



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

April 8, 2020

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



EPA Comments for the Sixth Five-Year Remedy Review Report for SRS Operable Units with Groundwater Remedies (U), [SRNS-RP-2019-00511], REV 0, DECEMBER 2019, & the Fact Sheet [SRNS-RP-2019-00743] & Scoping Summary [SRNS-RP-2019-00506] Savannah River Site, Aiken, South Carolina

5 sent 4/13/2020

Dear Mr. Hennessey,

The U.S. Environmental Protection Agency, Region 4 (EPA), has reviewed the R0 Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Groundwater Remedies. EPA comments are attached.

The Fact Sheet and Scoping Summary we approve, with no comments.

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

Sincerely,

**JON
RICHARDS**

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JON RICHARDS
Date: 2020.04.08
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Jon Richards
FFA RPM
Superfund & Emergency Management
Division

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

TECHNICAL COMMENTS

1. The bullet items listed under the subsection Remedial Actions, Page 8 of 36 present the general remedial action objectives (RAOs). However, a RAO committed to restoring contaminated groundwater to concentrations below respective maximum contaminant levels (MCLs) or residential remedial goals (RGs) is not presented. It is noted the fifth bullet on Page D-6 of D-42 indicates one of the RAOs for groundwater at the Chemical, Metals and Pesticides (CMP) Pits Operable Unit (OU) is to reduce the constituents of concern (COCs) concentrations in the groundwater plume to below MCLs. Additionally, the second bullet on Page E-5 of E-42 indicates one RAO for groundwater at the D-Area Oil Seepage Basin (DOSB) OU is to restore groundwater to attain Applicable or Relevant and Appropriate Requirements (ARARS) and RGs. *Revise 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 0, dated December 2019 (Sixth 5YR Report) to address this issue to ensure all the RAOs for groundwater, including restoration to beneficial use, are clearly presented and understood. However, it is not intended that new RAOs be created in the 5YR.*
2. The third bullet under “**Question A: Is the remedy functioning as intended by the decision documents?**” on Page 14 of 36 states “Contaminated material has been excavated and consolidated or left in place under protective cover systems breaking the pathway for worker exposure and for the migration of contaminants to groundwater.” However, it is noted the cover systems included in the Sixth Five-Year Review (5YR) provide dermal protection only and do not include engineered caps with low permeability. For example, Table A-3. Summary of Remedial Actions without Operating Equipment at SRS *(continued/end)*, Page A-13 of A-30 indicates “Compacted Common Fill (no hydraulic conductivity requirements) for the CMP Pits OU where 0.3 acres are covered. *Revise the Sixth 5YR Report to address this issue to ensure it is clearly understood no engineered low permeability caps are included in this Sixth 5YR.*”
3. **Table 4. Operation and Maintenance Cost Comparison for SRS OUs with Groundwater Remedies, Page 31 of 36:** According to the table, the estimated costs were \$503,549 and the actual costs were \$2,652,242, or 19% more than the estimated costs for the R-Area Reactor Seepage Basin Operable Unit (OU). However, the actual costs are actually 527% more than the estimated costs. Additionally, the text under the “Comments” column in the table only states “Actual costs are less than expected due to optimization of the groundwater monitoring”, and does not provide an explanation for the increased costs.” *Revise the table to address this issue and ensure the text in the comments column clarify the reasons for why the actual costs were 527% greater than estimated costs.*
4. **Table D-3. Actual versus Estimated O&M Costs, Page D-31 of D-42:** As shown in the table, the FY2015 through FY2019 five year Total Actual O&M costs (\$) are \$760,231. It is noted the text on Page D-9 of D-42 states an updated groundwater modeling effort was conducted in 2017 to reevaluate the hydrogeologic conditions and contaminant plumes

(SRNS 2017b). The updated model included updated monitoring data, new monitoring well information, sorption/desorption criteria, continuing sources in clay horizons, and was calibrated to plume behavior over the 2002-2016 period. The results of the model indicated that PCE would exceed MCLs in groundwater for approximately 91 years (~2107). Therefore, based on the five year total actual costs of \$760,231 and the predicted cleanup timeframe of 91 years for PCE, estimated O&M costs would exceed \$13 million dollars. As such, it is recommended a cost benefit analysis is conducted to evaluate whether implementation of additional source control measures would be effective in reducing overall cleanup timeframe and O&M costs. *Revise the Sixth 5YR Report to address this issue.*

Legal Comments

1. Page 8 of 36, states that RAOs at SRS generally include, as listed in the fourth bullet, an RAO to “Prevent or minimize the discharge of contaminated groundwater to surface water *at levels that exceed MCLs.*” However, as is correctly stated on page A-4 of A-30, it is *surface water standards* [not MCLs] that cannot be exceeded at the groundwater discharge point. Please clarify this in the text on page 8.
2. Second para. on page 11 of 36 states “Monitoring for 1,4-dioxane is no longer required at RAOU based on monitoring results and regulatory agreement.” Please clarify in the text what threshold the monitoring results were compared against to determine monitoring was no longer required. For example, EPA risk assessments indicate that the drinking water concentration representing a 1×10^{-6} cancer risk level for 1,4-dioxane is 0.35 µg/L (EPA IRIS 2013).
3. Second bullet on page 14 of 36 in response to “Question A: Is the remedy functioning as intended by the decision documents?” states “Groundwater data at Monitored Natural Attenuation (MNA) remedy plumes indicates that groundwater concentrations are generally decreasing, and plumes are not expanding.” Please clarify whether MNA is expected to attain remedial goals within an acceptable timeframe, as this factor relates to whether MNA remedy is functioning as intended as well.
4. Page C-2. End of first paragraph states that: “TCE does not exceed the MCL in surface water in either Castor Creek or Fourmile Branch, but TCE does exceed the MCL in an unnamed tributary to Castor Creek.” Surface water standards, ambient water quality criteria (or AWQC criteria equivalent if no promulgated standard is available), should not be exceeded at the groundwater discharge point to surface water. Please clarify whether contaminant levels in Castor Creek or Fourmile Branch are within acceptable surface water quality criteria.
5. Page C-7, second para. states “Subsequent to the interim action and based on TCE discharge to a tributary of Castor Creek, removal action alternatives were evaluated to address this problem. Per the Removal Site Evaluation Report/Engineering Evaluation/Cost Analysis for the CAGW OU (SRNS 2018a), the removal action objective to protect human health and the environment is to reduce discharge of groundwater contaminated with TCE above MCLs to surface water, so that the MCL (5 µg/L) is no longer exceeded in the unnamed tributary to Castor Creek.” See previous comment. Please clarify whether contaminant levels in tributary to Castor Creek are within acceptable surface water quality criteria. *Per South Carolina R.61-69, CLASSIFIED WATERS. A. Criteria for Classes. All adopted classifications must*

conform to the standards and rules contained within R.61-68, Water Classifications and Standards or site-specific standards listed within this regulation. Unless noted, site specific standards apply only to the water named and not to tributary or downstream waters. B. Tributaries to Classified Waters. Where surface waters are not classified by name (unlisted) in this regulation, the use classification and numeric standards of the class of the stream to which they are tributary apply, disregarding any site-specific numeric standards for the named waterbody. c. Toxic pollutants listed in the appendix. As prescribed in Section E of SC R. 61-69 regulation. SC R. 61-69.E.14.b states “Application of numeric criteria to protect human health. (1) If separate numeric criteria are given for organism consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs), they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State. Per table in Appendix the more stringent standard for TCE for protection of HH is 2.5 micrograms/L (W&O), not the MCL of 5.0.

6. Page D-2 bulleted list states: “Pen Branch Surface Water and Sediment – Groundwater from CMP Pits flows towards and discharges to Pen Branch; however, the stream has never seen contaminant concentrations above MCLs. The sediment at Pen Branch has not been impacted by the CMP Pits operations.” Please see previous comment regarding SC R. 61-69, application of numeric criteria in surface water to the COCs evaluated for this OU. Discharge of contaminated groundwater should not cause exceedances of numeric ambient water quality criteria in the surface water body.
7. Page D-13 bulleted list states: “MNA has shown effectiveness in preventing discharge of contaminated groundwater to surface water. With one exception, RCOC concentrations of surface water are generally below MCLs. Most results are non-detect. Overall, RCOC concentrations have been reduced in the groundwater and the plumes overall footprints are not expanding. There has only been one MCL exceedance in surface water.” See previous comments regarding SC R. 61-69, application of numeric criteria in surface water to the COCs evaluated for this OU. Discharge of contaminated groundwater should not cause exceedances of numeric ambient water quality criteria in the surface water body.
8. Page F-4 states: “Basis for Taking Action. The potential exposure to or ingestion of groundwater and surface water contaminated above maximum contaminant levels (MCLs) poses a potential increased risk of cancer to human receptors and is the basis for taking action at the LASG OU.” *Please correct text to clarify that, as is correctly stated on page A-4 of A-30, it is surface water standards that cannot be exceeded at the groundwater discharge point. See previous comments regarding application of SC R. 61-69 numeric criteria in surface water.*