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

October 22, 2018

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

Dear Mr. Hennessey:

The U.S. Environmental Protection Agency (EPA) has received the Department of Energy, Savannah River Site Treatability Study Work Plan for Groundwater Injection and Discharge Canal Treatment at the D-Area Groundwater Operable Unit, Revision 0, July 2018.

EPA cannot provide approval for the above mentioned document until the comments below have been addressed. Should you have any questions or concerns, please feel free to call me at on my cell number 404-229-9500.

Sincerely,

for

Diedre Lloyd
Remedial Project Manager
Federal Facilities Branch
Superfund Division

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

EPA COMMENTS ON THE
TREATABILITY STUDY WORK PLAN FOR THE
GROUNDWATER INJECTION AND DISCHARGE CANAL TREATMENT
AT THE D-AREA GROUNDWATER OU (U)
CERCLA NUMBER 63

REVISION 0
DATED JULY 2018

SAVANNAH RIVER SITE
SOUTH CAROLINA

EPA COMMENTS:

1. Section 3.0 (Test Objectives), Page 3 of 24, states, "Flush the acidity (increase the pH) out of the upper water table aquifer of the UTRA in the vicinity of and downgradient of the 484-17D Coal Storage Area and 489-D CPRB to improve the aquifer conditions and reduce or eliminate the dissolved metal groundwater plumes." It is noted the treatability study states an estimated 10 pore space volumes are sufficient to flush the aquifer with an estimated duration of 3 years to meet treatability study objectives. As such, the flushing of 10 pore space volumes would result in some dilution of the upper water table of the Upper Three Runs Aquifer (UTRA) via injection wells. Currently, it is unclear how the reduction in dissolved metals contamination in groundwater will be quantified with respect to dilution or sorption and/or redox attenuation mechanisms. Any natural attenuation remedy for dissolved metals in groundwater will rely primarily on sorption and/or redox attenuation mechanisms to reduce contaminant concentrations. Please revise the Treatability Study Work Plan for Groundwater Injection and Discharge Canal Treatment at the D-Area Groundwater to address this issue.

2. Section 4.0 (Experimental Design and Procedures), Page 4 of 24 states, "It is estimated that 10 pore space volumes are sufficient to flush the aquifer with an estimated duration of three years to meet treatability study objectives." However, the Work Plan does not discuss or explain if the estimated 10 pore volumes and 3 year duration to meet treatability study objectives considers the additional buffering of the vadose zone by the non-time critical removal action proposed for the D-Area Coal Storage Area (DCSA) (484-17D). Currently, a removal site evaluation report/engineering evaluation/cost analysis (RSER/EE/CA) is in preparation for the DCSA and will propose removal alternatives including partial excavation of coal fragments (5 acres) and addition of soil neutralization amendments (15 acres). Please revise the Work Plan to address this issue to ensure the feasibility of the action is sufficient to achieve the treatability study objectives.

3. The work plan outlines that flushing 10 pore space volumes will be necessary over three years to achieve the desired result of a more neutral pH.
    a. Please provide additional information and clarification within the work plan that explains how the pore space volume and time frame were determined
    b. Please explain how the titration analysis and the Graph of D-Area Discharge Canal Acidic Surface Water with Calcium Carbonate Additions (both noted as Figure 5 on page 19 of 24) informed this treatability study design.

4. Section 4.0 Experimental Design and Procedures, second paragraph of section 4.0, Page 4 of 24: "Monitoring of stream conditions upgradient and downgradient of the CaCO3 reactive structures will determine if more CaCO3 material is needed or is feasible." What monitoring parameters will be used to assess upgradient and downgradient stream conditions to determine when and how much CaCO3 material may be necessary?

5. Section 4.0, Experimental Design and Procedures, Page 4 of 24, states, "Slug tests in one or both of the existing monitoring wells to be used as part of the injection field (see section 5.0 Equipment and Materials) will also occur before the field start date to measure the aquifer characteristics during injection."
    a. Please revise the Work Plan to provide the details for the type of slug test that will be performed and the slug test data collection activities.
    b. The report states that slug tests will be performed in 1or both of the existing MWs. Please specifically state if slug tests will be performed in 1 or 2 Monitor wells and the MW designations that will be used for the proposed slug tests.

6. Section 5.0 Equipment and Materials, page 5 of 24, second paragraph: states that injection wells will be screened within high permeability (sandy) zones within the upper water table of the UTRA which is ~10 ft bls for injection purposes and well screen placement will be determined in the field based on encountered lithology.
    a. Please provide additional clarification as to the differing well screen intervals (5-20 feet) within the sandy zone of the UTRA.
    b. Please discuss the depth, lateral extent and lithologic composition of the aquifer that is anticipated to be affected by flushing from both injection fields and if any negative impacts may be encountered, such as dissolution, etc.

7. Section 5.0 Equipment and Materials, Page 5 of 24, first paragraph: "Adjustments to the configuration of the injection field may be made based on the actual field conditions to optimize performance once the action is underway."
    a. Please provide clarification as to what field conditions would indicate that adjustments will be needed to the injection field configuration to optimize performance after treatment study startup date.
    b. Please provide additional information with respect to injection field design, specifically schematics of pipe locations, associated valve locations and anticipated flow rates. For instance, an injection field system schematic would be helpful (no as builts drawings – just simple schematic of anticipated layout with the understanding that infield changes may be required, as needed during construction).
    c. Please revise the work plan to include text stating any adjustments to the injection field will be reviewed and approved by the Core Team prior too implementation.

8. Section 6.0, Sampling and Analysis, Page 6 of 24, states, "Adjustments to the monitoring may be based on field conditions or monitoring results." Revise the Work Plan to include text stating any adjustments to the monitoring will be reviewed and approved by the Core Team prior to implementation.

9. Section 10.0, Residuals Management, Page 7 of 24, states, "There is a possibility that metal cladding could occur on the CaCO3 reactive structures marble chips due to the reactive pH adjustment of surface water and dissolution of metals." However, the Work Plan does not include a sampling

frequency for metals on the CaCO3 reactive structures marble chips. Based on the length of the treatability study (3 years), please revise the Work Plan to address this issue.

a. If metal cladding is encountered, what is the plan to address this issue?
b. How will marble chips be disposed of subsequent to treatability study, if metal cladding is a problem?
c. How many pounds of marble chips will be used in each reactive structure?
d. How will the marble chips be installed and held in place within each reactive structure?

10. Table 2 Proposed Metals Included in Sample Analyses, Page 10 of 24: at the bottom of Table 2, an asterisk (*) denotes "if chromium exceeds 100 µg/L, chromium-6+ (hexavalent chromium) will be analyzed during the next sampling event. Please provide the rationale for using the exceedance threshold level of 100 µg/L before sampling for hexavalent chromium.

11. Please include monitor well location points and surface water station sampling points that are located on either side of the injection field. EPA suggests additional sampling points are needed in lateral direction which would include sampling points within groundwater flow direction and upgradient since water will be injected under pressure and will also travel in an upgradient direction. Additional lateral points are needed to assess the lateral movement during and subsequent to aquifer flushing.

12. Please provide a generalized timeline of site activities described in this Treatability Study up to the start date of January 31, 2020.

13. Please include Total Depth and Screen Interval for MWs in Table 1. Proposed D-Area Treatability Study Monitoring Network and Sampling Schedule

14. Please provide a figure and associated table that demonstrate the locations and water station designations where stream flow measurements will be collected

15. Please make the following corrections to the report:

a. Figure 6: please denote direction of waterflow
b. Figure 7: please include a North Arrow
c. Section 6.0 Sampling and Analysis,page 6 of 24: Please detail and include the specific analyses in the report text instead of "other routine field analyses" indicated in the last sentence of the first full paragraph.