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

MAR 15 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 and Emergency Management 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 2021 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U) (SRNS-RP-2022-00396, Revision 0, July 2022) SEMS Number: 27

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 South Carolina Department of Health and Environmental Control (SCDHEC) and the U. S. Environmental Protection Agency (EPA)comments on the report were received on November 21, 2022, and December 16, 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.

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

Sincerely,

Brian T. Hennessey Digitally signed by Brian T. Hennessey
Date: 2023.03.14 08:16:45 -04'00'

Brian T. Hennessey
SRS Remedial Project Manager
Remediation and Deactivation & Decommissioning Division

IACD-23-133

Enclosures:
1. SRS Responses to the United States Environmental Protection Agency Comments on the 2021 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U) (SRNS-RP-2022-00396, Revision 0, July 2022) SEMS Number: 27
2. SRS Responses to the SCDHEC Comments on the 2021 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U) (SRNS-RP-2022-00396, Revision 0, July 2022) SEMS Number: 27

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. 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

cc w/encl:
D. Lloyd, EPA-Atlanta
M. McRae, TechLaw, Inc.

SRS Responses to the United States Environmental Protection Agency
Comments on the
2021 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U), SEMS Number: 27 (SRNS-RP-2022-00396, Revision 0, July 2022)
Savannah River Site, Aiken, South Carolina
Comments received December 16, 2022

EPA SPECIFIC COMMENTS:

1. **Section 3.3, Natural Attenuation, Pages 8 through 10:** The third paragraph states that trends for pH, alkalinity, oxidation reduction potential (ORP), and dissolved oxygen (DO) sampled between 2000 and 2006 were compared to 2022 data for evaluation; however, according to the following paragraphs the trends between 2000 and 2006 were compared with 2021 data. Please revise the text to address this discrepancy.

   Response: Agree

   The trends for pH, alkalinity, oxidation reduction potential, and dissolved oxygen were compared to 2021 data. The 2022 date was entered erroneously. In future submittals of the report, SRS will take care to enter dates correctly. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

2. **Section 4.4.6, Trend Analysis, Page 15 of 30:** The text states that periods of high water levels may correlate with increased contaminant concentrations; however, a figure graph of water level data compared with contaminant concentrations over time was not provided as an additional line of evidence. Please include a separate figure that depicts groundwater elevation data in comparison to contaminant concentration data at all monitor wells.

   Response: Agree with Clarification

   Figures 1-4 provide comparisons of annual rainfall with contaminant concentrations. Trend in annual rainfall was considered as a surrogate for water level since it is a water table aquifer directly impacted by precipitation. However, future submittals of the full report will include figures that compare available water level data with contaminant concentrations when a possible correlation between the two is discussed. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

3. **Appendix A, Figure A-1. DOSB Groundwater Monitoring Results, 2Q2021, Page A-11 of A-12:** Table A-1 (DOSB Groundwater Monitoring Results, 2021) appears to be blurry and, thus, is difficult to read / interpret. Please revise Table A-1 to be clearly legible.

   Response: Agree

   The tables inserted in future submittals of the report will be checked for clarity. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

4. **Appendix B, Figure B-5. DOSB Potentiometric Data – AQ1/2, 3 and GAU AQ1, 2021, Page B-12 of B-24:** The groundwater elevations were not contoured for GA AQ1 and the southwest flow direction shown in the figure is not supported groundwater elevations. For, example, the groundwater elevation in well DOB 15PZ is 135.88 feet (ft) relative to mean sea level (msl) and is lower than the surrounding groundwater elevations recorded in Gordan Aquifer (GA) wells; however, the figure legend does not identify the water elevation in DOB 15PZ as suspect and not used for the determination of groundwater flow direction. Please revise the figure to address this issue to clarify the flow direction in the GA and provide discussion within report context.

   Response: Agree

   A review of the raw data showed that the water level for the well DOB 15 PZ was 139.4 feet (ft) above mean sea level (amsl) and not 135.88 ft amsl. The higher elevation justifies the groundwater flow direction, and in future submittals of the report, the reported values will be checked. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

SRS Responses to the South Carolina Department of Health and Environmental Control (SCDHEC) Comments on the 2021 Groundwater Mixing Zone Report for the D-Area Oil Seepage Basin (631-G) (U), SEMS Number: 27 (SRNS-RP-2022-00396, Revision 0, July 2022) Savannah River Site, Aiken, South Carolina Comments received November 21, 2022

SCDHEC GENERAL COMMENTS:

1. **Appendix C, DOSB 2021 Hydrographs.** It may be beneficial to plot the hydrographs with the VOC concentration time series to better understand the correlation between fluctuating water table levels and VOC concentrations.

   Response: Agree

   Future submittals of this report will include figures that compare available water level data with contaminant concentrations when a possible correlation between the two is discussed. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

2. **Appendix D, DOSB 2021 Time Series Plots for COC.** It may be beneficial to reorganize Appendix D so that time series plots for each well go from PCE to VC and then from source wells to distal wells (group plots by well number).

   Response: Agree

   The time series plots are produced by an automated process that we have limited control over on the order of the output. We will pursue the possibility of changing the order of the output as suggested for future submittals. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

SCDHEC SPECIFIC COMMENTS:

1. **Section 2.0, Site Hydrology, page 6.** The Department recommends including a reference to Figure B-2, DOSB Conceptual Cross-Section A-A'.

   Response: Agree

   In future submittals of the report, discussion of site hydrogeology will include reference to conceptual cross-section at the site. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

2. **Section 3.3 Natural Attenuation, pages 8-10.:** The section states that reductive dichlorination is not considered a viable process at the D-Area Oil Seepage Basin, but then focuses mainly on discussing reductive dichlorination and not the processes that are remediating the groundwater plume. There should be some discussion of the natural attenuation processes that are working to remediate the groundwater plume.

   Response: Agree with Clarification

   The intent of this section is to discuss the history of attenuation processes at the DOSB. Reductive dichlorination was likely the predominant degradation process before removal of the carbon source and so it is discussed extensively in this section while acknowledging that it is likely not a continuous viable process currently at the DOSB.

   In future submittals of this report, a reference to Section 4.4.6 will be added to the section under discussion to direct the reader to additional discussion on the current attenuation processes occurring at the DOSB. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

3. **Section 4.4, Compliance and Mixing Zone Monitoring, pages 12-13:** The Department recommends adding references to plume maps B-6 through B-9 in Sections 4.4.1 through 4.4.4.

   Response: Agree

   Future submittals of the report will include references to the location of the relevant wells in the respective aquifer. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

4. **Section 4.4.6, Trend Analysis, page 13:** This section references Figures B-6 through B-12 as opposed to Appendix D. Figures B6 through B-12 are a snapshot of concentrations of COCs for 2Q2021 and not a trend analysis. Appendix D Time series plots would be a more appropriate reference.

   Response: Agree with Clarification

   The first paragraph in this section discusses the maximum concentrations from 2021. Figures B-6 through B-12 are referenced here because they include all the results from 2021 making it convenient for the reader to observe the latest maximum concentration for each contaminant. Appendix D is referenced in the following paragraph. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

5. **Section 4.4.6, Trend Analysis, page 15:** The fifth sentence states, "however, VOC concentrations intermittently increase/decrease in various wells, including one additional well DOB 11 and plume compliance wells DOB 15A, DOB 15D and DOB 16." The Department recommends referencing the associated trend plot figure numbers.

   Response: Agree

   References to the relevant figures have been included in the text earlier in that section. However, in future submittals of the report, we will consider adding these references whenever a significant trend is discussed. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

6. **Section 4.4.6, Trend Analysis, page 15:** The last paragraph states, "Contaminant trends at the highest concentration well, DOB 15, show steady concentrations of VC, cDCE, and TCE, (Figure D-8, D-31, and D-77, respectively)." Figures D-8, D-31 and D-77 are for well BOB-15PZ, which typically has lower concentrations.

   Response: Agree

   The highest concentration well (DOB 15) has been identified correctly. However, the references should have been for Figures D-6, D-29, and D-75 instead. We will be careful to avoid such typographical errors in future submittals of the report. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

7. **Section 4.4.6, Trend Analysis, page 15 through 16:** Paragraph 3 on page 15 describes VOC concentrations intermittently increasing/decreasing due to core plume movement and degradation of VOC contaminants. However, page 16 discusses a lack of vinyl chloride accumulation and a retardation of plume movement. It appears that plume movement and degradation of VOCs are not the primary cause of the increasing/decreasing trends seen DOB 11, DOB 15A, DOB 15D, and DOB 16.

   Response: Agree

   The text on page 16 also discusses other factors that may cause the intermittent changes in VOC concentrations such as the retardation of VOCs by the aquitards and clayey zones and/or restricted groundwater flow through tighter (less conductive) aquifer formations. Therefore,

in future submittals of this report, the text on page 15 will be revised to reflect SRS's current interpretation more accurately. No changes are proposed for the 2021 report.

Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

8. **Figure 1 through Figure 4, pages 23-26:** These figures focus on VOC concentrations versus rainfall. Please clarify why only some of the wells are compared to total rainfall.

   Response: Clarification

   These figures were meant to provide examples of the potential correlation between rainfall and intermittent changes in VOC concentrations discussed in Section 4.4.6. Future submittals of this report will include figures that compare available water level data with contaminant concentrations when a possible correlation between the two is discussed. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov

9. **Figure 4, VC Concentrations Vs. Rainfall at Plume Compliance Wells (DOB 15, 15A, 15D and DOL 2) and Additional Wells (DOB 11, 12, 13 and 14) at the DOSB OU, page 26:** Why is the MZCL compliance line missing?

   Response: Agree

   The MZCL compliance line for VC was inadvertently omitted from Figure 4. We will be careful to avoid such omissions in future submittals of the report. No changes are proposed for the 2021 report.

   Contact: Kevin Boerstler, (803) 952-6766, kevin.boerstler@srs.gov