



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
REGION 4  
ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8960

March 24, 2021

**ENVIRONMENTAL COMPLIANCE &**

**MAR 24 2021**

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 for the Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Engineered Cover Systems (U), Aiken, South Carolina (SRNS-RP-2020-00420, Revision 0, Dec 2020), Savannah River Site, Aiken, South Carolina**

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 Engineered Cover Systems. EPA comments are attached.

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  
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Jon Richards  
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## COMMENTS:

1. The selected remedy included LUCs and/or specific LUC objectives for each of the following OUs: D-Area Burning/Rubble Pits (431-D and 431-1D), F-Area HWMF (904-41G, 904-42G, 904-43G), Ford Building Seepage Basin (904-91G), H-Area HWMF (904-44G, 904-45G, 904-46G, 904-56G), M-Area HWMF (904-51G, 904-112G), Metallurgical Laboratory HWMF (904-110G), and the Mixed Waste Management Facility (643-28E). However, the FYR appendix for each of these OUs does not discuss whether a unit-specific Land Use Control Implementation Plan (LUCIP), or other appropriate unit-specific post-ROD document, containing the federal facility LUC checklist items (\*including the checklist statement regarding required CERCLA 120(h) deed notices/restrictions) has been prepared for each of the OUs. *Please indicate in the remedy technical assessment section whether a unit-specific LUCIP governing the specific details of LUC implementation, maintenance, monitoring and enforcement has been prepared. If not, please indicate when a LUCIP, or other appropriate unit-specific post-ROD LUC implementation document, will be prepared for each of these OUs. If a unit-specific LUCIP has not been prepared, the FYR should include this requirement in the recommendations section.*

\* See, e.g., LUC Checklist items, including Property transfer language regarding deed restrictions: “Each transfer of fee title from the United States will include a CERCLA 120(h)(3) covenant which will have a description of the residual contamination on the property and the environmental use restrictions, expressly prohibiting activities inconsistent with the performance measure goals and objectives.

2. **Page A-3, first full paragraph.** On 5/01/2017 the EPA transmitted the following general comment #3:

*“As noted during the walk downs of the Operable Units, EPA is of the opinion that many of the covers could be re-evaluated for the planting of flowering species of plants to enhance pollinator species of insects in the area. While EPA is aware limited budgets exist for the effort, EPA proposes that DOE examine options such as limiting pesticide application and reducing mowing schedules and repurpose any savings into the acquiring and planting of species that will not damage covers and are attractive to pollinator species. In addition, reduction of mowing schedules will move these older remedies in a more “green remediation” direction. It should be noted that almost all the caps inspected show signs of wind deposited flowering species of various kinds, both native and invasive indicating that the caps are good candidates for such an effort. EPA requests further discussion of the options during comment resolution meetings for this Five Year Review.”*

Land Management and Ecosystems Protection should be considered in all phases “green” remediation, according to the SPIM (<https://semspub.epa.gov/work/HQ/100002576.pdf>) . Although subsequent meetings may have addressed the above topic, it should be noted that there are several native and non-native low-growing pollinator plants (e.g. micro-clover, crown vetch, etc.) that would not be destroyed during the mowing process. Please add additional text, where appropriate, to describe what is being done to further

commit the *flora* to “green remediation” for the applicable OU’s in this FYR.

3. The general Land Use Control (LUCs) Objectives presented as the last four bullets in Section II. Remedial Action Summary, Response Actions, Page 8 of 34, does not include the LUC objective to “maintain the integrity of the soil cover”. The text states the type of LUCs and their implementation are described in Section VII of the OU-specific appendices. It is noted that each of the OUs evaluated includes a statement in Section VII. Technical Assessment, that indicates periodic site inspections and site maintenance have been effective in maintaining the integrity of the soil cover. As the maintenance of the soil cover is necessary to ensure remedy performance, please *revise the Sixth 5YR Report to include maintenance of the soil cover a separate LUC objective bullet item in this section to ensure remedy integrity.*
4. The third bullet in Section IV. Five-Year Remedy Review Process on Page 10 of 34 discusses notifying the public citizens of South Carolina and Georgia that are on an extensive mailing list including landowners adjacent to the Savannah River Site (SRS). The text states the public was notified on October 8, 2020 that the United State Department of Energy (USDOE) is conducting the Sixth Five-Year Remedy Review in phases. However, the text does not state how frequent the SRS mailing list is updated or if it was recently updated just prior to the October 8, 2020 notice. *Please revise the text to ensure the most recent changes in land ownership was documented and the mailing list updated accordingly.*
5. Remedial action objectives (RAOs) were developed to prevent physical exposure to contaminants and to mitigate further migration of contamination to groundwater for the following OUs evaluated in this Sixth 5YR Report:
  - Appendix E, F-Area Hazardous Waste Management Facility (F-Area Seepage Basins [904-41G, 904-42G, 904-43G];
  - Appendix G, H-Area Hazardous Waste Management Facility (H-Area Seepage Basins [904-44G, 904-45G, 904-46G, 904-56G];
  - Appendix I, M-Area Hazardous Waste Management Facility (Lost Lake [904-51G] and M-Area Settling Basin [904-112G];
  - Appendix J, Metallurgical Laboratory Hazardous Waste Management Facility (904-110G); and
  - Appendix K, Mixed Waste Management Facility (643-28E).

However, the Sixth 5YR Report does not address whether the RAO of mitigating further migration of contaminants to the groundwater is being achieved to ensure the in-situ stabilization/solidification remedy is protective of groundwater. It appears groundwater will be discussed in the 5 Year Remedy Reviews prepared for the individual groundwater OUs associated with the OUs noted above. However, the Sixth 5YR Report should discuss whether the RAO for in-situ stabilization/solidification remedial action is being met to ensure the protectiveness of groundwater at the respective OUs. Additional discussion and lines of evidence (e.g., groundwater monitoring data) will be required to confirm that further migration of contamination to groundwater is being mitigated to satisfy the RAOs and ensure long-term protectiveness of groundwater at these OUs. *Please revise the Sixth 5YR Report to address this issue.*

## SPECIFIC COMMENTS

1. **Table 3 LUC Summary Table, Page 25 of 34:** The table identifies both soils and groundwater medium as areas that do not support unlimited use/unrestricted exposure (UU/UE) based on current conditions at the Central Shops Burning/Rubble Pits (CSBRP) OU and the Ford Building Seepage Basin (FSB) OU. However, the information in the table is inconsistent with the information presented for these same OUs in their respective Appendices C and F, respectively. For example, the information in Appendix C, CSBRP OU, states the CSBRP OU has not contributed to groundwater contamination. Additionally, the first bullet on Page C-5 of C-28 indicates groundwater use restrictions established as LUCs. Furthermore, in Appendix F, FSB OU it appears RAOs were only developed to address surface and subsurface soil contamination. *Please revise the table to address this discrepancy.*
2. **Appendix B, Evaluation of Changes in Standards and Toxicity, Pages B-1 through B-8:** Appendix B presents a comparison of the 2020 Regional Screening Levels (RSLs) and Preliminary Remediation Goals (PRGs) to their 2016 versions; however, the significance of any changes, and if the changes may implicate issues with the protectiveness of the remedy, is not evaluated. It is acknowledged that the text states that “the information in Appendix B is not standalone, but must be considered in context with the information and selected remedy presented in the OU [operable unit]-specific reviews located in Appendix C through Appendix L;” and, that “the impact that more stringent RSLs or PRGs have on protectiveness must be considered with respect to the OU-specific remedy.” However, review of Appendices C through L indicates that these appendices do not assess if risk-based cleanup goals for applicable contaminants warrant revision as a result of changes to toxicity criteria that resulted in changes to RSLs or PRGs. In all instances, Appendices C through L simply state, “The USEPA standards and toxicity values have been updated since the last five-year remedy review as shown in Appendix B. The changes to the values for COCs [contaminants of concern]...were not significant.” *Revise Appendix B to evaluate if risk-based cleanup goals for applicable contaminants at applicable OUs warrant revision as a result of the changes to the associated RSLs or PRGs shown in the tables of Appendix B.*
3. **Appendix B, Evaluation of Changes in Standards and Toxicity, Pages B-1 through B-8:** While Appendix B presents a comparison of the 2020 RSLs and PRGs to their 2016 versions, it does not present a comparison of the toxicity criteria employed in the original human health risk assessments (HHRAs) to current toxicity criteria for each COC. As such, it is unclear whether any of the risk-based cleanup goals warrant revision. *Revise Appendix B to evaluate if risk-based cleanup goals should be revised due to changes in toxicity criteria since the time of the original HHRAs or on the basis that improved approaches are available for calculating new/current cleanup standards.*
4. **Appendix B, Evaluation of Changes in Standards and Toxicity, Pages B-1 through B-8:** Appendix B does not evaluate if risk-based screening levels and toxicity criteria have been established for any detected compounds that were not evaluated in the original HHRAs due to the absence of toxicity information at that time. *Revise Appendix B to document those compounds, if applicable, and indicate whether inclusion of the additional detected compounds potentially impacts the protectiveness of the remedy. In addition, clarify if such compounds should be added to the list of current COCs on the basis of new toxicity information. Finally, if new compounds are included, demonstrate that the remedy remains protective, even when the additional compounds are considered.*

5. **Appendix B, Evaluation of Changes in Standards and Toxicity, Pages B-1 through B-8:** Review of Appendices C through L indicates that HHRAs for many of the OUs are dated (circa 1990s). However, Appendix B does not include an evaluation of updates to risk assessment methodologies since the time of the original HHRAs. *For completeness, review the most current risk assessment guidance and provide a discussion regarding whether the updated risk assessment methodologies have the potential to materially affect the conclusions of the original HHRAs. Specifically, address whether changes in the methodologies could lead to concerns regarding the protectiveness of the remedy. Updates could be addressed via scaling exercises or re-generation of risk estimates, if changes are determined to be significant.*
6. **Appendix B, Evaluation of Changes in Standards and Toxicity, Pages B-1 through B-8:** Appendix B does not discuss the sources of the exposure factors used in the original HHRAs. It is noted that U.S. EPA has published several resources with more current exposure factors since the time of the original HHRAs. Appendix B should clarify if any of the exposure factors used in the original HHRAs have changed, and if so, if the changes necessitate re-calculation of risk and hazard. In evaluating exposure assumptions, U.S. EPA's Comprehensive Five-Year Review Guidance (EPA 540-R-01-007, June 2001) also states that the evaluation should include "whether there are changed or new land uses, including zoning changes, changed or new routes of exposure or receptors, changed physical site conditions that may affect the protectiveness of the remedy, new contaminants, or a new understanding of geological conditions." *Revise Appendix B to include an evaluation of changes in exposure factors and exposure assumptions since the time of the original HHRAs, including exposure pathways and receptors, and clarify if any of these changes affect the protectiveness of the remedy.*
7. **Appendix B, Evaluation of Changes in Standards and Toxicity, Pages B-1 through B-8, Tables B-1, B-2 and B-3:** There is no indication on the tables to highlight which COCs have revised RSLs/PRGs (2020 vs. 2016). Adding bold type or shading would be helpful to guide the reader to those entries that have changed. *Revise Tables B-1, B-2, and B-3 accordingly.*
8. **Attachment C-1. Five-Year Review Site Inspection Checklist – Central Shops Burning Rubble Pits (631-1G/631-3G), Page C-24 of C-28:** In the checklist under Section VII. Landfill Cover/Containment, subsection 5. Vegetative Cover: the box next to "Grass" is empty and not checked suggesting no grass cover. However, Figure C-4. Current Photo of CSBRP OU (2020), Page C-15 of C-28 shows a grass cover exists over the CSBRP OU. *Please revise the checklist to address this discrepancy.*
9. **Appendix F, Ford Building Seepage Basin (904-91G) Operable Unit, Pages F-5 and F-7 of F-26:** The cover system remedy installed at the Ford Building Seepage Basin has been described as a common fill layer covered by a vegetative cover. Additionally, it has also been described as a low permeability cover. It is noted a common fill layer typically has a higher conductivity as compared to a low permeability cover. *Please revise the text to provide a consistent description of the cover system remedy installed at the Ford Building Seepage Basin OU.*
10. **Appendix H, Page H-6, bullet 1.** The text states:

*"In 2006, the USEPA, SCDHEC and USDOE agreed to reduce the sampling frequency from semiannual to quarterly due to steady or declining...."*

Please revise text to state "...reduce the sampling frequency from quarterly to semiannual...."

11. **Page H-16, Figure H-2, LAZ.** Please explain why there is not a potentiometric surface for the LAZ portion of this figure, or add the potentiometric surface.

**Legal Comments:**

1. Page 32. Tables 6 and 7. Please clarify whether the issues/recommendations identified in these tables summarizes those carried over from the Fifth FYR or are these tables referring only to issues/recommendations assessment for this 6<sup>th</sup> FYR.
2. Page C-6, Data Review. The section states that stormwater management has been "moderately effective" and "has been working as designed" in CSBRP OU Pit 631-3G. In order to evaluate remedy effectiveness, the FYR should identify the design's expected performance standard (e.g. expected post-remedy implementation depth to groundwater) and compare to observed water levels. Significant weather events resulted in high perched water levels (10 ft above basin bottom) within the pit. The data summarized in this section only discusses levels during significant storm events, which seem to indicate stormwater is not effectively diverted and significant infiltration is occurring.
3. Page C-8, first full paragraph. Correct text to read "to prevent unauthorized contact. . ." Please clarify what type(s) of physical access controls are in place and location, e.g. fencing around closed pits. Asbestos containing material (ACM) was formerly buried in one or more pits at CSBRP. ARARs for closure of areas that received ACM include warning sign location and interval requirements, fencing requirements, and deed notice requirements (in addition to those required in CERCLA Sect. 120(h)). The FYR Sect VII (Technical Assessment) should include an evaluation of whether the remedy complies with the following ARARs to ensure the remedy is protective. The text of the FYR does not indicate whether the following ARARs were identified in the ROD or LUCIP. Recommendations to correct deficiencies, if any, should be included.

<i>Capping Asbestos Waste In-Place</i>			
<i>Action</i>	<i>Requirements</i>	<i>Prerequisite</i>	<i>Citation</i>
Warning signs for disposal site	Display warning signs at all entrances and at intervals of 100m (328 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited.	Closure of an area that received asbestos-containing waste materials that does not include a natural barrier to adequately deter access by the general public – <b>relevant and appropriate</b>	40 CFR § 61.151(b)(1)

Warning signs for disposal site <i>cont'd</i>	The warning signs must: (i) Be posted in such a manner and location that a person can easily read the legend; and (ii) Conform to the requirements for (20"x14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and (iii) Display the legend as prescribed in § 61.151(b)(1)(iii) located in the lower panel with letter sizes and styles of visibility at least equal to those specified in § 61.151(b)(1)(iii).	Closure of an area that received asbestos-containing waste materials that does not include a natural barrier to adequately deter access by the general public – <b>relevant and appropriate</b>	40 CFR § 61.151(b)(1)(i)-(iii)
Fence for disposal site	Fence the perimeter of the site in a manner adequate to deter access by the general public.		40 CFR § 61.151(b)(2)
Deed notice for asbestos waste disposal site	Record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that: <ul style="list-style-type: none"> <li>• The land has been used for disposal of asbestos-containing waste material; and</li> <li>• The survey plat and record of the location and quantity of asbestos containing waste disposed of within the disposal site required in § 61.154(f) have been filed with the Administrator; and</li> <li>• The site is subject to 40 CFR part 61, Subpart M.</li> </ul>	Closure of an inactive disposal area that received asbestos containing waste materials – <b>relevant and appropriate</b>	40 CFR § 61.151(e)(1)-(3)

4. Page D-3 (Basis for Taking Action). Summary of soil sampling data at 431-D/431-1D indicate that Aroclor-1260 presents risk in top two-foot layer of soils at maximum observed concentration of 3.39 mg/kg, which exceeds the high-occupancy standard of 1 ppm. In addition to the requirements in CERCLA Sect. 120(h) (identified in the last bullet on page D-5) that must be met upon future transfer of the property, the following deed notice requirements are relevant and appropriate. The text of the FYR does not specify whether these ARARs were identified in the ROD and/or LUCIP and are in compliance. Recommendations to correct deficiencies, if any, should be included.

<i>Action</i>	<i>Requirements</i>	<i>Prerequisite</i>	<i>Citation</i>
Deed restrictions for caps, fences and low occupancy areas	<p>Record, in accordance with State law, a notation on the deed to the property, or on some other instrument which is normally examined during a title search, that will in perpetuity notify any potential purchaser of the property:</p> <ul style="list-style-type: none"> <li>• that land has been used for PCB remediation waste disposal and is restricted to use as a low occupancy area as defined in 40 CFR 761.3.</li> <li>• of existence of the fence or cap and the requirements to maintain the fence or cap.</li> <li>• the applicable cleanup levels left at the site, inside the fence, and/or under the cap.</li> </ul>	Use of a cap or fence at low occupancy PCB remediation waste cleanup site – <b>relevant and appropriate</b>	40 CFR 761.61(a)(8)(i)(A)(1)-(3)

- Pages E-7, G-7, I-8, J-7, K-8 (Technical Assessments). The text in the technical assessments for F-Area, H-Area, M-Area, Metallurgical Lab HWMF, and Mixed Waste Management Facility OUs notes that a LUCIP is not required; rather, the text states “LUC requirements are discussed and approved as part of the closure/post-closure permit application process governed by the RCRA Permit renewal.” Please identify what regulatory document, e.g., RCRA permit, RCRA post-closure document, or CERCLA document, lists the LUC objectives and LUC implementation, maintenance, monitoring, reporting and enforcement requirements. Additionally, the substantive requirements of CERCLA Sect. 120(h) for notifications within the deed upon any future transfer of property must be met. Please clarify what document identifies and requires compliance with the 120(h) requirements. Recommendations to correct deficiencies in documentation, if any, should be included.
- Page F-7, H-10, J-7, K-8 (Technical Assessment). Specify what type(s) of physical access controls are in place to prevent access to or disturbance of the covered waste units and/or basins in the FBSB, K-Area, Metallurgical Lab HWMF, and Mixed Waste Management Facility OUs.
- Page I-3 (Initial Response). Identify the specific RCRA or other regulatory document under which the 1988 closure of MHWMF OU was conducted.
- Page I-6 (Progress Since Last Five Year Review). Text states “[e]levated VOC concentrations are persistent in the vadose zone and groundwater outside of the target zone near the MASB, which will require additional corrective action to be taken under the direction of the RCRA Hazardous and Mixed Waste Permit Renewal (SCDHEC 2014).” Identify what additional actions are recommended or are being taken under RCRA corrective.