



**Department of Energy**  
Savannah River Operations Office  
P.O. Box A  
Aiken, South Carolina 29802

**AUG 17 2021**

Ms. Susan B. Fulmer, P. G., Manager  
Federal Remediation Section  
Division of Site Assessment, Remediation and Revitalization  
Bureau of Land and Waste Management  
South Carolina Department of Health and Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201

Mr. Jon Richards  
Savannah River Site Remedial Project Manager  
Superfund Division  
U. S. Environmental Protection Agency, Region 4  
61 Forsyth Street, SW  
Atlanta, Georgia 30303

Dear Ms. Fulmer and Mr. Richards:

**SUBJECT:** Record of Decision Remedial Alternative Selection for the Lower Three Runs Integrator Operable Unit (U) (SRNS-RP-2020-00542, Revision 1 Redline, August 2021) and Savannah River Site's Responses to the Regulatory Comments on the Revision 0 Document, SEMS Number: 35

In accordance with the terms of the Federal Facility Agreement, the U.S. Department of Energy (DOE) is submitting the subject document for your review and approval. The South Carolina Department of Health and Environmental Control (SCDHEC) and the U.S. Environmental Protection Agency (EPA) provided comments on the Revision 0 document on June 3, 2021 and June 21, 2021, respectively. This submittal includes the Savannah River Site's responses to the comments on the Revision 0 report and the incorporation of the responses into the Revision 1 Redline document.

Please review the enclosures and provide your approval within thirty (30) days of receipt. The effort and time that the SCDHEC and EPA have given on the subject operable unit are greatly appreciated.

Questions from you or your staff may be directed to me at (803) 952-8365.

Sincerely,

**Brian T. Hennessey**

Digitally signed by Brian T.  
Hennessey  
Date: 2021.08.10 16:44:21 -04'00'

Brian T. Hennessey  
SRS Remedial Project Manager  
Infrastructure and Area Completion Division

IACD-21-153

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Ms. Susan Fulmer  
Mr. Jon Richards

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Enclosures:

1. SRS Responses to SCDHEC on the Record of Decision Remedial Alternative Selection for the Lower Three Runs Integrator Operable Unit (U) (SRNS-RP-2020-00542, Revision 0, March 2021) SEMS Number: 35
2. SRS Responses to USEPA on the Record of Decision Remedial Alternative Selection for the Lower Three Runs Integrator Operable Unit (U) (SRNS-RP-2020-00542, Revision 0, March 2021) SEMS Number: 35
3. Record of Decision Remedial Alternative Selection for the Lower Three Runs Integrator Operable Unit (U) (SRNS-RP-2020-00542, Revision 1 Redline, August 2021) SEMS Number: 35

cc w/o encl:

J. Blalock, SCDHEC-Columbia  
S. French, SCDHEC-Columbia  
M. Reece, SCDHEC-Columbia  
G. K. Taylor, SCDHEC-Columbia  
T. R. Fuss, SCDHEC-Aiken Environmental Affairs Office  
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K. L. Beatty, SCDHEC-Aiken Environmental Affairs Office  
H. Herlong, SCDHEC-Aiken Environmental Affairs Office

cc w/encl:

R. H. Pope, EPA-Atlanta  
M. McRae, TechLaw, Inc.

**SRS Responses to the  
South Carolina Department of Health and Environmental Control  
Comments on the  
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Comments Received June 3, 2012**

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Contact for all comment responses: Jim Kupar, (803) 507-8072, james.kupar@srs.gov

Specific Comments

1. Declaration for the Record of Decision, Statutory Determinations, page vi of viii, last paragraph. The second sentence states that an agreement by USDOE, USEPA and SCDHEC to use LUCAP occurred on March 30, 2000. Please confirm this date.

**Response: Agree. The date March 30, 2000 is correct and represents the last signature on the Memorandum of Agreement (MOA) – Implementation of a Land Use Controls Assurance Plan for the United States Department of Energy Savannah River Operations Office, located in Appendix E of the LUCAP. The MOA was signed by the USDOE on 10/15/1999, SCDHEC on 11/29/1999, and the USEPA on 3/30/2000. No change to the document is necessary.**

2. Section V, Operable Unit Characteristics, page 10. The third bullet on page 10 describes EA 3 as including Pond B and the overflow canal connecting Pond B to Pond C. Figure 9, which depicts EA 3, shows the overflow canal but does not include it in the boundary designating EA 3. Furthermore, the description for EA 3 on page 10 includes the following language: “The canal flow area (i.e., where contaminants most likely have been deposited)...” This statement would imply the need for previous sampling in this canal overflow area; however, based on review of previous documents and the sampling locations depicted on Figure 9 for EA 3, no sampling at the canal overflow area between Pond B and Pond C was ever conducted. Please clarify the description of EA 3 and whether there could be any potential issues at the canal overflow area between Pond B and Pond C.

**Response: Agree/Clarification. The overflow feature was constructed to allow for emergency discharges that may be required from the reactors. The overflow canal identified at Pond B was evaluated using gamma overflight data as well as visually inspected. From those evaluations and based on the lack of recorded evidence that the feature was ever used, it was not included for additional screening and sampling. To address this comment, the statement, “The canal flow area (i.e., where contaminants most likely have been deposited) is ~3 m (9.8 ft) across the base of the canal.” will be deleted from the third bullet.**

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3. Figures 8 through 15, pages 78-85.

- a. What is the specific purpose of the callouts on these figures with regard to sample locations?

**Response: Agree/clarification. These figures denote the sediment/soil and water sampling locations described in the Baseline Risk Assessment/Remedial Investigation. Some of these locations are identified in this document in Section V, *Media Assessment Results*. For example, the text in Section V, *Media Assessment Results, Exposure Area 2 (Canal From Pond A to Pond B), Cs-137(+D)*, states, “Concentrations ranged from ND to 180 pCi/g with the highest detected concentration at location RDC007-001 collected on 4/14/2010 (Figure 8).” Location RDC007-001 is called out on Figure 8.**

Two of the call-outs, one on Figure 8 for RDC009-002, and one on Figure 14 for LTR-P45, are not needed and will be deleted off the respective figure. The revised Figures 8 and 14 are attached to these comment responses.

In addition, a call out from Figure 15, Pond C SED-28, was mislabeled in the text in Section V, *Media Assessment Results, the Exposure Area 9 (Pond C)* subsection, fourth paragraph. The text will be revised to state, “Co-60 was detected in 4 out of 24 sediment/soil samples with none of these results being estimated (i.e., “J” qualified). Activity concentrations ranged from ND to 0.448 pCi/g (Figure 15). The maximum, 0.448 pCi/g was from location Pond C SED-12, Pond C SED-2028.”

- b. Figure 8 has the PTSM locations for EA 5, but the figure is meant to represent EA 2.

**Response: Clarification. The legend indicates PTSM sample locations and although EA2 had no PTSM sample locations, the figure identifies the locations in the adjacent EA5. The legend will remain the same to indicate PTSM sample locations in the adjoining EAs. No change to the document is necessary.**

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c. Figure 9 is missing the PTSM locations for EA3.

**Response: Agree. The Main Body near Heron Island: SCB-34 and Main Body near Mouth of Outlet Bay: SCB-29-0 locations will be relabeled as PTSM locations on Figure 9. The revised Figure 9 is attached to these comment responses.**

d. Figure 11 is missing the PTSM locations for EA5.

**Response. Agree. The PTSM locations for EA5 will be included in the revised Figure 11 as well as adding PTSM sample locations into the legend. The revised Figure 11 is attached to these comment responses.**

4. Table 13, page 129 of 130. Please correct the title of the table to Lower ‘Three’ Runs.

**Response: Agree. The title will be changed to “Land Use Controls for the Lower ~~Three~~ Three Runs IOU (Continued/End)”.**

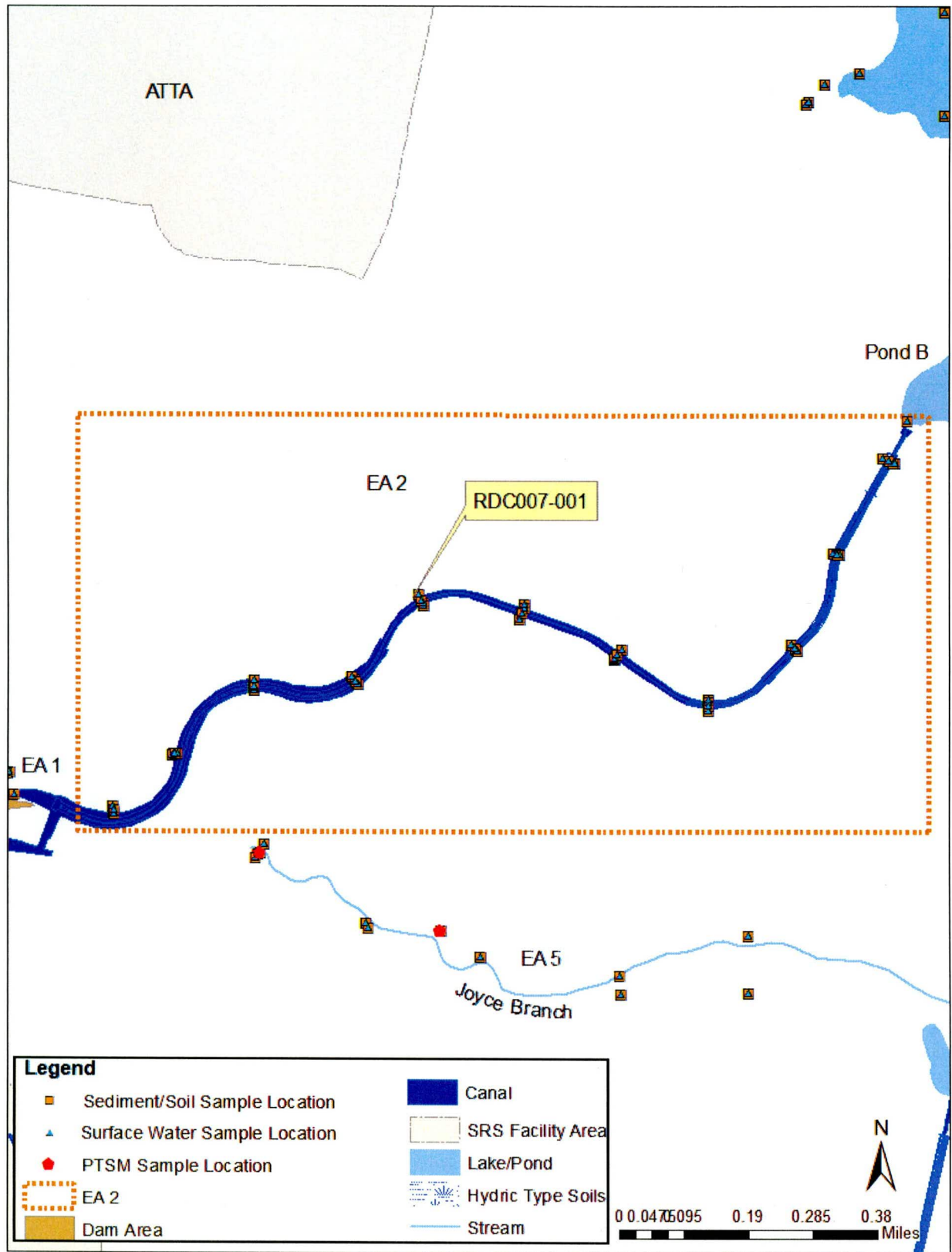


Figure 8. Sample Locations for EA2 in the Upper Subunit of the LTR IOU

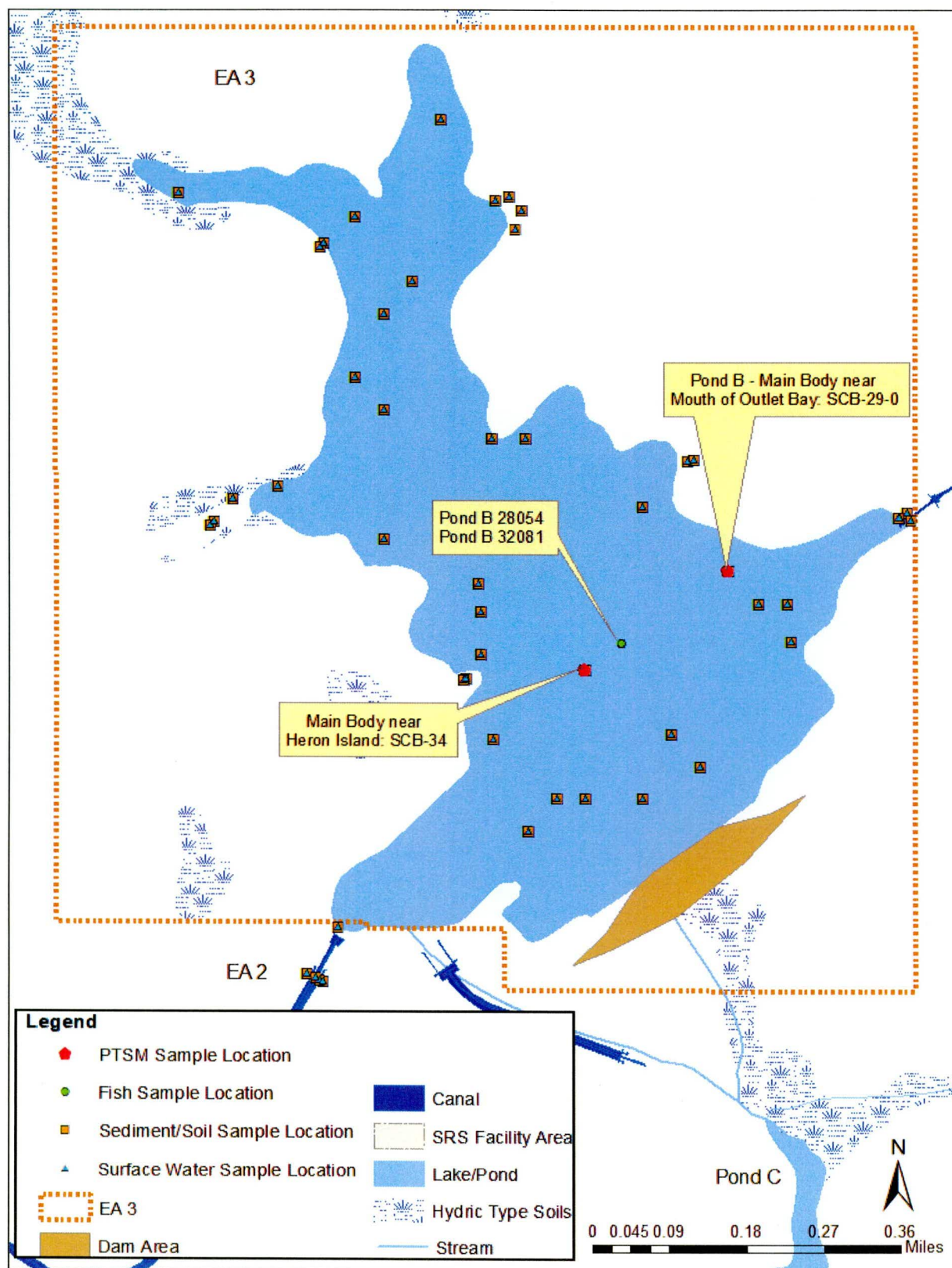


Figure 9. Sample Locations for EA3 in the Upper Subunit of the LTR IOU

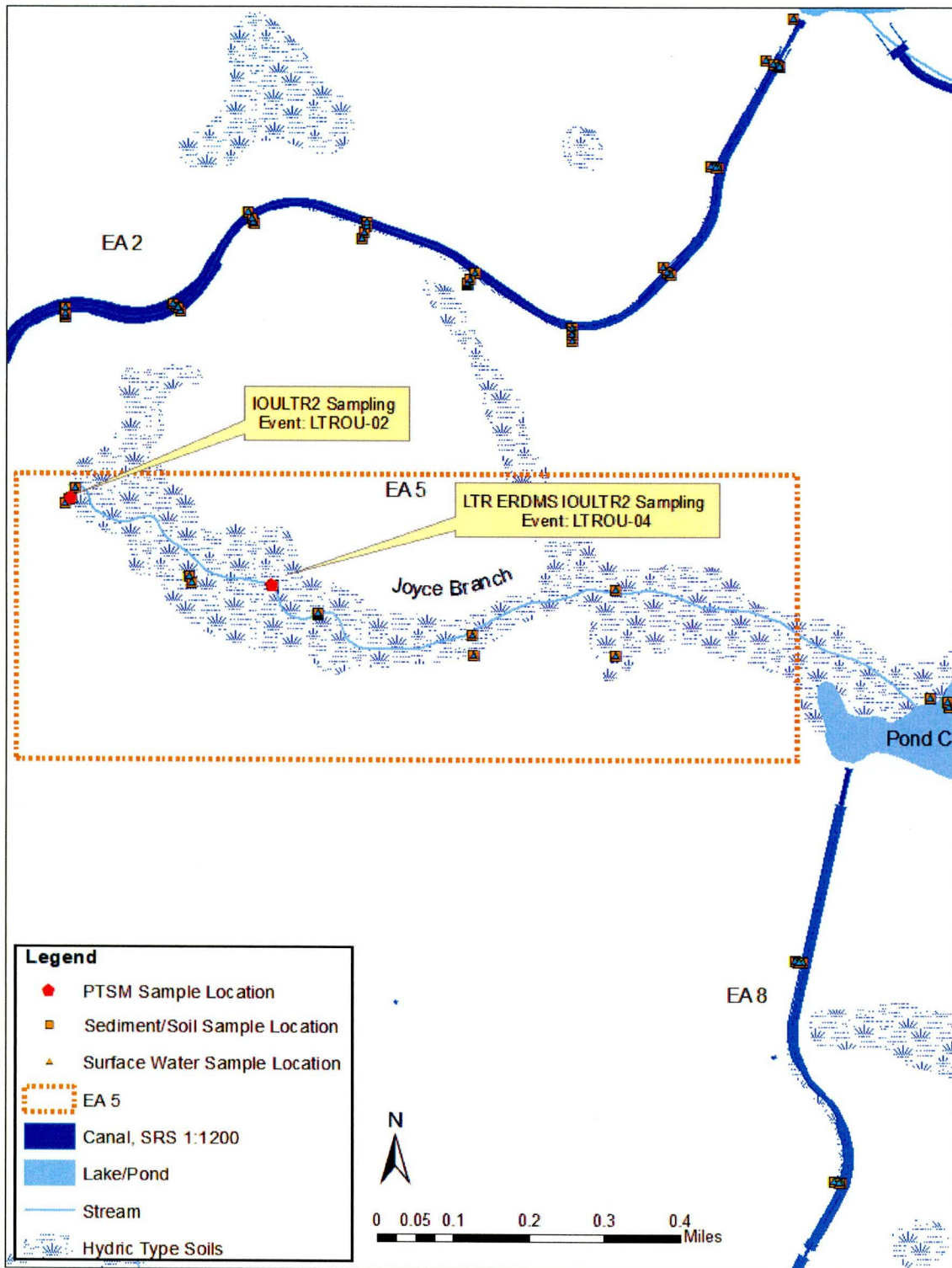


Figure 11. Sample Locations for EA5 in the Upper Subunit of the LTR IOU

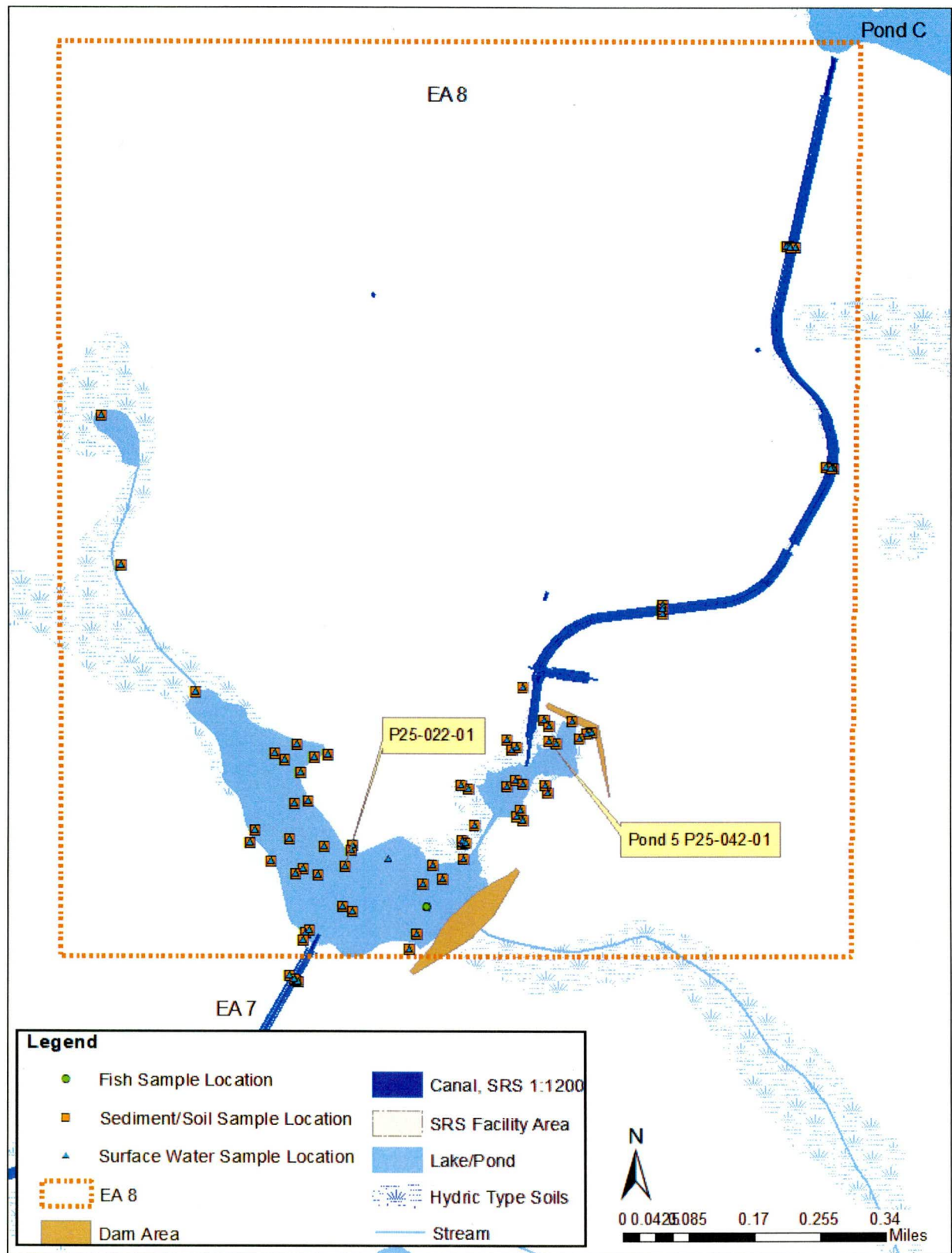


Figure 14. Sample Locations for EA8 in the Upper Subunit of the LTR IOU

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## **EPA COMMENTS**

Please refer to the Lower Three Runs stream as “waters of the state” for the state of South Carolina in addition to defining it as a blackwater stream in the text.

**Response: Agree. The Lower Three Runs stream will be identified as Waters of the State in Section II, Operable Unit Operational and Compliance History, end of the second paragraph as follows:**

**“LTR is a large, blackwater stream that originates in the northeast portion of SRS and follows a southerly direction for ~40-km (24.5-mi), discharging into the Savannah River. The LTR watershed drains about 460 km<sup>2</sup> (180 mi<sup>2</sup>). LTR is classified as Waters of the State for South Carolina.”**

## **Office of Regional Counsel Comments**

1. Declaration Pg.v. Revise last sentence to include underlined text: “*The remedy for EA1 also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduce the toxicity, mobility, or volume of materials comprising principal threats through treatment).*”

**Response: Agree. The Declaration section, *Statutory Determinations*, last sentence in the third paragraph will be revised as follows:**

**“~~This~~The remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduce the toxicity, mobility, or volume of materials comprising principal threats through treatment) for EA1.”**

2. Pg.18, Media Assessment Results. It would be helpful to the reader to include in the introduction of this section the source of screening criteria used for each media assessed and refer reader to appropriate table identifying the numeric screening criteria used.

**Response: Clarification/Agree. The details of the risk assessments, including references to the tables that present the screening criteria, is provided in Section VII Summary of Site Risks. For clarity, the first paragraph in the *Media Assessment Results* section will be revised to identify the source of the screening criteria as follows:**

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**“The characterization data was used to perform a human health risk assessment (HHRA), an ecological risk assessment (ERA), and a PTSM evaluation (SRNS 2017). Sediment/soil media was compared to USEPA regional screening levels (RSLs) for non-radionuclides and USEPA preliminary remediation goals (PRGs) for radionuclides, while surface water was compared to USEPA maximum contaminant levels (MCLs), SCDHEC ambient water quality criteria, RSLs, or PRGs as appropriate. For the HHRA, an IOU onsite worker (wetland researcher) is selected as the most likely receptor scenario for the Upper LTR IOU. A recreational fisherman scenario is also considered for EAs that can sustain populations of consumable fish. Table 2 summarizes the results of these evaluations and identifies refined constituents of concern (RCOCs) for each EA. RCOCs are those constituents that were retained following a weight-of-evidence evaluation and require remedial action. The details of the risk assessments, including references to the tables that present the screening criteria, is provided in Section VII Summary of Site Risks.”**

3. Pg.18, Media Assessment Results. For each exposure area (EA) identify whether any surface water screening criteria were exceeded. This information is missing from the media assessment summary in this section for some of the EAs. In addition, identify source of the screening criteria, e.g., AWQC, MCL.

**Response: Agree/Clarification.** Please see the response to Comment #2 with respect to the source of the screening criteria. The information presented in the Media Assessment Results section is intended to include a summary discussion of the contaminants that were identified as RCOCs that pose a threat to human health and the environment. As previously stated, there were no problems warranting action identified for surface water in any EA. This clarifying statement should have been included for each EA but was inadvertently omitted from the media assessment results for EA4, EA6, and EA8. Therefore, the text for these three EAs will be revised to include the following statement:

*Exposure Area 4 (Canal from Pond B to North Arm of PAR Pond)*

**“There were no problems warranting action identified for surface water for EA4.”**

*Exposure Area 6 (PAR Pond)*

**“There were no problems warranting action identified for surface water for EA6.”**

*Exposure Area 8 (Ponds 4 and 5 Including Canal from Ponds 4 and 5 to Pond C)*

**“There were no problems warranting action identified for surface water for EA8.”**

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The text correctly includes this statement for EA1, EA2, EA3, EA5, EA7, and EA9.

4. Pg.19, Media Assessment Results, 2<sup>nd</sup> Para., surface water assessment, states: *“Surface water was determined to not be a media of concern and did not pose an unacceptable risk.”* Please add the following language from the proposed plan ‘summary of contaminant fate and transport’ as revised per EPAR4 ORC’s previous comments on the proposed plan: *“Surface water monitoring was conducted as part of the RI and several metals including mercury exceeded SCDHEC ambient water quality criteria. Also, certain radionuclides such as Cs-137 exceeded screening levels including SDWA MCLs in some samples. However, based on the conceptual site model of Cs-137 high affinity for soil/sediments and low solubility in water, it was determined that Cs-137 contamination is predominantly located in soil/sediments, as is mercury; therefore, surface water is not being directly addressed with the proposed remedial action.”*

**Response: Agree with clarification. Cs-137 did not exceed the SDWA MCL of 200 pCi/L in any sample (e.g., the highest detected level was 176 pCi/L). For clarity, the following paragraph will be inserted after the first paragraph of the *Media Assessment Results* section consistent with the language in the Proposed Plan:**

**“Surface water sampling was conducted as part of the RI and metals and radionuclides were detected in surface water. Several metals including mercury exceeded the SCDHEC ambient water quality criteria, while the highest detected concentration of Cs-137 in surface water was below the surface water MCL. Based on the conceptual site model considerations of the high affinity of Cs-137 for sediment/soil and low solubility in water, it was determined that Cs-137 contamination is predominantly located in sediment/soil, as is mercury; therefore, surface water was determined to not be a media of concern and is not being directly addressed with the final remedial action. Instead, actions are proposed to address the sediment/soil as the “source” of the contamination (excavation/dredging, LUCs to reduce the chance of direct contact for humans and terrestrial ecological organisms by keeping the sediment/soil covered by water, restricting access, posting signs, restricting fishing on USDOE property, and MNR).”**

5. Pg.40, Conclusion. States: *“Surface water was determined to not be a media of concern and did not pose an unacceptable risk to human or ecological receptors.”* As in previous comment #4, add clarifying language in this risk discussion section explaining why observed surface water exceedances were determined to not present a risk.

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**Response: Agree with Clarification.** The following clarifying paragraph will be inserted in Section VII, Conclusions following the first paragraph (using the last sentence of that paragraph for the new paragraph), to read as follows:

**“Surface water was determined to not be a media of concern and did not pose an unacceptable risk to human or ecological receptors. Surface water sampling was conducted as part of the RI and metals and radionuclides were detected in surface water. Several metals including mercury exceeded the SCDHEC ambient water quality criteria, while the highest detected concentration of Cs-137 in surface water was below the surface water MCL. Based on the conceptual site model considerations of the high affinity of Cs-137 for sediment/soil and low solubility in water, it was determined that Cs-137 contamination is predominantly located in sediment/soil, as is mercury; therefore, surface water was determined to not be a media of concern and is not being directly addressed with the final remedial action.”**

6. Pg.41, Remedial Action Objectives. The following RAO should be modified to include the underlined risks thresholds. For example, *“Protect the recreational fisherman from exposure to Cs-137 and Hg in fish tissue that exceed risks of 1E-06 and HQ of 1, respectively. The primary route of exposure is the ingestion of fish pathway.”*

**Response: Agree.** Section VIII. Remedial Action Objectives, second bullet will be changed to read as follows: **“Protect the recreational fisherman from exposure to Cs-137 and Hg in fish tissue that exceed risks of 1E-06 and HQ of 1, respectively. The primary route of exposure is the ingestion of fish pathway.”**