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

JAN 19 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 2021 Groundwater Mixing Zone Report for the R-Area Reactor Seepage Basins/108-4R Overflow Basin Operable Unit (SRNS-RP-2022-00212, Revision 0, June 2022) SEMS Number: 25

In accordance with the terms of the Federal Facility Agreement, the U.S. Department of Energy (DOE) is submitting the subject report for your review. The U.S. Environmental Protection Agency (EPA) provided comments and the South Carolina Department of Health and Environmental Control (SCDHEC) approved the Revision 0 document on August 22, 2022, and October 27, 2022, respectively. This report will not be revised; however, all comment responses will be incorporated 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 Program Manager, Mr. Philip Prater, at (803) 952-9333.

Sincerely,

Brian T. Hennessey Digitally signed by Brian T. Hennessey
Date: 2023.01.18 11:17:58 -05'00'

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

IACD-23-120

Enclosure:
SRS Responses to Environmental Protection Agency Comments on the 2021 Groundwater Mixing Zone Report for the R-Area Reactor Seepage Basins/108-4R Overflow Basin Operable Unit (SRNS-RP-2022-00212, Revision 0, June 2022) SEMS Number: 25

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
R. H. Pope, EPA-Atlanta

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

GENERAL COMMENTS

1. It is unclear how restoration of contaminated groundwater will be attained if contaminant concentrations in auxiliary wells exceed applicable maximum contaminant levels (MCLs). For example, the Report discusses one sample exceeded the Strontium-90 (Sr-90) MCL of 8 picocuries per liter (pCi/L) in auxiliary well RPC 11DU; however, the Report also states the auxiliary wells are monitored for information only and the results are not compared to established groundwater mixing zone concentration limits (MZCLs) or MCLs. *Please revise the Report to address this issue by clarifying how complete restoration of groundwater for beneficial use will be attained.*

   Response: Clarification.

   Auxiliary wells are screened near the source and are expected to exceed the MCLs. These wells are in support of effectiveness monitoring of the closed seepage basin remedy and are sampled because they are indicators of future groundwater concentrations in other downgradient wells. They are not compared to MCLs because they are not meant to be used as a determining factor for any additional corrective action. However, one of the RAOs established in the Record of Decision for groundwater within the RRSB OU states that Sr-90 concentrations in groundwater must be reduced to below MCLs. Therefore, even though auxiliary wells are not compared to MCLs as action levels, groundwater would not be considered clean until all wells have achieved the MCL. No changes are proposed to the document.

   Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

2. Based on the Figure B-2 (Groundwater Mixing Zone Boundary and Monitoring Well Network) and Figure B-6 (Potentiometric Surface in the Transmissive Zone [1Q2022]), it is unclear if the current monitoring well network is sufficient to monitor potential migration of Sr-90 contamination to the northwest along a flow path from A/AA Horizon wells RPC 11DU and RSE 1A (auxiliary wells with historical and current exceedances). There are currently two boundary wells, RSE034D and RSE032D, located northwest of RSE 1A; however, the boundary wells are separated by over 1,000 feet and no wells are installed between them to monitor this potential migration pathway. *Please revise the Report to address this issue to ensure the monitoring well network is sufficient to monitor this potential migration pathway to the northwest of RSE 1A.*

Response: Clarification.

Auxiliary wells RPC 11DU and RSE 1A are screened in the A/AA-horizon. As stated in Section 2.2.1, groundwater in the A/AA-horizons and TZ at the RRSB migrates vertically downward with little or no horizontal migration. This is demonstrated by a measured downward head of about 6 feet between wells RSE 1A and RSE 26DL. Therefore, any migration of contamination near the A/AA-horizon auxiliary wells would be expected to be present in the TZ wells, screened below the A/AA-horizon. Time-series data from well RSE 26DL (page C-10) has demonstrated a declining trend, with no detections above MCL for over 15 years. In addition, Sr-90 is also fairly immobile as it tends to bind to the subsurface soils and sediments within the aquifer. Due to this reasoning, the findings of the modelling effort, and empirical data, Sr-90 is not expected to considerably migrate and therefore the monitoring well network is believed to be sufficient. No changes to the document are proposed.

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

SPECIFIC COMMENTS

1. **Section 3.3.1, Recharge and Precipitation Measurements, Page 13 of 22 and Appendix B, Figure B-8, Monthly Rainfall Measurements at SRS during 2021 Compared with the 30-year Average, Page B-9 of B-10:** Both the text and the graph compare 2021 precipitation data to historical averages but do not include relevant precipitation data for the re-sampling event in the first quarter of 2022. In addition, it is not discussed whether sampling in the first quarter of the year would be expected to impact results due to seasonal patterns of water availability. *Please revise the Report to include precipitation data through the first quarter 2022 sampling event and provide a discussion as to whether this may impact the expected results.*

Response: Clarification.

Strontium-90 is relatively immobile and infiltration from rainwater would not have significantly affected the results. There is also an asphalt and concrete cap that restricts infiltration of precipitation into the source zone and thereby decreases the risk of any leachability. Increased precipitation could have resulted in increased water levels within the water table, however, a significant increase in water levels was not observed as shown

in the Appendix D, hydrographs (e.g., RSE010 page D-9 and RPC 11DU page D-6). There is also a time-lag between periods of increased/decreased rainfall and rising/falling water table. No change to the document is proposed.

Responsible Party: Justin Steadman, (803) 952-7346, justin.steadman@srs.gov

2. **Appendix C, Time Series Plot, Pages C-7 and C-9 of C-24:** The plume/intermediate well graphs in Appendix C (RSD002DL, RSD002DU, RSE 10DU, and RSE010DL) do not include a horizontal line identifying the mixing zone concentration limit (MZCL). Section 1.3 (Groundwater Mixing Zone Compliance, Page 4 of 22) states, "The purpose of the plume/intermediate wells is to verify that the contaminants do not exceed MZCLs", however, a horizontal line identifying the respective MZCL value is not included on the graphs for the noted plume/intermediate wells. Concentrations limits that are used to determine courses of action should be included on the noted graphs. *Please revise the graphs to include a the MZCL limit line for the noted wells.*

Response: Agree.

The MZCL limit lines on the individual time-series plots was inadvertently left out. Future reports will include the MZCL limit line on the respective time-series plots. No change to the current document is proposed.

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