Department of Energy
Savannah River Operations Office
P O Box A
Aiken, South Carolina 29802

JAN 11 2023

Ms. Susan B. Fulmer, P. G., Manager
Federal Remediation Section
Division of Site Assessment, Remediation and Revitalization
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Mr. Jon Richards
Savannah River Site Remedial Project Manager
Superfund Division
U. S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

Dear Ms. Fulmer and Mr. Richards:

SUBJECT: Savannah River Site's Responses to the Regulatory Comments on the 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 (SRNS-RP-2022-00342, Revision 0, June 2022) SEMS Number: 24

In accordance with the terms of the Federal Facility Agreement, the U.S. Department of Energy (DOE) is submitting the subject comment responses for your review. The U.S. Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC) provided comments on the report on September 6, 2022, and October 14, 2022, respectively. The report will not be revised; however, all comment responses will be included and/or addressed in the next report, as applicable. Please review these responses and provide your approval thirty (30) days from receipt. The time and effort that the SCDHEC and the EPA have given on the subject operable unit are greatly appreciated.

Questions from you or your staff may be directed to me at (803) 952-8365, or the DOE Federal Project Director, Karen Adams, at (803) 952-7871.

Sincerely,

Brian T. Hennessey

Digitally signed by Brian T. Hennessey
Date: 2023.01.10 16:43:19 -05'00'

Brian T. Hennessey
SRS Remedial Project Manager
Infrastructure and Area Completion Division

IACD-23-119

Enclosures:
1. SRS Responses to South Carolina Department of Health and Environmental Control Comments on the 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 (SRNS-RP-2022-00342, Revision 0, June 2022) SEMS Number: 24
2. SRS Responses to United States Environmental Protection Agency Comments on the 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 (SRNS-RP-2022-00342, Revision 0, June 2022) SEMS Number: 24

cc w/o encl:
J. Blalock, SCDHEC-Columbia
S. French, SCDHEC-Columbia
M. Reece, SCDHEC-Columbia
G. K. Taylor, SCDHEC-Columbia
G. Stewart, SCDHEC-Columbia
T. R. Fuss, SCDHEC-Aiken Environmental Affairs Office
G. N. O'Quinn, SCDHEC-Aiken Environmental Affairs Office
B. A. Cameron, SCDHEC-Aiken Environmental Affairs Office
K. L. Beatty, SCDHEC-Aiken Environmental Affairs Office
H. L. Herlong, SCDHEC-Aiken Environmental Affairs Office
R. H. Pope, EPA-Atlanta

cc w/ encl:
M. McRae, TechLaw, Inc.

Contact for all responses to comments: Ashley Shull (803)952-7090 ashley.shull@srs.gov

GENERAL COMMENTS

1. In accordance with the EPA monitored natural attenuation (MNA) guidance document, "*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites*, Office of Solid Waste and Emergency Response (OSWER) Directive 9200.4-17P, April 1999 (EPA MNA Guidance), contingency measures should be implemented if unacceptable performance of the selected remedy should occur. While the EMR asserts MNA is performing as predicted, *it is noted that the CMP Pits OU groundwater remedy includes 4 of the 5 "trigger" criteria consistent with the EPA MNA Guidance, signaling unacceptable performance of the remedy, which generally include, but are not limited to, the following:*

    - ***Contaminant concentrations in soil or groundwater at specified locations exhibit an increasing trend not originally predicted during remedy selection.***
        - The EMR indicates modeling did not predict contamination to reach the Gordon Aquifer (GA) above maximum contaminant levels (MCLs). Results from CMP010A indicate that the GA is contaminated with tetrachloroethylene (PCE) and trichloroethylene (TCE) above MCLs; and
        - PCE and TCE has been increasing since 2013 in distal plume well CMP8B.
    - ***Near-source wells exhibit large concentration increases indicative of a new or renewed release.***
        - Recent data in the source area have shown the following:
            - PCE, TCE, and /or lindane in well CMP35D directly north of the CMP Pits have been increasing. Lindane has been increasing in concentration since 2013 in CMP35D, and PCE/TCE has been increasing since 2010;
            - PCE concentrations have been increasing in CMP10C since 2013, and TCE has been increasing since 2008;
            - PCE/TCE concentrations have been increasing in well CMP13B since 2001;
            - PCE concentrations have been increasing in well CMP13D since 2009;
            - Increasing trend in PCE/TCE concentrations are noted for well CMP32C since 2001;
            - Increasing trends in PCE/TCE concentrations are noted in well CMP34D since 2008;
            - An increasing trend in PCE concentration is noted for well CMP52C since 2002, and an increasing PCE/TCE concentration trends were observed in CMP52BU since 2005; and,
            - An increasing trend in PCE concentration is noted for well CMP058B since 2006.

- ***Contaminants are identified in monitoring wells located outside of the original plume boundary.***
    - The EMR indicates that the modeling did not predict contamination to reach the GA above MCLs. However, analytical results from CMP010A indicate that the GA is contaminated above MCLs with PCE, TCE, and has concentrations of 1,4-dioxane above the USEPA tap water regional screening level (RSL). Also, lindane was detected in CMP010A at a concentration of 0.162 micrograms per liter (µg/L), which is less than the MCL of 0.2 µg/L.

- ***Contaminant concentrations are not decreasing at a sufficiently rapid rate to meet the remediation objectives.***
    - The remedial timeframe estimates indicate groundwater contamination would remain above MCLs for up to another 100 years.

It is currently unclear if the estimated remedial timeframe of 100 years would be reduced if contingency measures are implemented to accelerate the restoration of groundwater to beneficial use within a reasonable timeframe. Considering the potential for monitoring the MNA remedy performance over the next 100 years, it may be beneficial to consider implementation of a contingency remedy. *Please revise the EMR to include a discussion of contingency remedy implementation to reduce the remedial timeframe and monitoring costs at the CMP Pits OU.*

Response: Clarification

Gordon Aquifer:

As discussed within the EMR in section 2.2.2.1, *PCE and TCE* on pages 16 and 17, the contaminants seen at well CMP010A are not believed to be representative of the GA based on vertical well contaminant trends at the CMP10 well cluster and contaminant trends throughout the CMP Pits area. Additionally, the 2021 soil sampling that was conducted throughout the UTRA and GA at nearby boring location CMP-BR-06, as presented in Appendix C of the EMR, does not indicate any vertical or horizontal source of contamination to the GA. The contamination may be caused by drilling activities during the CMP010A well installation or caused by other well/boring activities in the past. SRS is planning on redeveloping well CMP010A during 1Q2023 and will collect groundwater samples monthly after well redevelopment for two months afterwards to determine any changes in contaminant concentrations. A discussion of this effort and the data results will be included in the next EMR to be submitted in June 2023.

Lower Aquifer Zone:

Modeling indicated contaminant levels would increase within the LAZ over time throughout the VOC plume due to residual contaminant mass that has vertically migrated from overlying strata and now present within low permeability zones within

the unit. This includes LAZ wells near the source area (e.g., CMP 52BU and CMP058B) and wells further from the source area such as seen in wells CMP 32C and CMP 8B. The overall lateral plume footprints have not increased with these changes and impacts to the surface water of Pen Branch remain negligible.

Source Area/TZ and Remedial Timeframe:

It is expected that the residual contamination within the upper portion of the aquifer and vadose zone in the area around CMP 35D is contributing to the increase in groundwater concentrations. This is further substantiated by the 2021 soil sampling effort and the data collected at boring CMP035B which indicated elevated levels of VOCs near the top of the water table.

The 2017 modeling effort factored in continuing sources from residual contamination/ desorption from low permeable zones located beneath the CMP Pits knoll area. With the continuing source additions to the updated model, the cleanup timeframe (approximately 100 years [~ calendar year 2117] was similar to what was developed in the original model in 2002 (50 – 130 years [calendar years 2050 – 2130]).

During fiscal year 2024, SRS will use the data collected during the 2021 soil and groundwater investigation as well as recent groundwater data to evaluate if an additional action would improve cleanup timeframes. Information describing the evaluation for additional actions to be conducted in FY 2024 will be included in the EMR to be submitted in June 2023. Results of the evaluation will be included in the EMR submitted in June 2024 or 2025 to support Core Team consideration of the need for any additional response action. No changes to the June 2022 EMR are proposed.

2. It is uncertain whether the low permeability cap installed at the CMP Pits that may retard infiltration as indicated in the EMR was designed and engineered to meet infiltration/permeability specifications. For example, according to the Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Groundwater Remedies (U) SEMS Number: 00 SRNS-RP-2019-00511, Revision 1, Aiken, South Carolina, July 2020, only a soil and vegetative cover is installed at the CMP Pits. To support development of the conceptual site model (CSM), *please revise the EMR to clarify whether a low permeability engineered cap has been installed over the CMP Pits.*

Response: Clarification

A HDPE cover was installed over the CMP Pits in the mid-1980s as a maintenance action to help reduce infiltration after backfilling the areas of contaminated soil removal beneath the pits and the backfilling of the CMP Pits trenches themselves. This maintenance action was not formally performed under any regulatory program as the CMP Pits OU was not identified as a RCRA/CERCLA unit until 1989. Installation of the HDPE cover was not part of an interim or final remedial action and therefore not designed to meet any infiltration/permeability specifications at the CMP Pits. A soil and

vegetative cover were subsequently installed at the CMP Pits. SRS does not plan to include the HDPE cover to support the CSM. No changes to the June 2022 EMR are proposed.

SPECIFIC COMMENTS

1. **Section 1.3, Observed Hydrostratigraphy at the CMP Pits OU, Page 5 of 106, and Figure 3: CMP Pits Groundwater OU Conceptual Site Model (CSM), Page 35 of 106:** The text states, "the confining units appear to slope towards the south in some areas at the main CMP Pits... although the TCCZ [tan clay confining zone] and the TCLC [tan clay lower confining] are depicted as continuous units in the cross-sections, aquifer behavior in this area shows various elevation heads and contaminant pathways that indicate the confining horizons are discontinuous and/or intermixed with sandy clays." Figure 3: CMP Pits Groundwater OU CSM does not depict south-sloping confining units and TCCZ and TCLC are not shown as discontinuous and/or intermixed with sandy clays. *Please revise the EMR to address this discrepancy.*

   Response: Agree/Clarification

   Figure 3 provides a simplified CSM depicting the general elevation, thickness, and extent of the main confining layers. The description in the text is based on detailed core descriptions as well as the behavior of the plumes in the area. The CSM will be revised in future reports to better depict that the TCCZ and TCLC are not flat, south-sloping at the CMP Pits area, discontinuous, and/or intermixed with sandy clays. No changes to the June 2022 EMR are proposed.

2. **Section 1.4, Observed Hydrology at the CMP Pits OU, Page 8 of 106, and Figure 3: CMP Pits Groundwater OU Conceptual Site Model (CSM), Page 35 of 106:** The text states that the confining zones for the TCCZ and TCLC, "are not considered thick competent confining clays, but rather are hummocky, vary in thickness, and can be almost non-existent or leaky in areas." This description is not consistent with the confining zones depicted in Figure 3: CMP Pits Groundwater OU CMP, which are shown as contiguous and of equal thickness throughout the site. *Please revise the EMR to address this discrepancy.*

   Response: Agree/Clarification

   Please refer to the response to USEPA Specific Comment #1.

3. **Section 2.0, Groundwater Sampling Results, Subsection 2.2.2.1, PCE and TCE, Gordon Aquifer, Page 17 of 106**: The text states, "The recent data collected at new monitoring well CMP010A is the first occurrence of MCL exceedances in the GA." Please note that preceding text in Section 2.0, Groundwater Sampling Results, Subsection 2.2.2.1, Page 16 of

106 states, "CMP010A was the only GA monitoring well with PCE and TCE concentrations above MCLs, with concentrations of 106 µg/L for PCE and 43.9 µg/L for TCE. These concentrations have significantly decreased from 2020 concentrations." Based on these statements, it is unclear when PCE and/or TCE concentrations above MCLs were first observed within the GA at CMP010A. *Please revise the EMR to address this discrepancy.*

Response: Agree/Clarification

GA well CMP010A was installed in September 2019. It was first sampled in December 2019 during the 4Q2019 sampling event. This is when the PCE and TCE MCL exceedances were first observed in the GA at well CMP010A. In future EMRs, the text in section 2.2.2.1, *PCE and TCE, Gordon Aquifer* will be clarified to state that groundwater MCL exceedances in the GA were first identified in 2019 at well CMP010A after installation of the well. No changes to the June 2022 EMR are proposed.

4. **Section 2.0, Groundwater Sampling Results, Subsection 2.2.2.2, Cis-1,2-Dichloroethylene (c-1,2-DCE), Page 17 of 106:** The text states, "C-1, 2-DCE was detected in six wells in 2021…all of the wells with c-1,2-DCE are located in the wetland area near Pen Branch." For clarity, *please revise the EMR to include the names of the six affected monitoring wells.*

Response: Agree/Clarification

The six wells that included detections of c-1,2-DCE were CMP 36D, CMP 37D, CMP 38D, CMP 39D, CMP 40D, and CMP 41D. Future EMRs will include a complete listing of the names of wells affected in the text if the total number of wells to list is below 10 wells. No changes to the June 2022 EMR are proposed.

5. **Appendix C, Additional Sampling Efforts, Pages C-3, C-4 of C-30:** The text indicates no volatile organic compound (VOC) headspace sampling results were above the previous 60 milligrams per kilogram (mg/kg) [60,000 micrograms per kilogram (µg/kg)] threshold limit for dense non-aqueous phase liquid (DNAPL); however, it is unclear if the maximum VOC headspace soil sampling results for PCE and TCE of 1137.5 µg/kg and 106.4 µg/kg, respectively, from 60 feet below ground surface (ft bgs) and 92 ft bgs, respectively, at CMP035B indicate the potential to impact groundwater in excess of respective MCLs. *Please revise the EMR to clarify if the maximum VOC headspace soil sampling results for PCE and TCE indicate the existence of a potential contaminant migration to groundwater issue.*

Response: Agree/Clarification

The depth to groundwater at well CMP 35D is approximately 90-92 ft bgs. It is expected that the residual contamination within the upper portion of the aquifer and vadose zone in the area around CMP 35D is contributing to the increase in groundwater concentrations. No changes to the June 2022 EMR are proposed.

Contact for all responses to comments: Ashley Shull (803)952-7090 ashley.shull@srs.gov

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.).

   Response: Agree

   Surface soils include the depth of 0-1ft below ground surface. Section 1.2, *Nature and Extent of Contamination*, will be updated in the next EMR to be submitted in June 2023 to include the depth interval as follows:

   "… No constituents of concern (COCs) were identified in the surface soils (0-1 ft [0-0.3 m] bgs) in the CMP Pits subunit."

   No changes to the June 2022 EMR are proposed.

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)?

   Response: Agree/Clarification

   Advection and dispersion are evident from lower groundwater and surface water concentrations downgradient from the source area. To detect reductive dechlorination, groundwater and surface water data include the analysis results of VOC degradation products (1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride) as presented in Table 3, in the subsections of Section 2.2.2, *Groundwater Sampling Results*, Section 2.2.3 *Surface Water Sampling Results*, and in the sample results from South Carolina State University (SCSU), which also include microbial soil analyses (Section 2.2.4, *Additional Data from Independent Analysis*). In general, cis-1,2-DCE and vinyl chloride is detected in the wetland wells near Pen Branch.

   Field data including monitoring of geochemical properties that are conducive to reductive dechlorination (pH, dissolved oxygen, oxidation/reduction potential, and

alkalinity) are also measured and reported in Table 3, although discussion of field data is not provided in the EMR.

At the time the CMP Pits Groundwater OU MNA remedy was selected, there was an understanding that widespread reductive dichlorination was not occurring within the groundwater aquifer system. However, since implementation of the final remedy, SRS has been working with SCSU to collect data in the Pen Branch area in an effort to better understand groundwater impact to the wetlands and surface water and what processes that may be controlling concentrations of dissolved groundwater contaminants. SRS acknowledges that some biodegradation is occurring within the wetland area around Pen Branch due to analytical results and field data collected. Future reports will include a new section with discussion on evidence for any reductive dechlorination occurring at the CMP Pits OU.

No changes to the June 2022 EMR are proposed.

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.

Response: Disagree/Clarification

As agreed to in previous EMR submittals, the annual EMR presents data collected from the previous year to historical data in multiple formats as well as comparisons of the groundwater plumes through time. Please refer to the following:

- **Time-series plots in Appendix B with data for the previous 22 years since Jan 1, 2000 for PCE, TCE, 1,4-dioxane, and lindane.**
- **Sampling result descriptions within the specific contaminant subsections of section 2.2.2, *Groundwater Sampling Results*;**
- **Plume/concentration comparisons from 2008 and 2021 (Figures 15 and 16 for PCE; Figures 29 and 30 for lindane); and**
- **Maximum results from 2008 and 2021 for PCE (Table 4) and lindane (Table 5).**

Tabular forms of historical data can be acquired from the previous annual EMRs submitted since 2009. Additionally, historical data can be found in the CMP Pits OU RFI/RI/BRA that is referenced in Section 5.0, *References* (WSRC-RP-2002-4049). No changes to the June 2022 EMR are proposed.

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?).

Response: Agree/Clarification

Additional samples that are not required as part of the Effectiveness Monitoring Plan (EMP) (Table 1) were collected at wells CMP 56B, 56D, 57B, and 57D due to their location north of Pen Branch to help address USEPA's recent concerns of potential contaminant underflow to the north of Pen Branch. Future EMRs will include reasons for additional analytical sampling, as applicable.

No changes to the June 2022 EMR are proposed.

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?

Response: Clarification

No statistical tests or other software tests were conducted. Please see response to SCDHEC Specific Comment #11.

No change to the June 2022 EMR is proposed.

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.

Response: Clarification

The COC trend evaluation use well-specific timeframes for both the Excel file "Trends" tab and the bar graphs in Figure 32. The timeframe is focused on more recent/current

trends such as within the last 4 to 10 years since the EMRs are focused on presenting the current groundwater and surface water data trends as opposed to a strict comparison to pre-ERH (13 years) as trends may change through time depending on a well's location, depth, varying geology, etc.

In the text when talking about specific wells, the exact timeframe of how long a well has had an increasing, decreasing, or steady trend are used. For example, the last paragraph on page 11 states "Well CMP 35D has generally displayed increasing concentrations over the last 11 years...".

At the end of each UTRA aquifer zone subsection in section 2.2.2.1, *PCE and TCE (Transmissive Zone, Middle Aquifer Zone, and Lower Aquifer Zone)* and at the end of section 2.2.2.12, *Lindane*, a comparison of the plumes and concentrations from pre-ERH/SVE and the current year are provided. This information and associated plume comparison figures (PCE: Figures 15 and 16, lindane: Figures 24, and 25) and concentration comparison tables (PCE: Table 4; lindane: Table 5) were previously requested to be included in the EMRs.

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.

   Response: Agree/Clarification

   The reference to the figure on page 12 incorrectly stated Figure 32; it should have been listed as Figure 31. This figure reference will be corrected in future EMRs, as needed. No changes to the June 2022 EMR are proposed.

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.

   Response: Disagree/Clarification

   The top graph of PCE in Figure 31 shows a general trend through time that the PCE concentrations at CMP 35D (red line) decrease as water elevations (blue line) decrease

(i.e. 2003 - 2012) and vice versa (i.e., 2013 – 2021) although there may be a delayed effect. Additionally, the VOC headspace soil data collected next to CMP 35D as presented in Appendix C, page C-19, supports this dynamic as residual contamination is within the screen zone depth interval and above the screen zone within vadose zone. Future EMRs will include a revised representation of the data or additional evidence to further support a correlation of water elevations and contaminant trends at CMP 35D. No changes to the June 2022 EMR are proposed.

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.

Response: Clarification

It is expected that the residual contamination within the upper portion of the aquifer and vadose zone in the area around CMP 35D is contributing to the increase in groundwater concentrations. The 2017 modeling effort factored in continuing sources from residual contamination/ desorption from low permeable zones located beneath the CMP Pits knoll area. With the continuing source additions to the updated model, the cleanup timeframe (approximately 100 years [~ calendar year 2117] was similar to what was developed in the original model in 2002 (50 – 130 years [calendar years 2050 – 2130]).

During fiscal year 2024, SRS will use the data collected during the 2021 soil and groundwater investigation as well as recent groundwater data to evaluate if an additional action would improve cleanup timeframes. Information describing the evaluation for additional actions to be conducted in FY 2024 will be included in the EMR to be submitted in June 2023. Results of the evaluation will be included in the EMR submitted

in June 2024 or 2025 to support Core Team consideration of the need for any additional response action. No changes to the June 2022 EMR are proposed.

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.

    Response: Clarification

    Table 1 lists the monitoring stations and required sampling as determined in the CMP Environmental Monitoring Plan (EMP). Although VOCs and 1,4-Dioxane have been sampled at CMP 34D as well as lindane analysis for CMP010A, these are not part of the required monitoring according to the CMP EMP and are therefore not included in Table 1. For clarity, Table 1 in future EMRs will include any additional samples collected for the reporting period and will identify them as "additional samples" so they will be understood to not be a required sample per the EMP. No changes to the June 2022 EMR are proposed.

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.

Response: Clarification

Trend evaluations were determined based on visual analysis and professional judgement of the contaminant time-series plots (Appendix B). The COC trend evaluation uses well-specific timeframes for both the Excel file "Trends" tab and bar graphs in Figure 32. The timeframe is focused on more recent/current trends such as within the last 4 to 10 years since the EMRs are focused on presenting the current groundwater and surface water data. The timeframe is focused on more recent/current trends such as within the last 4 to 10 years since the EMRs are focused on presenting the current groundwater and surface water data trends as opposed to a strict comparison to pre-ERH (13 years) as trends may change through time depending on a well's location, depth, varying geology, etc.

A comparison of pre-ERH/SVE and current concentrations can be seen at the end of each UTRA aquifer zone subsection within section 2.2.2.1, *PCE and TCE* (*Transmissive Zone, Middle Aquifer Zone, and Lower Aquifer Zone*) and at the end of section 2.2.2.12, *Lindane*. Figures depicting the concentrations and plumes from these timeframes (PCE: Figures 15 and 16; lindane: Figures 24, and 25) and concentration comparison tables (PCE: Table 4; lindane: Table 5) are also provided. These are provided to illustrate changes in groundwater contaminant concentrations relative to implementation of the ERH/SVE.

Future reports will include an accurate comment and/or the timeframe used for the trend for all stations in the "Comment" column on the Trends tab of the Excel file. No changes to the June 2022 EMR are proposed.