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October 14, 2022

Mr. Brian T. Hennessey, SRS Remedial Project Manager
Infrastructure and Area Completion Division
U. S. Department of Energy
Savannah River Operations Office
Post Office Box A
Aiken, South Carolina 29802

Re: Effectiveness Monitoring Report for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit (OU) (U) April 2021 through March 2022, SEMS Number: 24 (SRNS-RP-2022-00342, Revision 0, June 2022) received June 17, 2022.

Dear Mr. Hennessey:

The Department has completed its review of the above referenced document pursuant to the Savannah River Site Federal Facility Agreement. The attached comments were generated as a result of this review. These comments must be addressed prior to final approval of the above referenced document. As specified in Section XXII, Review/Comment on Documents, the appropriate technical staff will be available to participate in a joint DOE/EPA/DHEC comment resolution meeting to discuss these comments, if necessary.

To schedule a meeting to resolve the attached comments or to obtain further information, please contact me at (803) 898-4331.

Sincerely,

Susan B. Fulmer, P.G., Manager
Federal Remediation Section
Division of Site Assessment, Remediation, Revitalization
Bureau of Land and Waste Management

cc: C. L. Bergren, SRNS-ACP (Signed Original)
Travis Fuss, Aiken Environmental Affairs Office (via email)
Jon Richards, EPA Region IV
Heather Cathcart, BLWM

South Carolina Department of Health and Environmental Control Comments on:
Effectiveness Monitoring Report for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit (OU) (U)
April 2021 through March 2022, SEMS Number: 24
(SRNS-RP-2022-00342, Revision 0, June 2022) received June 17, 2022.

Specific Comments

1. Section 1.2, Nature and Extent of Contamination, page 2. The report states that no COCs were identified in surface soils in the subunit. Please identify the specific depth intervals that SRNS identifies as "surface soils" where no COCs were identified (e.g., 0-6 inches, 0-12 inches, etc.).

2. Section 2.2.1, Groundwater Aquifers, page 9. The third paragraph, first sentence identifies advection and dispersion as the primary MNA processes occurring at CMP Pits, while some biodegradation is occurring in the wetland area near Pen Branch. Please explain how monitoring data were used to evaluate the MNA processes occurring at the subunit. For example, were concentrations of dissolved gases such as methane, ethene, and ethane evaluated as markers of biological activity or indicators of reductive dechlorination? Is this based on relative concentrations of CVOCs that are part of the biodegradation pathway for PCE (i.e., TCE, cis-1,2-DCE, and vinyl chloride)?

3. Section 2.2.2, Groundwater Sampling Results, page 10. In future monitoring reports for this unit, please include historical analytical results for all monitoring wells in tabular format and/or as an Excel file.

4. Section 2.2.2, Groundwater Sampling Results, page 10. The first paragraph of this section and the first paragraph of Section 2.2.2.1 indicate that wells CMP 56B, 56D, 57B and 57D were sampled for VOCs during 2021 although these wells are normally only used for water level measurements. CMP 34D was also sampled for VOCs in addition to its normal required analysis of lindane, with the rationale provided on page 12 indicating increases in PCE and TCE measurements at CMP 35D. Please provide the rationale for adding VOC analyses for wells CMP 56B, 56D, 57B and 57D as well (i.e., dry zone areas in the TZ?).

5. Section 2.2.2.1, PCE and TCE, page 10. Please specify the criteria and methodology used to determine if a monitoring well demonstrates an increasing, stable, or decreasing trend for a particular COC. Were trend evaluations performed with statistical tests such as the Mann-Kendall test, by comparison between current concentrations and concentrations prior to remedial activities, or via another method?

6. Section 2.2.2.1, PCE and TCE, pages 10 and 11. It is unclear what timeframe was used for the COC trend evaluations, and different sections of the report use different time ranges to describe trends. The above-referenced section of the report discusses PCE and TCE trends over the past 11 years. Following subsections discuss trends over the

past 13 years (since ERH/SVE startup). Page 16, second paragraph, fifth sentence describes a decreasing PCE trend at LAZ well CMP 10C over the last ten years. Page 21, first paragraph, first sentence describes a decreasing Lindane trend at CMP 10C over the last eight years. Page 12, last paragraph, next-to-last sentence states that PCE at CMP 13D displays a slight increasing trend without referencing the time range over which the trend was evaluated. Please clarify.

7. Section 2.2.2.1, PCE and TCE, Transmissive Zone, page 12. The third paragraph, last sentence states, "Figure 32 indicates a possible correlation between water elevation and contaminant levels of PCE at well CMP 35D." Figure 32 displays bar graphs of COC concentration trends by contaminant type and aquifer. Figure 31 displays PCE and Lindane concentrations in CMP 35D and CMP 10D in comparison to the groundwater elevation in CMP 35D. Please edit the text to reference the correct figure.

8. Section 2.2.2.1, PCE and TCE, Transmissive Zone, page 12. The third paragraph, last sentence states that a possible correlation exists between groundwater elevation and PCE concentration in CMP 35D. Visually, there appears to be little correlation based on the comparison presented in Figure 31. If there is believed to be a statistically significant correlation between PCE concentrations and groundwater elevations, then a correlation analysis or other statistical evaluation should be completed to demonstrate this.

9. Figure 15, PCE Plume Comparison from 2008 and 2021 in the TZ and MAZ, page 59. The PCE plume maps for the TZ indicate that the plume has migrated north-northeast of the CMP pits, with monitoring well CMP 35D displaying the highest PCE concentration of 2,470 ppb in 2021. Since ERH/SVE shutdown, PCE concentrations have generally increased in wells near the northern edge of the inferred plume area, namely CMP 34D, CMP 13D, and CMP 35D. The PCE concentration at CMP 35D in 2021 is significantly higher than the maximum concentration of 620 ppb at CMP 10D in 2008. Although the results from the additional sampling effort described in Appendix C did not identify any soil samples above the DNAPL contamination threshold of 60,000 ppb, the maximum PCE concentration detected in soil was 1,137.5 ppb in CMP035B at a depth of 60 feet bgs. This sampling location is adjacent to monitoring well CMP 35D. The increasing PCE concentrations at well CMP 35D and the soil PCE concentrations at CMP035B appear to indicate that sufficient source material is present to continue impacting groundwater PCE concentrations near CMP 35D. Please provide some discussion on whether any additional action is needed to address increasing PCE concentrations and possible plume migration, and whether these results significantly affect the projections generated by the 2017 modeling effort.

10. Table 1, CMP Pits OU MNA Monitoring Network, pages 98 and 99. Should this table be updated to include VOCs and 1,4-Dioxane analyses for CMP 34D as well as lindane analysis for CMP010A? Please clarify.

11. Appendix B, Time Series Plots, pages B-3 through B-52. In addition to earlier comments regarding different time ranges used to evaluate COC trends, some trend evaluations and time series plots presented in Appendix B appear to be inconsistent regarding the date range used to evaluate trends. The Excel file included in the CD with the report submittal includes a table indicating which trends were identified as increasing, stable, decreasing, or non-detect. There appear to be several discrepancies between the trends identified in the Excel file and the apparent trends presented in the time series plots in Appendix B. Specific examples are presented in the sub-comments below. Since it is unclear what methods were used to determine trends, a response to the previous comment regarding trend evaluation methodology may help address this comment by explaining how trend evaluations were performed.

    a. The Excel file identifies PCE at CMP 8 as demonstrating a decreasing trend. The time series plot for CMP 8 PCE, page B-5, shows an apparent decreasing trend from 2019 to 2022. However, from ERH/SVE shutdown through 2019, the data appear to be relatively stable with no apparent decreasing trend.

    b. PCE at CMP 32C was identified as stable in the Excel file, with a note stating, "Steady over last 4 years." Although the last four years of PCE data appear stable, PCE concentrations have increased since ERH/SVE shutdown.

    c. PCE at CMP 34D was identified as increasing, and concentrations have generally increased since ERH/SVE shutdown. However, if the data were evaluated over the last four years as was done for PCE at CMP 32C, PCE concentrations demonstrate an apparent decreasing trend at CMP 34D.

    d. PCE at CMP 58B was identified as increasing, with a note in the Excel file stating, "Steady over last 5 years." The PCE data for CMP 32C and CMP 58B both appear to demonstrate overall increasing PCE concentrations since ERH/SVE shutdown, while the data over the last four years for CMP 32C and five years for CMP 58B were identified as "steady." Despite apparently similar trends, PCE at CMP 32C was identified as stable, while PCE at CMP 58B was identified as increasing.