

SRS Responses to EPA COMMENTS on DOE-SRS WHITE PAPER  
REMEDICATION of the ACIDIC GROUNDWATER  
IMPACTING the DISCHARGE CANAL IN D AREA

Received March 7, 2018

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EPA Comments:

- 1) The White Paper provides a rough conceptual presentation of a treatability study intended to effectively flush an area impacted by low pH and metals contamination. While the general concept (i.e., flushing/dilution) may be reasonable to address the low pH conditions, it may not adequately address other contaminants (e.g., metals).
  - Since the noted conditions are quite similar to those associated with acid mine drainage (AMD) sites; options such as treatment wetlands, or conventional backfilling of the canal (including the possible addition of carbonate materials) to increase groundwater residence time/buffering prior to surface water discharge may also be reasonable.

**Clarification.**

**Acidic groundwater with pH levels measuring 3.4 to 3.9 (2017 values) is currently discharging into the canal with elevated metal concentrations. Flushing the area now will accelerate the pH change in the aquifer to return it to more natural pH levels and prevent future dissolution of metals from the sediments, thereby reducing the metal plumes to a more natural, regional level. Treatment by wetlands or methods to increase groundwater residence time/buffering prior to surface water discharge will be considered as more viable options for a final remedial action.**

- It may also be beneficial to evaluate other potentially viable options (e.g., treatment wetland) either through the implementation of a study-scaled option (bench scale) or collection of data that may support evaluation of such options prior to remedy selection.

**Agree.**

**The final remedial assessment for this area will consider other viable options for the the low-pH/metals plume, and the Discharge Canal and Beaver Dam Creek.**

- Has a bench scale treatability study been considered prior to a large scales TS for the proposed actions?

**Clarification.**

**No bench scale treatability study has been considered due to the current timeframe for this TS.**

- 2) Metals impacts in groundwater are noted to be of concern; however, the White Paper focused on low pH issues and provides no discussion on mitigation of metals. Given the proposed study framework, it is anticipated that metals in solution will precipitate in the carbonate reaction structure though it is unclear if this structure will contain these

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contaminants and prevent release to sediment and surface water, which may worsen environmental conditions in the canal.

- Please provide additional information to address this issue.

**Clarification.**

**The goal of the Treatability Study is to flush the affected area to increase the pH to more natural levels, as well as exposing the groundwater to CaCO<sub>3</sub> in the discharge canal. This action will prevent future dissolution of metals from the sediments into the groundwater, thereby reducing the metals plumes to a more natural, regional level, ultimately improving conditions in the canal. It is expected that precipitates will occur at or very near the reactive structure within the canal, and a decline of surface water quality in the canal is not expected. Monitoring of the groundwater and surface water will occur throughout the action.**

- 3) The White Paper notes that following the completion of activities at basin 488-1D, the current dilution of low pH and metals impacted groundwater at the point of discharge to the canal will cease.
  - The White Paper also indicates that the study should achieve “significant acid reduction” in approximately 1,000 days (3 years) of operation, though it is unclear how long the study would occur. Please provide an anticipated timeframe for activities

**Agree.**

**The Treatability Study is projected to take place over a 3-year period; however, the evaluation of monitoring data of actual conditions and discussions with the Core Team will determine the duration.**

- It is unclear from the email message transmitting the White Paper if SRS intends to perform any different action for this portion of the plume until after the Remedial Investigation/Feasibility Study has been completed and a DAGW remedy is in place in 2023. Please provide additional detail to clarify this issue.

**Clarification.**

**No actions are currently planned other than the soil neutralization (non-time-critical removal action) at the 484-17D Coal Storage Area and D-Area groundwater characterization. The TS presents an opportunity to test this relatively low-cost, readily implementable concept.**

- Given that pH conditions in the canal may presumably worsen and may impact compliance with surface water standards following the completion of activities at 488-1D, the study may require years to demonstrate success.

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- Does DOE-SRS anticipate another remedy before 2023? Please provide additional detail as to the path forward with respect to D Area surface and groundwater actions.

**Clarification.**

**Both the proposed Treatability Study and the soil neutralization (NTCRA) at the 484-17D Coal Storage Area should improve surface water quality in the canal and nearby groundwater quality. The schedule of activities associated with the D-Area, including final remedial actions, have not been changed, and no other actions are currently planned.**

**The D-Area Groundwater Operable Unit has the following schedule in FFA Appendix E: RFI/RI Field Start June 2020; Issue ROD June 2023; Remedial Action Start September 2024.**

**Beaver Dam Creek and the Effluent Discharge Canal are part of the Savannah River and Floodplain Swamp Integrator Operable Unit; current schedule is for ROD Issuance in FY2064.**

- 4) Finally, the White Paper does not address chlorinated volatile organic compound (cVOC) and tritium groundwater plume(s) associated with/overlapping the low pH and metals plume(s). As a result, it is unclear what impacts the treatability study will have on the cVOC and tritium plumes.
  - Please address the potential for the treatability study and implementation of proposed activities to impact the cVOC and/or tritium plume(s) by expansion due to groundwater mounding.

**Clarification.**

**The metals plumes are a result of metals leaching from coal and low pH soils in and around the 484-17D Coal Storage Area and 489-D Coal Pile Runoff Basin. The source areas for the cVOC and tritium plume are to the northwest of the area of groundwater injection and the D-Area Discharge Canal. The cVOC and tritium plumes do somewhat overlap the injection area and it is anticipated that some interaction may occur due to the increased amount of injection water entering the system. The change in pH of the aquifer is not expected to have a direct effect on the cVOC or tritium plumes. Since the sources of the cVOC and tritium plume are located in a different area, the effects on the cVOC and tritium plumes should be minimal. The cVOC and tritium plumes will be addressed through the RI/FS and final remedial action(s).**