



REGION 4

ATLANTA, GA 30303

September 4, 2024

ENVIRONMENTAL COMPLIANCE &

SEP - 4 2024

Ms. Avery Hammett
SRS Remedial Project Manager
Remediation and Deactivation & Decommissioning Division
U.S. Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

AREA COMPLETION PROJECTS

EPA comments: EFFECTIVENESS MONITORING REPORT FOR THE MONITORED NATURAL ATTENUATION (MNA) AT THE CHEMICALS, METALS, AND PESTICIDES (CMP) PITS OPERABLE UNIT (OU) (U), APRIL 2023 THROUGH MARCH 2024, SEMS NUMBER: 24, SRNS-RP-2024-00606, REVISION 0, JULY 2024, SAVANNAH RIVER SITE, AIKEN, SOUTH CAROLINA

Dear Ms. Hammett:

EPA has reviewed the EMR for the MNA at CMP for April 2023 through March 2024, dated July 2024. Attached are our comments:

If you have any questions or require additional information, please contact Jon Richards at (404) 562-8648.

Sincerely,

**JON
RICHARDS**

Digitally signed by JON RICHARDS
Date: 2024.09.04 17:32:57 -04'00'

Jon Richards, FFA RPM
Federal Facilities Branch
Superfund and Emergency Management Division

cc: C.L. Bergren, SRNS-ACP
Susan Fulmer, SCDHEC

GENERAL COMMENTS

1. Section 2.2.2 (Groundwater Sampling Results) indicates that the data collected is verified and unvalidated (VU); however, it is unclear whether this was the data validation method selected in the applicable regulatory reviewed quality assurance project plan (QAPP) or corresponding applicable work plan. All data should undergo data validation. *Please clarify whether data validation was not required under the applicable QAPP and please recommend future data be validated, if not.*
2. It is unclear whether any quality control (QC) samples (i.e., field duplicates, matrix spike matrix spike duplicates [MS/MSD]) are collected, as the EMR does not specify this. QC samples should be collected at an appropriate rate (i.e., one per 10 normal samples) in order to verify sample results. *Please discuss any QC measures that were taken, or recommend future sampling be inclusive of QC samples.*
3. It is unclear whether any preliminary investigation into the use of per- and polyfluoroalkyl substances (PFAS) has been conducted at the CMP Pits. Per the Historical and current usage of per- and polyfluoroalkyl substances (PFAS): A literature review, Linda G. T. Gaines, May 2022 (<https://onlinelibrary.wiley.com/doi/10.1002/ajim.23362>), PFAS have been used as an active and inert (or inactive) pesticide ingredient, and may also have been a component of other chemicals that were disposed in the CMP Pits. Also, at Department of Energy (DOE) sites uranium enrichment and plutonium production process areas including equipment/lubricants serve as PFAS sources since PFAS was used on an industrial scale in uranium separation activities during Manhattan Project and Cold War era operations. It is noted that any waste (chemical, metals and pesticides) disposed of at the CMP Pits that originated from an uranium enrichment and/or plutonium production process area are potentially contaminated with PFAS. Furthermore, restoration of contaminated groundwater to beneficial will not be considered complete until all potential sources of groundwater contamination are sufficiently investigated. *Please revise the text to discuss whether any preliminary investigation into PFAS use at the site has been conducted and if not, recommend sampling for PFAS analysis to be conducted during the next monitoring event.*
4. It is unclear whether it is necessary to reevaluate monitored natural attenuation (MNA) as a remedy and develop contingency remedial actions (RA) in the event that MNA is not occurring as anticipated. Section 4.0 (Summary) states, “The most important indicator for the MNA remedy performing as predicted is an evaluation of the long-term concentration trends of many monitoring wells and an interpolation of the data showing decrease in plume size over time. Although the overall plume size has minimally changed since the completion of the source zone RA 15 years ago, many core concentrations (higher concentration areas of the plume) continue to decline.” However, the decline in core concentrations could be attributed to the increase of water levels and indicate enhanced dilution or migration of contaminants is occurring and masking results of MNA. As such, future EMRs should evaluate whether MNA or dilution/hydraulic movement has a greater effect on the resultant contaminant concentrations. *Please indicate that further investigations to assess the effectiveness of MNA are warranted and discuss contingency RA's that may be implemented if MNA is not effective.*
5. It is unclear whether the upcoming 2025 CMP Pits EMR will also provide a cost analysis in the evaluation of additional actions to address the residual source contamination and improve cleanup times. The EMR states, “SRS [Savanna River Site] is using the 2021 data soil sampling data, as well as recent groundwater data, to update the source term (and plumes) in the 2017 model to simulate if an additional action to reduce the residual source would improve cleanup timeframes,” however, it is not clear whether a cost analysis will be included in this evaluation. The cost analysis associated

with the reduced cleanup timeframes, including capitol and operational costs of contingency actions, should be compared to the costs to perform long-term monitoring (LTM), including five year reviews (FYRs) for the next approximately 100 years. *Please revise the EMR to indicate that evaluation of additional cleanup actions and associated cost analysis will be prepared, along with the model update, and provided in the 2025 CMP Pits EMR.*

6. The text indicates that MNA is not likely occurring outside of the wetland; however, a discussion on how this was evaluated utilizing the geochemical parameter well data is missing. The geochemical parameter data presented in Table 3 (CMP Pits OU Annual MNA Results, April 2023 through March 2024) should be used to evaluate what may be inhibiting natural attenuation at the site. *Please provide a detailed discussion on the factors contributing to reduced MNA potential.*
7. Table 3 (CMP Pits OU Annual MNA Results, April 2023 through March 2024) indicates the detection limit for vinyl chloride is frequently greater than the maximum contaminant level (MCL) of two micrograms per liter ($\mu\text{g/L}$); however, the EMR does not discuss the corresponding impact on data or recommend a resolution. It is noted that SRS is looking for a laboratory to achieve lower 1,4-dioxane detection limits, but VC is not mentioned. *Please revise the EMR to discuss the impact of the elevated VC detection limit and any impact on data and include VC in the recommendation to find a lab to achieve the lowest possible detection limit.*

SPECIFIC COMMENTS

1. **Section 3.0, Future Additional Sampling and Efforts, Page 27 of 114:** Well cluster CMP 15B/A should be included in the additional wells proposed for anion/cation sampling. The text states, “Additional anion/cation samples are proposed to be collected at a total of 23 additional wells, including clusters with wells in multiple aquifer zones, wells downgradient towards Pen Branch, and wells on the north side of Pen Branch (Figure 35);” however, since the CMP 15A/B well cluster is used to construct Cross-Section B-B’, anion/cation sampling should also be proposed for this well. *Please revise the EMR to also propose well cluster CMP 15B/A for cation/anion sampling in 2025.*
2. **Section 3.0, Future Additional Sampling and Efforts, Page 27 of 114:** The text indicates the 12 new permanent shallow monitoring wells in the Pen Branch stream will be sampled for VOCs and 1,4-dioxane semiannually for at least the first two years; however, any new groundwater monitoring well should be analyzed for all site contaminants (e.g., including lindane) during the initial sampling. *Please revise the text to recommend all analyses at the proposed new wells during initial sampling.*
3. **Figure 22, Cross Section B – B’ at the CMP Pits OU Area with 2023 1,4-Dioxane Plume and Results, Page 75 of 114:** It is unclear why CMP 32B is not sampled for 1,4-dioxane. Based on the plume configuration, sampling of this location may provide valuable information for vertical delineation of the plume in the Lower Aquifer Zone (LAZ). *Please revise the EMR to recommend CMP 32B for 1,4-dioxane sampling.*
4. **Figure 22, Cross Section B – B’ at the CMP Pits OU Area with 2023 1,4-Dioxane Plume and Results, Page 75 of 114:** Based on the cross-section, CMP 8A exceeds the 1,4-dioxane Regional Screening Level (RSL) of $0.46 \mu\text{g/L}$ in the Gordon Aquifer at $4.7 \mu\text{g/L}$; however, it is unclear what additional efforts are being made to delineate this area. *Please revise the EMR to discuss delineation of 1,4-dioxane exceedance in the Gordon Aquifer at CMP 8A.*

5. **Figure 23, Cross Section C-C' at the CMP Pits OU Area with 2023 1,4-Dioxane Plume and Results, Page 77 of 114:** It is unclear why EPA Method 8260D detection limit for 1,4-dioxane is listed at CMP 064B, when all other monitoring locations use the EPA Method 522 detection limit of 0.2 µg/L (see Table 3, CMP Pits OU annual MNA Results, April 2023 through March 2024). *Please revise the figure to use consistent method detection limits.*

6. **Figure 24, 2023 Lindane Plume and Groundwater Results for the TZ and MAZ, Page 79 of 114:** It is unclear why CMP 13D is not sampled for lindane. Based on the time-series plot in Appendix B for CMP 35D, lindane has been increasing since 2013 and CMP 13D is northwest and potentially downgradient of CMP 35D; therefore, lindane should be proposed for sampling to bound the plume. *Please revise the EMR to recommend CMP 13D be sampled in future events for lindane.*