



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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

November 15, 2021

ENVIRONMENTAL COMPLIANCE &amp;

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

NOV 15 2021

AREA COMPLETION PROJECTS

Dear Mr. Hennessey:

The U.S. Environmental Protection Agency (EPA) has reviewed the 2020 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report (SEMS #21, 29), Revision 0, dated June 2021.

EPA cannot approve the above mentioned report until the comments below have been addressed. If you have any questions, please contact me at (404) 229 -9500.

Sincerely,

A handwritten signature in cursive script that reads "Diedre Lloyd".

Diedre Lloyd  
Remedial Project Manager  
Restoration and Sustainability Branch  
Region 4, Superfund & Emergency Management 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

**EPA COMMENTS ON THE  
2020 ANNUAL COMPREHENSIVE TNX AREA GROUNDWATER MONITORING  
AND REMEDIAL EFFECTIVENESS INTERIM REPORT  
SEMS NUMBER 21, 29**

**REVISION 0, DATED JUNE 2021**

**SAVANNAH RIVER SITE  
AIKEN, SOUTH CAROLINA**

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**EPA COMMENTS:**

1. It is unclear whether the Old TNX Seepage Basin (OTSB) and/or the New TNX Seepage Basin (NTSB) received process wastewater that contained nitric and/or other acids that would impact the pH of sediments, soils, and groundwater as the wastewater seeped through the basins. Additionally, it is unclear whether the process wastewater contained chlorinated volatile organic compounds (VOCs). For example, the text in Section 1.2.1 [TNX Burying Ground (TBG)] states nitric acids were used in the pilot-scale chemical separation process tests conducted in the TNX Area for the Defense Waste Processing Facility (DWPF) and the General Separations Area. However, the text in Sections 1.2.2 and 1.2.3 do not indicate whether the process wastewater received at the OTSB and/or NTSB contained nitric and/or other acids or chlorinated VOCs. Please revise the 2020 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report (U), SEMS Numbers: 21, 29, SRNS-RP-2021-03858, Revision 0, dated June 2021 (Annual Report) to clearly state whether nitric and/or other acids or chlorinated VOCs were received at the OTSB and/or NTSB so the nature of the low pH levels and the chlorinated VOCs in groundwater are better understood.
2. It is unclear whether a surface water sample will need to be collected from the X-008 Ditch to ensure no contaminated groundwater discharge to surface water is occurring at levels that would result in an unacceptable risk to human or ecological receptors. The text in Section 2.0 (Site Hydrogeology), page 7 of 60, states, "Particle tracking from the groundwater model (WSRC 2000) illustrates westerly flow from TNX source areas to the Savannah River with some water discharging to the X-08 Ditch and wetlands." A review of Figure A-6 (Plan View of the TNX Area OU Showing Particle Starting Locations and Path Lines Towards the X-008 Ditch and the Savannah River) in Appendix A, page A-11 of A-46, depicts the particle path lines towards the X-08 Ditch. It is noted one of the groundwater remedial action objectives presented in Section 3.0 (Objectives), page 8 of 60, is to prevent, minimize, or eliminate discharge of contaminated groundwater to surface water that would result in unacceptable risk to human or ecological receptors. Please revise the Annual Report to address collection of a surface water sample from the X-08 Ditch as a data need to ensure the objectives of the remedial action are being met.
3. Section 3.1 (Objectives) of the Annual Report, page 8 of 60, states, "Beneficial reuse of the groundwater will not be achieved until active remediation of the groundwater is complete." It should be noted a period of groundwater attainment monitoring will be required to ensure no rebound in groundwater concentrations occurs during the post remediation phase per EPA guidance document, "Recommended Approach for Evaluating Completion of Groundwater Restoration Remedial Actions at a Groundwater Monitoring Well OSWER 9283.1-44, August 2014" (EPA Guidance). The EPA Guidance recommends groundwater monitoring well data and other related

subsurface information be evaluated to make conclusions during both the remediation monitoring and attainment monitoring phases. Please revise the Annual Report to state that the determination of when groundwater has been returned to beneficial reuse will be conducted consistent with the EPA Guidance.

4. According to the Annual Report, there are no discernible and consistent radiologically contaminated groundwater plumes present, and therefore, no remedial action is needed. However, this statement appears contradictory to implementation of land use controls (LUCs) as a remedial action. Furthermore, based on the text it is unclear how radionuclide contaminated groundwater will be returned to beneficial use without implementing additional remedial action(s) (e.g., monitored natural attenuation [MNA]) in addition to LUCs. For example, the text in Section 3.5 (Radiologically Contaminated Groundwater), page 11 of 60, states, "Institutional controls (i.e., land use controls) are the agreed to remedial action for the radionuclide contaminated groundwater for the TNX OU." Since groundwater remedial actions typically do not include LUCs only as a standalone remedy, please revise the Annual Report to address whether additional actions will be implemented for returning radionuclide contaminated groundwater to beneficial use.
5. The nature of the 1,4-dioxane release is not clearly understood. For example, the text in Section 6.7 (1,4-Dioxane), pages 46-47 of 60, states, "The location of these wells near the TBG source area indicates that 1,4-dioxane was likely associated with debris buried at the TBG." However, it is noted 1,4-dioxane is used as a stabilizer in chlorinated solvents, but it is unclear if 1,4-dioxane was released with the solvent or only associated with the buried debris at the TBG. Please revise the Annual Report to provide more information about the source(s) of 1,4-dioxane contamination in groundwater so the nature of the release(s) are clearly understood.
6. The Annual Report does not discuss if corrective measures are planned to address the groundwater sampling issues noted in Section 4.1.1 (Sampling Issues), pages 16-17 of 60. For example, the text indicates during the second quarter 2020 (2Q2020) and fourth quarter 2020 (4Q2020) sampling events, TNX 72S was dry and no water level or sample was collected. Additionally, during the 2Q2020 sampling event, well TNX 72D was pumped dry, and sampling for mercury, uranium, gross alpha, radium-226, radium-228, and nonvolatile could not be performed due to insufficient water volume. Please revise the Annual Report to address this issue to ensure all future groundwater monitoring data needs are met.
7. The Annual Report indicates Savannah River Site would like to conduct an evaluation of the soil vapor extraction (SVE) wells to determine the future operational status of the MicroBlowers™. However, it is unclear if the evaluation will include the need to equip all or some of the SVE wells with BaroBalls™. As noted in the Annual Report, the total annual pounds of solvent removed from the MicroBlowers™ have decreased with time with approximately one pound of solvent removed per year during the last five years. Please revise the Annual Report to discuss the need to equip all or some of the SVE wells with BaroBalls™ when the data indicates the use of MicroBlowers™ are no longer warranted.
8. The Annual Report refers to the X-08 ditch by several designations, including X8 (e.g., Figure A-2), X-008 (e.g., Figure A-6), and X-8 (e.g., Figure A-8). For clarity and consistency, please revise the Annual Report to address this concern.