**Former Twin Cities Army Ammunition Plant (TCAAP)**

**Restoration Advisory Board (RAB) Meeting**

**In Person and on Microsoft Teams**

**September 17, 2024**

**Date/Time**: September 17, 2024, at 7:00 pm

**Place:** In person at Minnesota Army National Guard’s Ben Franklin building and virtually on Microsoft Teams meeting.­­­­­­

**Attendees:** Approximately 30 people attended the meeting including four Community Restoration Advisory Board (RAB) Members and six Government RAB Members.

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

**Introduction:** The RAB Community Co-Chair called the meeting to order. The Army Co-Chair provided plans for the evening.

Old Business (Thomas Toudouze, USAEC (US Army Environmental Command))

* Draft minutes from the previous RAB meeting were sent to RAB members.
* The meeting minutes were accepted as final.
* The Contract for Round Lake construction was awarded in August 2023.
* The Date for the next Round Lake Technical Working Group (TWG) is pending. The Army aims to hold the TWG meeting in the Fall of 2025, after the submittal of the draft 30% design.
* The Preliminary Assessment/Site Investigation (PA/SI) was completed for Per- and Polyfluorinated Substances (PFAS) September 2023.

TCAAP Cleanup Status (Art Peitsch, EA Engineering andLisa Poole, GHD)

* The hydraulic evaluation of the TCAAP Groundwater Recovery System (TGRS) is in progress.
* The Fiscal Year (FY) 2024 groundwater sampling and land use control inspections are complete. The draft final FY 2023 annual performance report was submitted to the regulators in February and is being reviewed.

**Groundwater Sampling Update**

* Groundwater sampling was completed in Summer 2024. This year is a major year event The groundwater data is being validated and will be incorporated into the Draft FY 2024 Annual Performance Review (APR) [the FY 2024 being a major year included more many more wells than FY 2023].
* Annual plume maps are available in their respective APRs, which have been updated in the Draft Final FY 2023 APR.
* A statistical evaluation of the monitoring well network will be completed in FY 2024.

**FY 2023 Prairie du Chien Plume Map**

* The plume is relatively stable compared to FY 2022 results.
* Minor decreases in Trichloroethene (TCE) are spread throughout the plume. High concentration areas (greater than > 100ug/L of TCE) remain as two distinct lobes.

**FY 2023 -** **Prairie du Chien Plume Map Over Time**

* FY 2023 is represented by two smaller distinct lobes. This could be due to the minor year sampling event not having as many datapoints.

**FY 2023 – Jordan Plume Map**

The main plume is relatively stable compared to FY 2022 results. Some downgradient wells were non-detect for TCE in FY 2022.

**FY 2023 – Operable Unit 2 (OU2) Unconsolidated Sediments Plume Map**

* The main plume is relatively stable compared to FY 2022 results, including the higher concentration area.

**Operable Unit 1 (OU1) Optimization**

* No change since the last meeting.
* New Brighton and the Army have come to an agreement on funds needed to both continue operations and install a new well, the funds were transferred in August 2024.
* The Army will meet with New Brighton next week to discuss the planning of the new well.

**OU2 Site A Monitored Natural Attenuation**

* The main plume is relatively stable compared to FY 2022 results.
* The higher contaminant concentration area continues to decrease. Contaminant concentrations in the center of the smaller plume have decreased since FY 2022.

**OU2 Site C Monitored Natural Attenuation**

* Three locations exceed the cleanup level compared to one location in FY 2022. The plume has also rebounded compared to FY 2022; however, new exceedances are localized. Levels of metals can be variable from year to year which could explain the exceedance.

**OU2 Site K Pump and Treat**

* The plume is relatively stable compared to FY 2022 results.
* The groundwater collection system continues to provide TCE plume containment.
* Pump and treat operations will continue.
* The Site K groundwater extraction, trench and treatment system continue to operate as designed. So far in FY 2024, the system captured and treated over 3,600,000 gallons of water and maintained a continuous zone of capture. Eight pounds of volatile organic compounds (VOCs) were removed during FY 2024 downgradient of former building 103. The quarterly site K treatment system effluent samples met each analytes designated effluent limits.
* Sample results from the nine wells sampled in FY 2023 show a gradual decrease in TCE concentrations, indicating relative stability over the last 20+ years of sampling. FY 2024 samples have been collected and analyzed and will be included in the FY 2024 APR.

**OU1 and OU2 Well Abandonment and Reinstallation**

* The Army is abandoning three industrial wells in OU1 and 42 monitoring wells in OU2. Four wells in OU1 and one in OU2 will be removed and reinstalled. These activities will be completed in FY2024.
* One of the wells is not able to be abandoned traditionally due to its position in the basement of a building, it will be rendered inoperable and sealed so that no water can be extracted.

**Operable Unit 3 (OU3)**

* The plume is relatively stable compared to FY 2022 results. Statistical evaluation of groundwater data collected in FY 2023 indicates stable to declining concentration trends at the center and edge of the plume. Sampling for 14 dioxane continued in FY 2023 with results similar to those reported over the last six years.

Deep Groundwater TCAAP Groundwater Recovery System (TGRS) (Lisa Poole, GHD)

* TCE Concentrations were detected at or above 1000 micrograms per liter in the Site D source area, with lower concentrations between 5 and 1000 micrograms per liter in the Site G and Site I source areas.
* The optimization of the TGRS included implementing a second groundwater treatment system into full operation in February of 2023. This new system is the Source Groundwater Recovery System (SGRS) which recovers and treats high concentrations of VOCs and 1,4 Dioxane in the source areas at Sites D, G, and I.
* The Boundary Groundwater Recovery System (BGRS) remains in operation and is used to treat VOCs in deep groundwater collected from the southwest boundary of OU2. The treated groundwater from the SGRS and the BGRS combine to discharge to the onsite sand and gravel pit.
* SGRS began full operation in February 2023 and has met all discharge criteria.
* Monthly samples are collected from the BGRS and SGRS effluent according to the Record of Decision to ensure discharge standards are met.
* Since SGRS has been in operation the influent TCE and 1,4 Dioxane concentrations have decreased by over 60%.
* Both systems continue to meet the applicable discharge limits. Air sampling and modeling will be completed for Building 116 emissions once new TGRS operational flow rates are established and a hydraulic capture analysis of the SGRS is complete.
* The Source Area Hydraulic Evaluation Report and modified operating strategy for the TGRS is expected to be finalized during FY 2024.
* Data indicates that the SGRS is efficiently extracting and treating VOCs and 1,4 Dioxane from the source areas, the removal rates observed during FY2023 for VOCs and 1,4-dioxane have not been achieved since FY 2004.
* Through July 2024, the BGRS has pumped 686,752,038gallons and removed 250 lbs. of VOCs; and the SGRS has pumped 151,022,202 gallons and removed 1,209 lbs. of VOCs.
* During Spring FY 2023 a pumping test was completed for the SGRS extraction wells. The test was used to determine the extent of hydraulic capture created by each of the source areas. The results of this hydraulic evaluation and recommendations for a modified operating strategy were provided to the Environmental Protection Agency (EPA) and the Minnesota Pollution Control Agency (MPCA) on September 7, 2023, and are currently in review.
* Several repairs to wells B3, B5, B9, and issues with the ozone equipment of the SGRS led to downtime throughout the year. However, the annual average extraction rate of 1,907 gpm was still in excess of the 1,745 gpm required by the ROD.
* Based on the FY 2022 and 2023 TCE contours, the estimated width of the source area TCE Plume has decreased approximately 17% from 3600 feet to 3000 feet.
* The operation of the SGRS extraction wells in the sites D, G and I source areas, is expected to significantly increase mass removal, and accelerate the shrinking of the TCE plume.
* Prior to the construction of the SGRS, air emissions sampling and modeling was completed at the BGRS. Since then, there has been a significant reduction in TCE concentrations in the BGRS influent. Two wells previously associated with the BGRS treatment system have been rerouted to the SGRS treatment system.
* Currently, there are no receptors to the BGRS area missions, but additional air sampling and modeling will be completed prior to development in that area.

**PFAS**

* A Preliminary Assessment and Site Inspection (PA/SI) was finalized by the Army in September of 2023.
* In July 2024, the Army received a joint letter from EPA and MPCA documenting that the regulators did not concur with the finalization of the report, identifying a number of specific issues.
* The Army has agreed to discuss the inclusion of additional AOPIs with EPA and MPCA, discussion is expected to take place in October 2024.
* A RI/FS contract is currently being built with an expected award during 3rd quarter FY25 pending funds availability.

**What’s Next?**

* OU1 – The Army continues to secure a new well installation in New Brighton. The Army is planning to begin the industrial well abandonment of three wells and begin installation of four monitoring wells.
* OU2 – The Army will abandon 42 monitoring wells and install one, after which the monitoring well network optimization will be initiated. The Army will also begin work on the Risk Assessment, with a goal of unrestricted land use. 135 Primer Tracer Area has been sold.
* OU3 – The Army will continue groundwater monitoring.
* The Army will continue the remedial design at Round Lake.
* The Army is working with Arden Hills Training Site to increase storage space at TCAAP for additional Administrative Record/Information Repository storage.

New Business (Thomas Toudouze, USAEC)

* The Army proposed 18 February 2025 for the next RAB meeting.
* The Army presented the agenda for the next meeting.

Round Lake (Jennifer Wilkie, Jacobs Engineering)

* The Record of Decision (ROD) signed in 2023 for Round Lake laid out what contamination was to be removed, to what cleanup level, what depth below the lake bottom, and what volume of sediment was expected.
* Field work was conducted in May 2024 to perform a Pre-Design Investigation (PDI) consisting of confirmation sampling around the lake as well as an updated bathymetric survey.
* The last data collected at Round Lake was in 2011, the sedimentation rate was expected to be over one and a half centimeters per year since then, this is the calculation that was used in the ROD to come up with the targeted amount of 82,000 Cubic Yards.
* Based off the preliminary findings of the PDI there is approximately 60,000 Cubic Yards of additional sediment that was not accounted for in the ROD.
* The bathymetric survey taken during the PDI also indicates major differences between it and the survey conducted in 2011 with up to ten feet of elevation difference in some areas.
* This puts the current total of sediment that needs to be removed at 142,000 Cubic Yards.
* A survey of the small retainage pond on the northwest corner of the lake, near the planned access ramp, was conducted to determine if any contamination was present there. None was detected above the cleanup level.
* A survey was also conducted of the storm sewer, which is planned to be used to pump sediment from Round Lake onto the former TCAAP property where de-watering and loading into trucks to transport to a disposal site will take place.
* A new pipe will be fed through the storm sewer to pump the sediment through, there will be no contact of sediment with the storm sewer itself.
* While dates of the planned schedule were provided on the slides, they are expected to change due to the increased volume of sediment identified.

**Questions asked by RAB members:**

TCAAP Cleanup Status (Art Peitsch, EA Engineering andLisa Poole, GHD)

* **Q**: **How much above the target cleanup levels are the samples from site K**

**A**: The highest known sample taken was over 35,000 micrograms per liter, the cleanup level is 30 micrograms per liter for TCE. (Lisa Poole, GHD).

Deep Groundwater TCAAP Groundwater Recovery System (TGRS) (Lisa Poole, GHD)

* **Q**: **The Ramsey County developer wants to move the BGRS treatment facility at building 116, have you considered moving it?**

**A**: The Army has no plans at this time to move building 116, the current system is running as designed and it would be a significant financial cost to re-locate this system while maintaining its requirement to pump and treat water from the boundary wells. If the county would like to move this building, they would have to fully coordinate with the Army and FFA stakeholders for planning and approval. They would also have to fully fund the operation themselves. (Thomas Toudouze, USAEC).

* **Q:** **Why couldn’t the SGRS system handle treatment of the wells currently treated by the BGRS system?**

**A:** The SGRS system has an upper treatment capacity of 600 gallons per minute, the BGRS system has a capacity of 1600 gallons per minute. Because of our global operating requirement of maintaining at least 1745 gallons per minute of treated water we would not be able to operate only on the SGRS. (Lisa Poole, GHD).

* **Q:** **What is the regulatory cleanup level for 1,4 Dioxane?**

**A:** The cleanup level for 1,4 Dioxane is one microgram per liter, the highest detected level is approximately 100 micrograms per liter. (Lisa Poole, GHD).

* **Q:** **Does the SGRS air stripper have any capacity to do the other sites?**

**A**: No, it does not, it is limited to 600 gallons per minute and the total requirement would be at least 1745 gallons per minute to stay in compliance of our global operating requirements. (Lisa Poole, GHD).

* **Q:** **At the rate that contaminants are being removed, do you have a projection of how long it will take to clean up?**

**A1:** We do not have a projection of how long it will take to achieve our cleanup goals. (Lisa Poole, GHD).

**A2:** The Army currently has the treatment projected out as far as we can in our budget, which is 30 years, we are assuming that it will take longer than that to achieve our goals. (Thomas Toudouze, USAEC).

Per- and polyfluoroalkyl substances (PFAS) update (Thomas Toudouze, USAEC)

* **Q:** **Is this PFAS contamination all from firefighting foam?**

**A:** While at this time we cannot rule that out, based off our initially detected numbers we do not believe this PFAS is from firefighting foam. Our highest detections were under a former metal plating shop which is a known source of PFAS contamination, additionally contamination levels would be expected to be much higher than the highest concentration measured of 19 parts per trillion. (Thomas Toudouze, USAEC)

Round Lake (Jennifer Wilkie, Jacobs Engineering)

* **Q:** **Will you be removing clean sediment along with the contaminated sediment?**

**A:** Yes, we will be dredging and removing the clean sediment that is on top of the contaminated sediment as well as some underneath it to ensure we are removing it all. Unfortunately, there is no way to segregate the clean and contaminated sediment during the dredging process so it will all have to be removed from the site. (Jennifer Wilkie, Jacobs Engineering).

* **Q: You mentioned 9 inches of sediment being deposited since the last survey, but it’s not necessarily 9 inches all the way across the lake? Could it be deeper?**

**A:** Yes, it could be, 9 inches is the expected average, but the lake bottom is not flat and has some deeper pockets where more sediment would gather and peaks where less would gather. (Jennifer Wilkie, Jacobs Engineering).

* **Q:** **Do you think the lake is going to be deeper because you’re removing some of the sediment and not really replacing it with anything?**

**A:** Yes, as we remove the sediment the lake will get deeper in those areas. However, once we remove the sediment and test to confirm we removed the contamination we will be depositing a layer of clean sand on the bottom to help re-establish the ecosystem. It will be a smaller layer than what we remove though so the lake will be deeper in those areas. (Jennifer Wilkie, Jacobs Engineering).

* **Q:** **When you are replacing the dredged sediment with some amount of sand does that mean it will go across the whole bottom of the lake or just in the areas where you’ve dredged?**

**A:** We will only be placing sand in the areas that we have dredged. (Jennifer Wilkie, Jacobs Engineering).

* **Q:** **Is the goal of Round Lake for it to be a swimmable lake?**

**A:** We are working towards cleaning the lake for the environmental risk, there is currently no human health risk present at Round Lake. The lake belongs to U.S Fish and Wildlife so any future recreational use of the lake is up to them. (Thomas Toudouze, USAEC)

* **Q:** **Will the lake be ok for both kayaks and going fishing?**

**A:** Again, the lake belongs to U.S Fish and Wildlife so any future recreational use of the lake is up to them. (Thomas Toudouze, USAEC).

* **Q:** **Can we have any say or input on that in our next meeting?**

**A1:** The Army can reach out to U.S. Fish and Wildlife to see if they would be willing to have a discussion over that at our next RAB meeting.
**A2:** U.S. Fish and Wildlife receives these questions often at these meetings, we are not able to plan for those uses yet. We are waiting to see how the remediation goes, how the cleanup goes, and then we will have open house sessions where we hear from residents. (Nicole Menard, U.S. Fish and Wildlife)

* **Q:** **Because of its current high profile, at future RAB meetings could the update on Round Lake be presented first?**

**A:** Yes, moving forwards the Army can move the information on Round Lake to the beginning of our presentations. (Thomas Toudouze, USAEC).

* **Q:** **It was difficult to find the RAB, the website had the wrong address listed, as well as the contact information. Can you fix that?**

**A:** Yes, the Army will make sure that the TCAAP RAB website is updated with the proper meeting information, and we will remove any older out of date information. (Thomas Toudouze, USAEC).