UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

ENVIRONMENTAL COMPLIANCE &

November 19, 2021

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

AREA COMPLETION PROJECTS

EPA Comments on the EFFECTIVENESS MONITORING REPORT (EMR) FOR THE C-AREA GROUNDWATER OPERABLE UNIT REMOVAL ACTION (U) JULY 2020 THROUGH JUNE 2021 SEMS NUMBER: 82, SRNS-RP-2021-04758, REVISION 0 DATED SEPTEMBER 2021, Savannah River Site, South Carolina

Dear Mr. Hennessey,

The U.S. Environmental Protection Agency, Region 4 (EPA), has reviewed the Effectiveness Monitoring Report (EMR) for the C-Area Groundwater (CAGW) Operable Unit Removal Action (U) – July 2020 through June 2021, SEMS Number: 82, SRNS-RP-2021-04758, Revision 0, September 2021). EPA comments are attached.

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

Sincerely,

JON RICHARDS

Digitally signed by JON RICHARDS
Date: 2021.11.19 07:26:42 -05'00'

Jon Richards
FFA Remedial Project Manager
Superfund & Emergency Managment Division

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

GENERAL COMMENTS

1. The EMR for CAGW Operable Unit Removal Action (U), July 2020 through June 2021, does not present an estimate of trichloroethylene (TCE) mass that has been reduced since the 2019 baseline conditions. The EMR indicates the CAGW OU non-time critical (NTC) removal action objective (RAO) is to protect human health and the environment by reducing the mass of TCE in groundwater. The text further indicates the overall CAGW OU TCE and tritium plumes have decreased in extent and concentration, however, no mass estimates of the TCE reduction in groundwater are provided. *Please revise the EMR to discuss the estimated reduction of TCE mass in groundwater relative the 2019 baseline conditions.*

2. It is unclear whether petroleum fuel contaminants (e.g., toluene) are present in groundwater that would impact the biodegradation of chlorinated volatile organic compounds (cVOCs). For example, the footnote in Section 4.3.2 (CAGW OU Groundwater Sampling and Analyses), Page 9 of 94, states that "Only well CRW022D samples are analyzed for TPH [total petroleum hydrocarbon] diesel range organics, as it monitors a remediated diesel storage tank site." Additionally, the text in Section 4.4.1.9 (BioTrap QuantArray-Chlor® Microbial Data), Page 18 of 94, states aerobic (co)metabolic microbial activity is indicated by detectable levels of toluene monooxygenase and toluene monooxygenase 2 on the BioTraps at nearly all monitoring wells. As such, it is unclear whether the detectable levels of toluene monooxygenase and toluene monooxygenase 2 on the BioTraps indicates the presence of toluene in groundwater. *Please revise the EMR to discuss the presence of petroleum fuel contaminants in groundwater and how this condition impacts biodegradation of cVOCs in groundwater.*

SPECIFIC COMMENTS

1. **Section 3.2 Hydrogeologic Setting, Page 6 of 94:** The aquifer/stratigraphic layers discussed in this section do not agree with the aquifer/stratigraphic layers depicted on Figure 4 (CAGW OU TCE Transport from C-Area to Castor Creek), Page 30 of 94. For example, the cross-section in Figure 4 depicts layers designated as "A-Horizon, AA-Horizon, Transmissive Zone (TZ)" and the Tan Clay Lower Clay (TCLC) that are not discussed in this section. *Please revise the text to provide discussion of how the A-Horizon, AA-Horizon, TZ and TCLC relate to the hydrogeologic setting discussed in this section.*

2. **Section 4.4 Groundwater and Surface Water Results, Page 10 of 94:** The last paragraph states data from December 2020 show a small area with TCE above 100 micrograms per liter (µg/L) near the C-Area Reactor Building; however, the text does not identify the monitoring well with the TCE exceedance. *Please revise the text to state TCE was detected in monitoring well CRW020D at a concentration of 207 µg/L in fourth quarter 2020 (4Q20).*

3. **Figure 2 CAGW OU TCE Plume 4Q20, Page 28 of 94:** The CAGW OU Oil Injection Areas, monitoring locations, and TCE results are not presented on the figure. As such, this issue impacts the evaluation of the changes in TCE concentrations over 2019 baseline conditions at the CAGW OU NTC removal action (NTC RA) area. For example, in Figure 3 [CAGW OU NTC RA (2019 Baseline Conditions)], Page 29 of 94, monitoring locations are identified and TCE results presented; however, the NTC RA depicted in Figure 2 does not define the monitoring locations or TCE results. Further, the location of the CAGW OU Oil Injection Area is not depicted on Figure 2; therefore, the location of the monitoring wells in relation to the injection points is unclear. *Please revise Figure 2 to include the CAGW OU Oil Injection locations, identification/labels of monitoring locations (e.g., wells, seepline and*

surface water) and corresponding TCE results so the remedial progress between the 4Q20 TCE results at the NTC RA areas over 2019 baseline conditions can be fully assessed.

4. **Figure 4 CAGW OU TCE Transport from C-Area to Castor Creek, Page 30 of 94:** It is unclear what wells have the TCE results depicted on the figure since no specific well identification labels are provided for most of monitoring well screen clusters shown in the cross section. *Please revise the figure to include the unique well screen identification labels and associated TCE results.*

5. **Figure 6 CAGW OU Monitoring Stations, Page 32 of 94:** The figure has "ML Monitor Well" identified as light blue in the legend; however, the EMR does not define the ML designation relative to monitoring wells. Additionally, the table in Appendix F (CAGW OU Data July 2020 through June 2021) also identifies several monitoring station types as "ML Monitor Well." *Please revise the EMR to define the meaning of "ML Monitor Well."*

6 of E-8: The Lower Aquifer Zone is incorrectly abbreviated as UAZ in the figure title. *Please revise the figure title to state the correct abbreviation of the Lower Aquifer Zone which is LAZ.*