than deed restrictions for remediation, the Army will not have jurisdiction over the property (Linda Albrecht, USAEC).

New Business

- **Q: When will they start the dredging at Round Lake?**
- **A:** The summer of 2025 at the earliest (Linda Albrecht, USAEC).
- **Q: Will the contract [Round Lake] likely be awarded by September?**
  A1: The Army expects to award the contract in early August (Linda Albrecht, USAEC)
  A2: The contractor may be able to attend the September RAB meeting which provides the RAB an opportunity to discuss any concerns with the new contractor (Cathy Kropp, USAEC).

ATTENDEES

Government RAB Members Present

1. Brigitte Hays (MPCA)
2. Linda Albrecht (Army Co-Chair)
3. Mary Lee (MN ARNG)
4. Melissa Collins (WDNR)
5. Nicole Menard (USFWS)
6. Viral Patel (USEPA)
7. David Brown (Northrup Grumman)
8. David Yang (City of Shoreview)
9. Mike Loosbrock (City of Arden Hills)

Community RAB Members Present

1. Forrest Kelley (Community Co-Chair)
2. Lyle Salmela
3. Keith Maile
4. Paul Bloom
5. Sara Franz

Army and Army Contractors Present

1. Kevin Kowalk (EA Engineering)
2. Charles Campbell (EA engineering)
3. Cathy Kropp (USAEC)
4. Kay Toye (Environmental Research Group (ERG))
5. Shannon Dunn (Arcadis)
6. Quang Nguyen (USAEC)
7. Shawn Horn (GHD)

Visitors

1. Brittany Rivard (US Army Corps of Engineers)
2. Elizabeth Wiebke (The Office of Congresswoman Betty Mccollum)
3. Rich Straumann
4. Robert J. Young
5. Susan Johnson (MPCA)
6. Mark Leeper (HQDA-G9)
7. Samuel Pierre (HQDA-G9)
8. Elizabeth Rasmussen (MDNR)
9. Robert Lux
10. Troy Worwa
11. John Horn
12. Mark Paul