



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

March 04, 2019

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Brian Hennessey, 730-B
SRS Remedial Project Manager
Area Completion Projects
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802



Dear Mr. Hennessey:

The U.S. Environmental Protection Agency (EPA) has reviewed the Removal Site Evaluation Report/Engineering Evaluation/Cost Analysis (RSER/EE/CA) for D-Area Coal Storage Area (484-17D), Revision 0, dated November 2018.

EPA can not provide approval for the above mentioned document until the comments below have been addressed. If you have any questions or concerns, please contact me at (404) 229 -9500.

Sincerely,

A handwritten signature in black ink, appearing to read "Diedre Lloyd".

Diedre Lloyd
Remedial Project Manager
Restoration and Sustainability Branch
Region 4, Superfund Division
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

cc: Angelia Holmes, DOE-SRS, C. L. Bergren, SRNS-ACP (Signed Original), Karen Adams, DOE-SRS, C.L. Bergren SRNS-ACP (Signed Original), Susan Fulmer, SCDHEC

**REMOVAL SITE EVALUATION REPORT/ENGINEERING EVALUATION/
COST ANALYSIS (RSER/EE/CA) FOR THE
D-AREA COAL STORAGE AREA (484-17D) (U)**

**SEMS NUMBER: 63
SRNS-RP-2018-00813
DATED NOVEMBER 2018**

**SAVANNAH RIVER SITE
AIKEN, SOUTH CAROLINA**

EPA GENERAL COMMENTS

1. The Removal Site Evaluation Report/Engineering Evaluation/Cost Analysis (RSER/EE/CA) for the D-Area Coal Storage Area (484-17D) (U), SEMS Number: 63; SRNS-RP-2018-00813; dated November 2018 [RSER/EE/CA] evaluates the implementation of a non-time critical removal action in advance of a final remedial action for the DCSA. Alternatives evaluated focus on mitigating low-pH conditions in groundwater that have contributed to metals plumes.

a. Two remedial alternatives incorporating soil neutralization amendments are evaluated and provide costs estimates:

- Table 3 [Detailed Cost Analysis for the D-Area Coal Storage Area, Alternative 2, Addition of Soil Neutralization Amendments (15 Acres)] and
- Table 4 [Detailed Cost Analysis for the D-Area Coal Storage Area, Alternative 3, Partial Excavation of Coal Fragments (5 Acres) and Addition of Soil Neutralization Amendments (15 Acres)]

However, justification for line items such as “Liming Agent to be Spread on Acreage” are not supported in the text or tables. As a result, it is unclear how the liming agent mass was developed to ensure the Remedial Action Objective (RAO) stated in Section 3.2 (Remedial Action Objective) to “protect human health and the environment is to increase the pH in the DCSA vadose zone soils to more natural conditions to minimize future impacts to groundwater” will be achieved. Please provide this information that supports this assertion.

b. Also, while the RSER/EE/CA text clarifies limitations related to the vertical extent of soil neutralization (approximately four feet as limited by cost-effective agricultural equipment) it is unclear how the effectiveness of the liming of the proposed interval was determined to achieve the RAO. Revise the RSER/EE/CA to provide the basis (treatability studies, calculations, etc.) for the proposed liming agent mass and distribution relative to the stated RAO.

2. Section 4.0 (Identification of Removal Action Alternatives) and subsequent sections state that the six- to eight-inch layer of coal fragments present in the southern five-acre portion of the area has similar pH measurements to the vadose zone soils, is likely weathered/oxidized, and poses no greater leaching threat than the affected vadose zone soils; however, the bases for these assumptions are not provided. Please provide information that supports these assertions.

a. While the referenced pH measurements are provided (Table 1), it is unclear if the liming agent mixing will enhance coal reactivity and reduce the effectiveness of the alternative, require the addition of an increased liming agent mass per soil/coal volume, etc., as no study results of similar evaluations are referenced. It is noted that this information is also relevant to the development of remedial alternatives; Alternative 2 relies upon liming

while Alternative 3 incorporates removal of the residual coal fragments (reducing uncertainty in the long-term effectiveness of liming of coal). Should additional liming agent be required to address residual coal fragments, costs associated with Alternative 2 may increase and effectiveness may be impacted. As such, it appears Alternative 3 reduces the uncertainty in the long-term effectiveness and permanence of the removal action and would be more effective as compared to Alternative 2. Revise the RSER/EE/CA to include an expanded justification for the assumptions regarding the reactivity of the residual coal fragments and the effectiveness of the proposed liming activities. In addition, revise the RSER/EE/CA table of comparative analysis rankings in Section 5.5 (Comparison of Removal Action Alternatives) to indicate Alternative 3 ranks higher relative to Alternative 2 regarding effectiveness.

3. Appendix A, Sampling and Analysis Plan for the DCSA, provides additional detail to support the collection of samples to assess the pH conditions approximately 1.5 years following the addition of soil neutralization amendments. However, it is unclear how the duration of 1.5 years was established to assess effectiveness. It is also unclear how the data will be evaluated to confirm performance, and what actions will be taken (e.g., application of additional neutralization amendments) if performance objectives are not achieved. Revise Appendix A and the RSER/EE/CA text to clarify neutralization performance objectives, provide a basis for the 1.5-year affect period and address what actions will be taken if performance objectives are not achieved. In addition, revise the RSER/EE/CA Table of contents and text to reference Appendix A.

EPA SPECIFIC COMMENTS

1. **Section 4.0, Identification of Removal Action Alternatives, Pages 8 through 10 of 42:** This section states that the six- to eight-inch layer of coal fragments present in the southern five-acre portion of the area has similar pH measurements to the vadose zone soils, is likely weathered/oxidized, and poses no greater leaching threat than the affected vadose zone soils; however, review of Figure 5 (June 2018 Soil Sampling Locations within the DCSA), Figure 6 (June 2018 DCSA Soil Sampling pH Field Measurements) and Table 1 (June 2018 Soil Sample Field pH and Lab pH Measurements) indicates that pH conditions in the southern area were among the lowest (e.g., Location 8). Also, it is noted that the southern area was reworked and includes an overlying sod and top soil layer; it is unclear if this overlying layer of presumably more neutral soil is contributing to an increased pH condition. Revise the RSER/EE/CA to clarify the impact on observed pH of the sod/top soil layer overlying the layer of coal fragments in the southern area, and potential impacts on the development of removal alternatives.