Former Badger Army Ammunition Plant (AAP)
Restoration Advisory Board Meeting
Sauk Prairie High School River Arts Center
April 20, 2023

Time: 6:30 pm, April 20, 2023

Place: Conducted in-person at Sauk Prairie High School River Arts Center and virtually using Microsoft Teams

Attendees: Approximately 38 people attended the meeting, including 15 Restoration Advisory Board (RAB). Attendees are included in the attachment.

Introduction: Mr. Matt Dayoc, US Army Environmental Command (USAEC), provided an introduction and plans for the evening.

- Reviewed and finalized the RAB Meeting Minutes from the 19 January 2023 meeting.
- Reviewed the annual Installation Action Plan (FY22) process and schedule. The IAP process is required annually by the Army per Department of Defense (DOD). https://aec.army.mil/application/files/3016/6396/4748/FY22IAP-WI-BAAP.pdf
- Mr. Dayoc briefly summarized the Army Cost to Complete (CTC) process.

Review/Approve Minutes of Last Meeting

- Final minutes from the previous RAB meeting (19 January 2023) were sent to RAB members 14 April 2023.
- There were no additional comments on the January meeting minutes.
- The RAB adopted the minutes as final.

Groundwater Monitoring Network Optimization, Matt Dayoc (USAEC)

Monitoring Well Access Leasing Updates

- The Army plans to drill 8 monitoring wells to help define plume delineation for the Deterrent Burning Ground and Propellant Burning Ground plumes.
- WDNR approved the Army well installation work plan.
- Property owners (private landowner, Alliant Energy, Wisconsin Department of Transportation (DOT), Sauk County Parks) tentatively agreed to allow access to property for well installations and sampling pending leasing agreement.
- Army is working with the U.S. Army Corps of Engineers (USACE)-Omaha District to secure property right-of-entry for the monitoring wells.
- Well installations planned for May/June 2023.
- The Army is currently in communication with the three property owners where the wells will be installed.
- All parties have agreed to the proposed well installations.
- Real estate actions are being handled by USACE.
- Property access agreements must be implemented and signed by the property owner/entity and the Army.
- The final terms for the well installations are in discussion.
- Joel Janssen (SpecPro) noted that the DOT signed and approved their access agreement and established well installation dates (15 May – 15 June 2023).

Proposed Monitoring Wells

Deterrent Burning Ground Plume (DBG)

- 1 location; 2 wells
- Estimated Depths
  93 ft
  158 ft
- The wells will be installed in the far east portion of the plume.
- The wells will be installed as nests, providing a vertical profile of the plume.
- Anticipated well installation in 2023.

Propellant Burning Ground Plume (PBG)

- 2 locations; 6 wells
- Estimated Depths
  119 ft
  165 ft
  213ft
- The wells will be installed in the mid to southern portion of the plume.
- Anticipated well installation in 2023.
- The Army is in the process of obtaining permission from property owners.
- The wells will be installed as nests, providing a vertical profile of the plume.
- Proposed monitoring wells will fill data gaps to assist in tracking plume movement and vertical extent.

Project Management Updates (Matt Dayoc, USAEC)

Proposed Plan (PP) for the Site-Wide Groundwater

- The proposed strategy is to install injection wells for placement of biochemicals at numerous locations along the plumes to reduce the groundwater concentrations of both volatile organic compounds (VOCs) and Dinitrotoluene (DNT). The current type and amount of biochemical proposed to be used has yet to be determined for the proposed remedy. Once the plan is approved, the design remedy will determine injector spacing and chemical composition for the injection product. This will include bench scale studies and other assessments to ensure this approach will work.
- Army submitted the Proposed Plan (PP) to the Wisconsin Department of Natural Resources (WDNR) for review on 9 February 2023.
- The WDNR is preparing comments to the proposed remedy. WDNR project manager, Luke Lampos, has reviewed the PP together with the WDNR Complex Site Team composed of scientists and engineers.
- The next step is to resolve potential WDNR comments followed by a public comment period with a public meeting for an in-depth discussion on the proposed remedy.
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires a 30-day comment period for the PP. The public comment period for this action has been extended to 60 days.

- One RAB member shared a concern about the effectiveness of the Army's public comment period. The RAB member felt that the public does not have enough time and money to sufficiently evaluate the proposed remedy.
- A RAB member stated they would like the state to be involved in the PP process.
- The Technical Assistance for Public Participation (TAPP) program grants $25,000 per year [$100,000 for the lifetime of the RAB with the potential for more with an approved waiver]. The TAPP consultant has been procured and can be available to support the RAB's PP evaluation.
- The Army commented that the intent of the public comment period is not for the public to provide technical information. It is for the public to provide public concerns and public information [e.g., local knowledge about an area, that the Army may not be aware of, such as frequent flooding]. This type of feedback received from the public is very useful to the Army and helps the Army make informed decisions that are not based [solely] on technical data but based on an understanding of what happens within the community [at specific locations where the Army is proposing to act] on a cyclical or day-to-day basis.
- A RAB member expressed concern that unless an engineering consultant is hired outside of the TAPP program, the RAB will have no say about what is going on [with the cleanup].
- Another RAB member commented that the RAB will have a say in what is going on [with the cleanup] but may not have adequate knowledge and noted that the previous USGS advisor/consultant provided excellent technical guidance and was very helpful to the RAB.
- The Army noted that it is not in the Army's best interest to pick a technology that will not work, because the site must be cleaned up before the Army can walk away. Project funding/finances are largely not an issue. Congress has provided the Defense Environmental Restoration Program (DERP) an increase in budget the last several years. However, the cleanup is complicated and not always easy to understand so there is occasionally trial and error, but the Army's intent is to move things forward, address the problem and find resolution.

Second Five-Year Review (FYR)

- FYRs look at remedies that have been implemented. The remedies are evaluated for protectiveness and effectiveness. The FYR is not for sites where remedial action has yet to be implemented.
- Every five years the Army hires a third-party consultant to evaluate and ensure the remedy in place remains protective of human health and the environment.
- Public Notice of the FYR was published in Baraboo News Republic (March 13), Portage Daily Register (March 22), Juneau County Star (March 23), Wisconsin State Journal (April 7), and Sauk Star News (April 13).
- The second FYR site visit was conducted on March 15, 2023.
- The Draft FYR report is expected to be delivered to USAEC in April 2023 and be final by Sept 2023.
- A RAB member asked if all FYRs could be distributed directly to the board members as soon as available for public comment/review and placed in the public repositories. The Badger community will be informed when update to the Admin Record has been made. When the FYR is added to the Admin Record, a notice will be sent, and it will be posted on the Badger Army Ammunition Plant website where it can be read.

Community Involvement Plan (CIP)

- The Army is updating the CIP. The Army received a small amount of feedback from the community. The CIP addresses how the Army communicates with the community (e.g., social media, in person meetings etc.). The Army encourages the community to contact the Army with any input [about the communication strategy].
- The CIP window for receiving public input ended but if additional feedback is received there is still time to incorporate into the draft before the document is finalized.
- The draft CIP was submitted to the Army on March 27, 2023.
- The Army is currently in process of reviewing the Draft CIP.
- A public notice of the CIP will be advertised. A RAB member asked if the final CIP could also be distributed directly to board members. The Badger community will be informed when update to the Admin Record has been made. When the Final CIP is added to the Admin Record, a notice will be sent, and it will be posted on the Badger Army Ammunition Plant website where it can be read.

Key FY23 Contracting Actions (Matt Dayoc, USAEC)

TAPP Awarded

- Technical Assistance for Public Participation (TAPP) awarded April 2023.
- ERG LLC manages the TAPP agreement with the consultant.
- Three consultants were asked to provide a proposal. Mr. James Tinjum (University of Wisconsin) provided the sole response to the proposal request, and he was subsequently selected.
- A RAB member noted that meetings with the RAB and the previous TAPP consultant (USGS) were very productive.
- Mr. Tinjum is familiar with the Badger AAP site and has extensive private consulting experience.

Settling Pond Expanded Site Inspection

- Includes Final Creek, Settling Ponds 1 & 3, and Spoils Disposal Areas I, II, III, IV, & V.
- A Site-Wide Groundwater Monitoring Plan is included in the Settling Pond Expanded Site Inspection.
- Project anticipated to be awarded in Spring 2023.
    - The Mission Installation Contracting Command (MICC) is currently working on a market research report and acquisition strategy for legal review.
    - The next phase is to go through the small business administration and conduct market research, then issue a request for proposal to the Army subcontractor.
    - SpecPro will prepare a proposal for Army review, then the Army will conduct a cost evaluation process.
    - The Army will proceed with developing work plans after a late spring contract award.
    - The Site Inspection process will include compiling a comprehensive site-wide groundwater monitoring plan in coordination with the WDNR.

PFAS Remedial Investigation for Propellant Burning Ground

- A preliminary assessment (PA) and site inspection (SI) was conducted 2021 at Badger AAP and concluded no further action based on polyfluoroalkyl substances (PFAS) releases not exceeding screening criteria.
- The Environmental Protection Agency revised regional screening levels for six PFAS in May 2022 and the Office of the Secretary of Defense (OSD) published new guidance. Screening levels are used to determine when further investigation is needed under CERCLA. When the Army reviewed the 2021 data from Badger AAP, one area of potential interest exceeded the new screening levels at the Propellant Burning Ground. The Army will conduct a Remedial Investigation for that site.
  The EPA proposed Safe Drinking Water Act standards for PFAS, Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) of four parts per trillion in late March 2023 [refer to EPA website for additional information: https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas]. The EPA plans to finalize these by the end of 2023.
- A draft Performance Work Statement (PWS) and IGCE for the PFAS work is under preparation, to include several other Army installations.
- The PFAS RI contract is planned for Fall 2023 (FY24) award.

Landfill #5 -Repair of Settled Areas

- The Army has completed its Independent Government Cost Estimates (IGCE) and contract modifications for the subcontract.
- The Army has modified the current contract to complete settling repairs on Landfill #5.
- The MICC is currently reviewing the contract modification for Landfill #5. A contract specialist has been assigned.

Badger AAP Groundwater Remediation: Pending Article Publication

- The story map presentation at the 2022 August RAB meeting received excellent reviews. However, the RAB asked if the Army could do a better job of promoting the story map to the public.
- The Army interviewed RAB members on the usefulness of the story map tool and prepared an article for publication. The Army will be sending the draft to the RAB members that participated for their review to ensure all quotes are accurate.
- A RAB member expressed concern about the article taking too much time for finalization in addition to concern regarding the Army's selection of methods for distribution and their likely [lack of] effectiveness [methods have yet to be selected].
- The Army encouraged the community to provide feedback to the Army about preferences for receiving information. The Army also noted that a URL for the article can be provided to the RAB members so members can distribute the link to people or groups that they would like to inform.
- A RAB member commented that a large portion of the community lacks adequate internet access or has a difficult time accessing information on the Army website.

Gruber's Grove Bay Sediment Update (Ryan Tefft, USACE)

- Ryan Tefft introduced himself and is presenting on behalf of AECOM (contractor).

- Mr. Tefft initiated his presentation by illustrating a comprehensive sediment sample locations map including samples collected in 2016 and 2018.
- A total of 63 surface and 63 subsurface samples were analyzed for total mercury, including areas within both sediment layers exceeding background.
- The target goal for background concentration is .36 mg/kg.
- The maps for total mercury concentration were prepared for two sediment horizons based on the most complete sample datasets (2016 and 2018).
    - Surface: 0 to 0.5 ft
    - Subsurface: Greater than 0.5ft
- The higher total mercury samples above the background value (.36 mg/kg) are concentrated in the surface 0 to .5ft region.
- Total mercury values decrease with depth.
- The sampling grid was limited along margins of sediment occurrence.
    - This limited the ability to clearly identify boundaries for mercury at some locations of GGB.
- Existing sample datasets did not allow accurate estimates for changes over time.
    - This was due to differing characterization priorities for each sampling event.
- A review of human health and ecological risk assessment is being performed. Risk is being interpreted from previous data collected within GGB after remedial dredging efforts in 2006.
- A review of receptors in the conceptual site model is being conducted.
- The Army is evaluating the need for additional sampling and a data gaps investigation (DGI) is being considered.
- DGI identifies key needs for additional investigation work to develop remediation plans. The information acquired during a data gap investigation should aid in decision-making. Additional work in progress will be presented at the next RAB meeting.
- As part of the Gruber's Grove Bay risk assessment discussion, a RAB member noted that mercury is not the only contaminant of concern in sediments, but other contaminants were present such as cadmium, chromium, and PCBs. The Army stated a risk assessment for all contaminants of concern are being evaluated as part of the RI.

Groundwater Flow Model Report Overview (Meg Haserodt, USGS)

- The USGS Groundwater Flow Model report will be available to the Army soon (within two weeks).
- The Army will upload the Ground Flow Model report at: https://aec.army.mil/index.php/baap.
- All USGS data and model files will be available online. The Army will email RAB members a corresponding URL link.
- The report characterizes the groundwater flow system at Badger AAP.
    - Where is groundwater moving?
    - How does groundwater interact with the Wisconsin River?
    - How does the flow of groundwater control plume movement?
- The information in the report is the foundation of the groundwater transport model (in progress).
- A groundwater flow model is a compilation of math equations used to calculate subsurface water movement. A groundwater model is not 100% accurate.

- A groundwater flow model is a strategic tool used to guide the implementation of remediation efforts at Badger APP.
- The Badger AAP groundwater flow model can:
    - Assess future plume footprints with monitored natural attenuation versus bioremediation.
    - Estimate how long bioremediation may need to run to reach plume reduction targets.
    - Guide the layout of treatment wells for maximum plume reduction.
- The model can be used with other information to help make informed decisions about a groundwater system under conditions we cannot directly observe or measure.
- What went into the Badger AAP groundwater flow model?
    - The USGS ran a transient model from 1984 to 2020 based on data availability for model calibration.
    - The USGS identified and selected a model area, then divided the model area into a grid of small boxes that represent real locations on a map.
    - At each box the model has various properties defined that govern how groundwater moves through that area.
    - The next step extended the model grid underground to include underlying geologic units.
- Geologic Units:
    - Baraboo Quartzite – Bottom of the model bedrock, poor permeability, and porosity.
    - Wonewoc Sandstone
    - Eau Claire
    - Mt Simon Sandstone
- Groundwater will flow differently through these units; each unit is assigned specific/ unique properties for modeling purposes.
- Glacial geology is prevalent above the bedrock units.
- An outwash with coarse material and less fines is present at the site.
- Till lies over the outwash in the eastern portion of the site.
- The next step in modeling determines how water can enter or leave the groundwater system.
- Recharge serves as the biggest input to the groundwater system; recharge water enters the system via snow melt or rain and moves down to the groundwater surface.
- The USGS ran a separate model for groundwater recharge called a soil water balance model.
- The soil water balance model estimates recharge using climate data (temperature, rainfall), soil characteristics, and land use as inputs.
- The model also used streams, rivers, and wetlands as inputs.
- The model calibration process was implemented to compare model outputs and actual data collected.
- The modeling results matched the conceptual site model.
- The USGS generated 200 versions of the model exploring different model parameters.

<u>Groundwater Transport Model, Nick Carson-Dosch (USGS)</u>

- The second phase of modeling work focuses on the Badger AAP contamination movement within the subsurface.
- The transport model builds on the groundwater flow modeling.
- The transport model integrates flow and transport information, simulates fate of contamination, and is subject to assumptions and simplifications.
- The transport model is currently in the calibration phase. Calibration improves the model's ability to simulate reality and quantifies model uncertainty.
- WDNR commented that online resources exist such as a well driller viewer and remediation development program. WDNR has a drinking water program and a municipal water program.

Future Meetings

- RAB members had no objections to the following proposed future meeting dates:
  - July 26, 2023
  - October 19, 2023
  - January 18, 2024

Closing Remarks

- Mr. Dayoc introduced Mr. Dwight Hollon as the new Badger AAP USAEC Environmental Support Manager (ESM).
- Mr. Hollon spoke to the RAB about his technical and project experience.
- Mr. Dayoc proposed a new meeting date of 26 July 2023 at 6:00 P.M. for the next RAB meeting and the RAB concurred.
- A RAB member invited the audience to a research dairy public meeting at the George Culver Public Library on 1 May 2023 from 5:30 to 7:30 P.M. Virtual meeting available through Zoom.

Questions and Answers

<u>Project Management Updates (Matt Dayoc, USAEC)</u>

Proposed Plan (PP) for the Site-Wide Groundwater

- **Q: What would WDNR be reviewing as part of the PP review process to ensure the remedy will work?**
  A: WDNR has a site-specific project manager (Luke Lampo) and multiple teams including a complex site team that review and provide comments on the PP (WDNR).

- **Q: Which chemicals will the proposed remedy utilize?**
  A: It is a little premature [to answer this question], but this can be further elaborated during the proposed plan public meeting, once the WDNR completes their review from a chemical perspective. Essentially, it is largely vegetable oil that is used in these types of processes (Matt Dayoc, USAEC).

- **Q: Will the RAB have an opportunity to discuss and provide input on the remedy process with the Army, and will the public have an opportunity to influence the remedy decision?**

A: The public participation piece of the CERCLA process is the proposed plan process. The Army does not sign a decision document until the proposed plan [process] is complete and signed. The decision document allocates the resources, the requirements, and the directive to move forward. As requested, the RAB has been given a Technical Assistance for Public Participation (TAPP) grant, and this resource can be used to provide understanding on the remedy process. The Army's intent is to legitimately seek public input and move through the process (Matt Dayoc, USAEC).

- **Q: How effective is the remedy method based on data from similar sites and there some real-life examples of the remedy being effective?**
  A1: This type of remedy has been implemented at McAlester Army Ammunition Plant to address Volatile Organic Compounds (VOCs) moving toward Brown Lake. The microbial material significantly reduced the contaminates there. The remedy has also been implemented at Cornhusker Army Ammunition Plant (Cornhusker) in Nebraska and has been very effective. More information about where the remedy has been successful can be provided. There are [Army] reports available that discuss the success and contamination decreases over time (Matt Dayoc, USAEC).
  A2: An article was published about a year ago about Cornhusker that discussed how the remedy worked there, in addition to the dollars and timed saved. The Army will send the article to the RAB members (Cathy Kropp, USAEC).

- **Q: What were the contaminants of concern at Cornhusker?**
  A: TNT [2,4,6-trinitrotoluene] and other explosives (USAEC).

Community Involvement Plan (CIP)

- **Q: Have the deadlines been met for the second FYR and the CIP? Can the public still provide comments.**
- **A:** There is no public comment period for the second FYR. There will be a public notice that the FYR has been completed and available for review. The CIP window for receiving public input ended but if additional feedback is received there is still time to incorporate into the draft before the document is finalized.

  Q: When these documents are published, can they be sent to the RAB members?
  A: The Army can upload the documents to the website and the link can be sent out to the RAB members (Cathy Kropp, USAEC).

<u>FY 2023 Contracting Actions (Matt Dayoc, USAEC)</u>

TAPP Awarded

- **Q: Can the RAB conduct a separate meeting with the TAPP consultant that is strictly for the purposes of his consultation?**
  A: Yes, a separate TAPP meeting with the consultant is within the parameters of the program (Matt Dayoc, USAEC).

PFAS Remedial Investigation for Propellant Burning Ground

- **Q: Is PFAS present at the DBG, and if so, would its presence impact the current proposed remedy?**

A: The SI did not identify exceeding PFAS screening levels at DBG. The Army will report back on the exact numbers [not on hand at meeting] (Matt Dayoc, USAEC). [There is no evidence of use, storage, or disposal of PFOS, PFOA, or PFBS containing products at the DBG area based on records review or personnel interviews. Burning activities also occurred prior to the known use of AFFF at Army installations.]

Gruber's Grove Bay Sediment Update (Ryan Taft, USACE)

- **Q: What is the max depth of the subsurface sample interval?**
  A: 4 - 4.5 ft (Ryan Taft, USACE)

- **Q: Will the health risk assessment look at cumulative risk including all the contaminants of concern?**
  A: Yes, it will. The internal draft RI/FS in the risk assessment will encompass other chemicals of concern. The report will be presented at the next RAB (Ryan Tefft, USACE).

- **Q: When will the findings and report be complete to make recommendations to the Army?**
  A: After the data gap investigation (Ryan Tefft, USACE).

- **Q: What do the red contours represent in the sediment surface layer map?**
  A: The red represents higher mercury concentrations (Ryan Tefft, USACE).

- **Q: Why is the contamination higher at the surface after two dredging events?**
  A: That is a complex question with complex answers. There is not a current source of mercury at the bay. A potential hypothesis is dredging disturbs the mercury containing material which re-settles after dredging (Ryan Tefft, USACE).

- **Q: Does AECOM have an alternative remediation technology other than dredging?**
  A: AECOM has the capabilities to perform a wide variety of remediation technologies. AECOM is a large business with multiple resources including research facilities and off-site laboratories (Ryan Tefft, USACE).

- **Q: Are the other contaminants distributed in a similar pattern as mercury?**
  A: Yes, other contaminants behave similarly to mercury (Ryan Tefft, USACE).

Groundwater Flow Model Report Overview (Meg Haserodt, USGS)

- **Q: RAB member asked if the particle path model represented contaminant concentration levels?**
  A: Particle paths do not equal concentration (Meg Haserodt, USGS).

- **Q: Are the monitoring wells closest to the central plume clean?**
  A: Yes, they are (Joel Janssen, SpecPro Services).

- **Q: Does the model consider bedrock water?**

A: Yes, we are modeling bedrock and glacial till water (Meg Haserodt, USGS).

- **Q: Does the water move from bedrock to the groundwater or from the groundwater to the bedrock? Or do they not mix?**
  A: There is some exchange. Toward the Wisconsin River there is some upward movement. There is also some downward movement toward the Baraboo Hills. The exchange appears to be limited but the model does monitor both lateral and vertical flow (USGS Team).

Attachment

ATTENDEES

RAB Members Present

1.	Matt Dayoc	Army Co-Chair
2.	Charlie Wilhelm	At Large Member
3.	Chris Hanson	At Large Member
4.	Curtis Hedman	WDHS
5.	Dennis Hancock	US Dairy Forage Center
6.	Laura Olah	Citizens for Safe Water Around Badger (CSWAB)
7.	Issac Ross	WDNR
8.	Michele Hopp	Community Co-chair
9.	Randy Poelma	Ho-Chunk Nation
10.	Roger Heidenreich	Town of Merrimac
11.	Craig Walsh	Town of Prairie du Sac
12.	Doug Gjerston	Town of Sumpter
13.	Robin Meier	Bluffview Sanitary District
14.	Luke Lampo	WDNR
15.	Mike Gleason	Lake Wisconsin

Army and Army Contractors

1.	Joel Janssen	SpecPro Services
2.	Kay Toye	Environmental Research Group
3.	Dwight Hollon	USAEC
4.	Sergio Celis	Environmental Research Group
5.	Ryan Tefft	USACE
6.	Quang Nguyen	USAEC
7.	Cathy Kropp	USAEC

Visitors

1.	Mathew Pajerowski	USGS
2.	Howard Reeves	USGS
3.	Nat Crisco	Guest
4.	Dave Considine	State Representative
5.	Brenda Murphy	Guest
6.	T. Jackson	Guest
7.	Michael Leuth	Guest
8.	Wendy Carlson	RAB Alternate (CSWAB)
9.	Jason Lowery	WDNR
10.	Mick Corshendaf	Guest
11.	Laura Schacter	USGS
12.	Howard Reeves	USGS
13.	Meg Haserodt	USGS
14.	Isaac Ross	WDNR
15.	Nick Carson-Dosch	USGS