



Department of Energy
Savannah River Operations Office
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JUL 19 2018

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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
Acting 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: Redline Pages to the Periodic Report 5 for the Upper Three Runs Integrator Operable Unit (IOU) (U) (SRNS-RP-2017-00548, Revision 1, July 2018) and Savannah River Site's Responses to Regulatory Comments on the Revision 0 Document, CERCLIS Number: 70

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. 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 May 18, 2018 and May 24, 2018, respectively. All comment responses have been incorporated into the attached redline page changes as appropriate. Please review the enclosed information and provide your approval within thirty (30) days of receipt.

The effort and time that the SCDHEC and the 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,

A handwritten signature in blue ink, appearing to read "BTH", is written over a blue ink scribble.

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

IACD-18-162

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Ms. Susan Fulmer
Mr. Jon Richards

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Enclosures:

1. Periodic Report 5 for the Upper Three Runs Integrator Operable Unit (IOU) (U) (SRNS-RP-2017-00548, Revision 1, July 2018) CERCLIS Number: 70 (Redline Pages Only)
2. SRS Responses to the SCDHEC Comments on Periodic Report 5 for the Upper Three Runs Integrator Operable Unit (IOU) (U) (SRNS-RP-2017-00548, Revision 0, February 2018) CERCLIS Number: 70
3. SRS Responses to the EPA Comments on Periodic Report 5 for the Upper Three Runs Integrator Operable Unit (IOU) (U) (SRNS-RP-2017-00548, Revision 0, February 2018) CERCLIS Number: 70

cc w/o encl:

D. Scaturo, SCDHEC-Columbia
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cc w/encl:

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**Final SRS Responses to EPA Comments on
Periodic Report 5 for the Upper Three Runs IOU,
SRNS-RP-2017-00548, Revision 0, February 2018, CERCLIS Number: 70
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Contact: Susan Blas, 803 952-6904, susan.blas@srs.gov

TECHNICAL REVIEW COMMENTS

HUMAN HEALTH RISK ASSESSMENT (HH) REVIEW

General Human Health (HH) Risk Comments:

1. Section 2.1.2 (Human Health Benchmark Screening and Results) of the Periodic Report 5 for the Upper Three Runs Integrator Operable Unit (UTR PR5 Report) discusses benchmark exceedances for cesium-137 (Cs-137) for the onsite worker in the Tinker Creek subunit in 2014/2015 that were determined to be a result of stormwater discharges from the saltstone processing and disposal facilities. However, the discussion regarding this event and how this impacts future data collection is incomplete, as follows:
 - The UTR PR5 Report does not discuss in detail, or provide figures of the extent of, contamination found in the sediments of Tinker Creek or surrounding soils. The UTR PR5 Report should be revised to include additional detail about the extent of contamination in the Tinker Creek sediments, including figures depicting the locations of the Z-Area Stormwater basin and Z-01 outfall, the location of the soil/sediment removal that occurred after the release event, and the location of impacted sediments/sediment breaks in Tinker Creek.

Response: Agree with clarification. During IOU Phase II periodic reporting, the IOU program reports the location of exceedances based on data acquired since the last periodic report (PR). As with OU data or other data reported from other data stewards, details such as those noted in the comment are contained in other primary documentation and are not re-created (re-reported) in the IOU PRs. Please note, the release occurred toward McQueens Branch which is the most downgradient tributary in the Tinker Creek watershed. The release did not impact upgradient Tinker Creek background locations.

To address this comment, the 2012 Z-Area Special Environmental Monitoring Results (SRNS-TR-2012-00767, December 2012) will be added as a reference to the PR as follows, “SRNS, 2012a. 2012 Z-Area Special Environmental Monitoring Results, SRNS-TR-2-12-00767, December 2012, Savannah River Nuclear Solutions, Savannah River Site, Aiken, SC”. The other “SRNS 2012” references will be renumbered accordingly to SRNS 2012b, and SRNS 2012c. The text will be revised as noted below to reference the Z-01 Outfall Data Report (SRNS-RP-2015-00784).

Executive Summary, HH Benchmark Screening and Results, 2nd paragraph: “The discharge pipe and Z-01 Outfall were also grouted and closed, and a newly constructed Z-01 Outfall discharge structure is in place. The basin was also expanded to accommodate a

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100-year storm event that dramatically reduces the potential for future releases from the basin. Details associated with the monitoring and mitigative efforts associated with the Z-Area basin discharge are presented in the 2012 Z-Area Special Environmental Monitoring Results report (2012a) and the Z-01 Outfall Data Report (SRNS 2015). Since the Tinker Creek cesium-137...”

Section 2.1.2, Sediment subsection, 2nd paragraph: “The discharge pipe and Z-01 Outfall were also grouted and closed, and a newly constructed Z-01 Outfall discharge structure is in place. The basin was also expanded to accommodate a 100-year storm event that eliminates the potential for future releases from the basin. Details associated with the basin releases, follow-up sampling, and actions taken to mitigate the unplanned releases are detailed in the Z-01 Outfall Data Report (SRNS 2015) and 2012 Z-Area Special Environmental Monitoring Results report (SRNS 2012a).”

- Table 2-2, Human Health Benchmark Exceedance Summary for UTR PR5, lists the Cs-137 exceedances as being collected in 2010. The UTR PR5 report should clarify whether the Cs-137 human health benchmark exceedances also occurred in 2010, and if so, Table 2-2 should be revised to also include the exceedances from the 2014/2015 data collection. Alternatively, correct the collection date listed in Table 2-2.

Response: Agree. Table 2-2 lists the date (2010) that the background data were collected that are used to support background screening for the UTR PR5 (2010). The background data for cesium-137 were collected in 2010 from the “BKGRDSS001” location in Tinker Creek. To address this comment, Table 2-2 will include a footnote (*) associated with Cesium-137 (“Cesium-137*”) that states, “* Cesium-137 exceedances in the UTR Tinker Creek subunit were associated with McQueens Branch, a tributary of the Tinker Creek watershed located downgradient of Tinker Creek background locations. See Figure 2-1 for the location of exceedances.”

Additionally, the last paragraph of Section 2.1 will be revised to state, “Benchmark exceedances are listed in Tables 2-2 through 2-5. The exceedance tables include a “Bkgrd Date, Location” column that lists the background location and year the background data were collected to support the background screening criterion. The figures...”

- The UTR PR5 Report does not indicate where future background data will be collected from Tinker Creek or how future background sample locations will be selected to ensure that locations where elevated Cs-137 levels from the 2013 storm water discharge event that resulted in human health benchmark exceedances in Tinker Creek, are not included in the background data set.

Please revise the UTR PR5 Report to address these concerns.

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Response: Clarification. As indicated in the responses above, the Tinker Creek background locations are not impacted by releases associated with McQueens Branch (within the Tinker Creek subunit, i.e., watershed). Tinker Creek will continue to serve as a background location supporting IOU background screening. Additional changes to the document, other than those above, are not proposed.

2. Section 3.1 (Identification of Data Needs) discusses the use of passive diffusive gradients in thin films (DGT) samplers in the UTR IOU to provide screening data to estimate concentrations in fish tissue to support future HH subsistence fisherman scenario benchmark screening and the ecological screening. However, this discussion does not provide information about the comparability of data collected using DGT samplers to data obtained directly from fish tissue. *Please revise the UTR PR5 Report to provide information that demonstrates use of the DGT samplers will provide sufficiently representative data compared to actual fish tissue data, and to state whether future data collection for evaluation of the subsistence fisherman will also include some fish tissue to ensure the continued reliability of the DGT data.*

Response: Agree with clarification. One of the purposes of acquiring DGT data is to evaluate the use and comparability of the DGT approach to monitor contaminant levels. This approach can be a useful tool for assessing contaminant levels during Phase II (ongoing monitoring and assessment) with the intent of using the data to assist in identifying ecological and human health threats for Phase III final assessment. The Phase III field start for the Upper Three Runs IOU is not scheduled to begin until November 2057.

To address this comment, the 2nd paragraph of Section 3.1 will be revised to state, “The data obtained from passive samplers will provide consistent and comparable data allowing for spatial comparison and trending among and within the IOUs since the semipermeable medium is consistently prepared and deployed. As the DGT sampling data is supplemented with biological data/tissue samples, the comparability of the approach to biological data collections such as fish will be demonstrated. For the initial deployment, the passive sampler collections will focus on the Middle and Lower UTR subunits where edible sized game fish are more likely and high fish diversity is present. The data collected will be used to begin the process of refining the approach for assessing contaminant threats for the IOU program. These data will be reported in a future PR.”

Specific HH Risk comments:

1. **Figure 1-2. Upper Three Runs IOU on page 1-9 of 1-58:**

Figure 1-2 is not depicted on the page labeled Upper Three Runs IOU on page 1-9.
Please revise the UTR IOIU PR5 Report to include this figure.

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Response: Clarification. There is a title page inserted in the document for the larger sized GIS figures. The figures are inserted after the title page. No change to the document is proposed.

2. Figure 1-4d, Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU – H, S, and Z Areas, page 1-31 of 1-58:

Figure 1-4c Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU – F and E Areas is duplicated and is included in place of Figure 1-4d, Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU – H, S, and Z Areas in the UTR PR5 Report. *Please revise the UTR PR5 Report to include the missing Figure 1-4d for the H, S, and Z areas.*

Response: Agree. The figure (now Figure 1-5c) will be included in the revised document.

ECOLOGICAL RISK ASSESSMENT (ERA) REVIEW

General ERA comments:

- I.* The toxicity of metals to aquatic community-level receptors in surface water is best assessed using the dissolved fraction. The UTR PR5 Report does not mention if the surface water metals data represents the total or dissolved fraction. Amend the text to clarify this issue. Assessing surface water toxicity using total metals is overprotective, and hence acceptable, even though quite conservative. No action would be required if total metals data were used in the UTR PR5 Report data evaluation. However, *this discrepancy (if present) needs to be discussed in the text in order to put the surface water risk evaluation in its proper context.*

Response: Agree with clarification. Since the IOU database includes data from various data stewards, the IOU program assumes results for metals are representative of total metals. As the UTR IOU approaches Phase III final action determinations, a sampling and analysis plan will be developed that will include collection of filtered and unfiltered samples to better address the bioavailability of metals to ecological receptors as appropriate at that time.

To address this comment, the first paragraph of the Ecological Benchmark Screening and Results section of the Executive Summary will be revised to state, “Therefore, the potential for an effect on ecological receptors could be indicated by an exceedance of either the Tier I or Tier II surface water screening benchmarks. Since the IOU database includes data from various data stewards, the IOU program assumes results for metals are representative of total metals. Constituents with surface water Tier I and Tier II exceedances, or constituents with sediment and sediment/soil Tier II level exceedances are evaluated further if all criteria below are met...”

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Also, the first paragraph of Section 2.1.3 will be revised as follows beginning with a new paragraph that states: “For surface water screening, the Tier I benchmark is not based on “no effect” level toxicological data, but rather, from “low effect” chronic thresholds. Since the IOU database includes data from various data stewards, the IOU program assumes surface water results for metals are representative of total metals. As the UTR IOU approaches Phase III of the IOU program and final deposition of the UTR IOU, the dissolved fraction will be evaluated to better address bioavailability for constituents that pose a potential threat to ecological receptors.” The Tier II surface water screening benchmarks are based on acute-level thresholds. Therefore, a potential threat to ecological receptors could be indicated by either the Tier I or Tier II surface water screening benchmarks.

2. The “Tier I” and “Tier II” terminology is confusing when referring to the surface water benchmarks. First, the definitions provided in the text for these two terms is unclear. Second, the wording is not always used consistently in the text (e.g., see first and second sentences in the paragraph under Surface Water on page 2-13 of 2-54 which refer to “Tier I (low effect level)” and “Tier I (acute level)”). And third, although not intended, it mimics the language used to denote the Tier I (no-effect) and Tier II (low-effect) soil and soil/sediment benchmarks. Instead, it is recommended to call these two types of surface water benchmarks by their actual meaning, i.e., acute surface water benchmarks and chronic surface water benchmarks. This approach will remove all confusion and simplify the text. It would still be necessary to explain (a) the exact meaning of each term, and (b) why these benchmarks are used in the PR even though their exceedance both indicate the potential for effect. *Amend the text accordingly.*

Response: Agree with clarification. Initially the two types of ecological benchmarks were referred to as “chronic” and “acute” as suggested in this comment. However, further Core Team discussions resulted in a more generic term (Tier I and Tier II) since the toxicological thresholds are compiled from a variety of sources. It is proposed that the current terminology employed for UTR PR 5 be maintained for this report. For future periodic reports, there will be a single ecological screening value for each medium that will be referred to as a “refinement screening value (RSV)” to better align the IOU screening level risk evaluation with the Operable Unit baseline risk assessment approach. The RSVs for surface water will be based on chronic values. RSVs for sediment and sediment/soil will be based on Low Observed Adverse Effect Levels to support refinement of the ecological risk assessment as the IOUs continue with Phase II long-term monitoring/reporting.

The first paragraph of Section 2.1.3 will be revised to state, “For surface water screening, the Tier I benchmark is not based on “no effect” level toxicological data, but rather, from “low effect” chronic thresholds. The Tier II surface water screening...”

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The first paragraph of the “Surface Water” subsection of Section 2.1.3 will be revised to state, “... is provided in Table 2-5 and depicted in Figure 2-9. Tier I (~~acute~~low effect level) SW exceedances were observed for aluminum...”

3. Multiple times throughout the report (e.g., page 2-14 of 2-54), the text provides a benchmark but omits the units. Ensure that all the concentrations are associated with their proper units. Next, providing the concentrations, benchmarks, and hazard quotients in scientific notation (i.e., 00E-/00) adds an additional mental step required to “translate” these numbers into understandable values based on the decimal system. Although not a request, please consider providing all values as decimals in future PRs. Also, the text and data tables present the concentrations of the surface water analytes and benchmarks in units of mg/L. It is more usual to provide surface water concentrations in units of µg/L. One reason may be that the “typical” analyte concentration in surface water is closer to 1 or 10 µg/L than 1 or 10 mg/L, thereby avoiding unnecessary zeros. *Although not a request, please consider providing surface water concentrations in units of µg/L in future PRs. Finally, for the sake of consistency, ensure that all the concentrations in the text are presented either in scientific or decimal notation (e.g., see the bottom two paragraphs on Page 2-14 of 2-54).*

Response: Agree. The text will be revised to include the appropriate unit when a benchmark or concentration value is presented. These values will be presented in scientific notation for this report. The hazard quotients will be presented in decimal form with one significant digit (i.e., 5.3 for example). Also, as development of the next periodic report continues, decimal units will be considered for all numbers as well as reporting surface water in µg/L units to be more consistent with other types of regulatory reports.

4. Frequency of Detection (FOD) is one of the three criteria used to determine if further ecological evaluation is needed for a particular matrix at a given exposure area. The text does not specify that this criterion should only be used if a dataset contains a minimum number of samples which, by convention and consensus, is set at 20. Please clarify this issue in the text. Also, specify that FOD will not be used as a decision criterion if the number of samples collected from a particular exposure area is less than 20. *This requested modification needs to be reflected throughout the UTR PR5, as necessary.*

Response: Agree. The second paragraph of Section 2.1 will be revised as follows: “Similarly, constituents with a low frequency of exceedance (5% or less) do not require additional evaluation by the IOU program. For the frequency of exceedance determination, a minimum of 20 samples is required for assessment at the 5% level. The background data...”

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Specific ERA comments:

1. **Executive Summary, Data Needs and Early Actions, Page ES-8 of ES-10:**

This section indicates that passive diffusive gradients in thin films (DGT) samplers have been used successfully by regulatory agencies and can be used to collect screening-level contaminant data to estimate concentrations in fish tissue without catching or destroying any fish. Regardless, while this approach may be accurate, *additional information and/or research studies should be provided that explain why it would be better to collect DGT data instead of actual fish data.* These research studies will help project managers determine the acceptability of using DGT data over actual fish data and help make defensible risk-management decisions.

Response: Agree. Please see the response to HH comment #2 above. One of the purposes of acquiring DGT data is to evaluate the use and comparability of the DGT approach to monitor contaminant levels for the IOU program. This initial data collection effort is the first step in evaluating the approach as a useful tool for assessing contaminant levels during Phase II (ongoing monitoring and assessment). The intent is to conduct periodic monitoring, supplemented by biological data, to begin monitoring contaminant levels during Phase II and to determine that applicability for use for final Phase III final assessment. The Phase III field start for the Upper Three Runs IOU is not scheduled to begin until November 2057.

Please see the response to the HH comment #2 for how the comment will be incorporated into the revised document.

2. **Section 2.1.3, Ecological Benchmark Screening and Results, Page 2-13 of 2-54:**

The second paragraph on page 2-13 indicates that the mean ratio for aluminum is 2.11E-01 mg/kg. However, this mean ratio is inconsistent with the value listed on Table 2-4 Summary of Ecological Benchmark Exceedances for Sediment/Soil for UTR PR5. *Ensure that the aluminum mean ratio listed on page 2-13 is consistent with the mean ratio listed on Table 2-4.*

Response: Agree. The mean ratio for aluminum will be corrected to 1.05E+02 in Section 2.1.3 for the Sediment/Soil (Soil) discussion.

3. **Section 2.1.3, Ecological Benchmark Screening and Results, Surface Water, Page 2-16 of 2-54:**

This last paragraph on Page 2-16 indicates that while the mercury levels are above the Tier II surface water benchmarks, the concentrations observed are within the National Pollution Discharge and Elimination System (NPDES) permitted levels. However, in

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order to verify this statement, it is recommended to *revise section 2.1.3 by providing the NPDES-permitted levels for mercury.*

Response: Agree. Further review of the data revealed that the mercury results reported for the Outfall A-11 had a conversion error when converting from ng/L (units that were reported from the laboratory). The corrected mercury levels are below NPDES permit limits (1.4E-01 µg/L [1.4E-04 mg/L] daily maximum) for the A-11 Outfall. The corrected results are also below the surface water ecological benchmarks (Tier I and Tier II). To address this comment, Table 2-5, the text (primarily the Executive Summary and Section 2.1.3), and Figure 2-9 will be revised to correct the mercury exceedances/discussion for the revised report. Mercury discussions for the Tim Branch subunit will be revised to reflect the corrected maximum result of 3.30E-05 mg/L, maximum ratio of 2.75, mean detect of 6.00E-06 mg/L, 2 exceedances, and a 2.9% frequency of exceedance. The text and surface water Table 2-5 will be revised to address various surface water data updates for the ecological exceedances reported for the Middle subunit since the database was updated after the Rev. 0 document was developed.

4. Section 2.1.3 Ecological Benchmark Screening and Results, Biological Data and Benchmark Screening Results, Page 2-17 of 2-54:

The second paragraph on Page 2-17 states, “IOU collected data including past fish condition factors and health assessment index (necropsy) data show no deleterious effects on the health of individual fish within the UTR system.” The fish condition factor and the fish health assessment index (necropsy) are two measures of effect which are simply too crude to be used in support of future risk management decision making. These two measures can be expected to generate false negatives (i.e., concluding that an effect is not present when it in fact exists) because they are not sensitive enough. *This comment does not impact the current PR but is included to notify SRS that these two measures of effect should not be used as lines of evidence in a future Baseline Ecological Risk Assessment (BERA) for the Upper Three Runs Integrator Operator Unit.*

Response: Agree. No change to the document is proposed.

5. Appendix A Benchmarks for SRS PR5 — Human Health and Ecological, Ecological Benchmarks - Tier II, Pages A-34 to A-44.

Many of the Tier II surface water ESVs presented in the table are referenced as Aquatic Water Quality Criteria (AWQCs). EPA’s AWQCs as presented in the aquatic life criteria tables available at <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>. This table provides acute and chronic benchmarks for metals, organochlorine pesticides, and a handful of other analytes. Yet, the table in Appendix A of the UTR PR5 Report also includes AWQC for numerous

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analytes not included in EPA's aquatic life criteria table (e.g., heptachlorodibenzo-p-dioxin, diethylphthalate, and dozens of others). It appears that the "Source" of these compounds was wrongly attributed to EPA's AWQC. *Amend the table to address this issue.*

Response: Agree with clarification. The AWQC nomenclature referred to the 1995 EPA Region IV Supplemental Guidance to RAGS: Region 4 Bulletins as the source of those benchmarks as indicated on page A-4. These, and other values, were compiled in the Ecological Screening Values for Surface Water, Sediment, and Soil (WSRC-TR-98-00110) that supported early IOU and operable unit (OU) screening. The AWQC values questioned in the comment were verified based on the WSRC-TR-98-00110 report that was used as the basis for EPA Region 4 Screening Values during that timeframe. The heptachlorodibenzo-p-dioxin benchmark is based on the value for 2,3,7,8-TCDD (dioxin).

To address this comment, the WSRC-TR-98-00110 citation will be added to the list of reference citations for surface water media since these values can be readily verified from that source document. There were also a few constituents referred to in the Tier II SW benchmark table (Appendix A) as AWQC that should be designated as ORNL (1,2,3,4,6,7,8-Heptachlorodibenzodioxin through 1,2,4-Trichlorobenzene, 1,2-Dibromo-3-chloropropane, and 1,2-Dichloroethane.) These will be corrected to state, "ORNL". Finally, the first AWQC assigned constituent listed for SW in Appendix A (page A-36 for 1,1,1,2-Tetrachloroethane) will be listed as "AWQC (EPA 1995, WSRC 1998)"

For upcoming periodic reports, new IOU benchmarks are being generated to bring the IOU screening in line with the OU Baseline Risk Assessment values. The ecological benchmarks for upcoming periodic reports (beginning with Steel Creek Periodic Report 6) will be based on Refinement Screening Values generated from chronic values for surface water, and LOAEL-based thresholds for sediment and sediment/soil media such as those used for the Lower Three Runs Integrator Operable Unit and the G-Area Oil Seepage Basin baseline risk assessments. The human health benchmarks will also be revised for the Steel Creek report for the potential resident for surface water (based on MCLs), subsistence fisherman (for fish), and the onsite worker (for sediment).

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Contact: Susan Blas, 803 952-6904, susan.blas@srs.gov

General Comments

1. There are several discrepancies between the figures showing all of the operable units (OU) for each area in the UTR IOU (all of the figures associated with Figures 1-3 and 1-4) and Table 1-1, which lists all of the OUs for each area. Specifically, the following OUs are listed in Table 1-1 but are not shown in figures corresponding with their respective areas:
 - a. A/M Area (Figures 1-3a and 1-4a): 24, 44, 133, 134, 195, 384, 400, 406, 409, 410, 419, 420, 436, 446, 449, 451, 480, 484 and 521
 - b. B Area (Figures 1-3b and 1-4b): 530
 - c. F and E Areas (Figures 1-3c and 1-4c): 35, 199, 200, 227, 263, 284, 308, 368, 372, 399, 414, 416, 422, 424, 435, 438, 445, 485 and 490
 - d. H, S and Z Areas (Figures 1-3d and 1-4d): 260, 264, 295, 364, 383, 403, 412, 423, 433 and 512
 - e. G Area (Figures 1-3f and 1-4f): 38, 40, 140, 174, 186, 213, 333, 463, 541 and 568

These figures should be revised to include all applicable OUs that are listed in Table 1-1, including insets showing expanded high population areas if necessary. The figures showing G Area OUs can be expanded and modified to show only the G Area OUs.

Additionally, the following OUs were depicted inside the UTR IOU footprint on the following figures but were not included in Table 1-1:

- a. Figure 1-3a: 12, 100, 189, 197, 397 and 486
- b. Figure 1-3c: 592
- c. Figure 1-3d: 285

Please correct these discrepancies.

Response: Agree with clarification. To address this comment, a new general figure (Figure 1-3) will be added that shows all units listed in Table 1-1 for all three phases (Assessment, Remediation, and Complete) to orient readers to the location of units in the UTR watershed/adjacent watersheds. Unit IDs will not be included on Figure 1-3 due to the scale of the figure and to provide a correlation to the conceptual site model that shows only units in the Assessment and Remediation phase. The Rev. 0 Figures 1-3a to 3f have been replaced with Figures 1-4a to 1-4d focusing only on the areas with Assessment and Remediation units to allow unit ID numbers to be visible and to provide a correlation to the conceptual site model that shows only units in the Assessment and Remediation phase. There are fewer figures since Complete units are not shown on the detailed figures. The areas shown in the revised detailed figures include A/M-Area (Figure 1-4a), F and E Areas (Figure 1-4b), H, S, and Z-Areas (Figure 1-4c), and R Area (Figure 1-4d) for topography incorporating scale appropriate G Area units. Similar figures (Figures 1-5a to 1-5d) will

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show the groundwater plumes and potentiometric contours. Figure 1-5a includes both A/M-Area and B-Area to follow the extent of the plumes. Some units do not have a georeferenced location and are not on the figures. Table 1-1 will include a note for those units. Unit 592 will be added to Table 1-1. Please see the attached revised figures and Table 1-1.

Figure call-outs will be corrected to reflect the revised figures. Also, the text in the fourth paragraph of Section 1.2 will be revised to state, “The potential for contaminant impacts to the IOU are assessed based on knowledge of the OUs or inferred from contaminant migration analysis. Figure 1-3 provides an overview of the OUs within the UTR watershed (and adjacent watersheds) and identifies whether the unit is in the Assessment Phase, Remediation Phase, or Complete. For Assessment and Remediation Phase units, the potential SW flow paths for land surfaces...”

Specific Comments

1. Figure 1-4a through Figure 1-4f, pages 1-23 through 1-33. Figures 1-4a through 1-4f should be labeled “Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU” for each unit area as stated on pages 1-23 through 1-33. Also, in the revision of PR5, please delete the additional copy of Figure 1-4c and insert Figure 1-4d.

Response: Agree. The new Figures 1-4a to 1-4d represent “Operable Units and Topography Associated with the UTR IOU”, and the new Figures 1-5a to 1-5d are “Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU” and labeled appropriately.

2. Figure 1-5, Upper Three Runs IOU Conceptual Site Model, page 1-35. There are a few discrepancies between the CSM and Table 1-1 regarding the potential for listed OUs to impact groundwater and/or surface water at the UTR IOU. The CSM lists the following OUs as impacting both surface water and groundwater, yet Table 1-1 lists only the potential for groundwater impact: 141, 142 and 591. Also, 429 is listed as potentially impacting only groundwater; yet, Table 1-1 lists the potential for impact to both groundwater and surface water. Please revise.

Response: Agree. To address this comment, the CSM, relabeled as Figure 1-6, will be revised as follows.

- a. Unit F-141 (F-Area Inactive Process Sewer Lines) will be moved to the preceding F Area box for potential impact to Groundwater only.
- b. Units H-142 (H Area Inactive Process Sewer Lines) and H-591 (H Area Process Sewer Lines as Abandoned) will be inserted into the bottom H Area box that already contains Unit 275 associated with the H Area Tank Farm Area Operable

Final SRS Responses to South Carolina
Department of Health and Environmental Control Comments on:
Periodic Report 5 for the Upper Three Runs Integrator Operable Unit (IOU) (U),
CERCLIS Number: 70 (SRNS-RP-2017-00548, Revision 0, February 2018)
Page 3 of 3

Comments Received (May 18, 2018)

Unit. Unit H-142 and H-591 will be denoted as associated with H Area Operable Unit (581) for potential impact to GW only.

c. Unit F-429 will be moved to the last F Area box for potential impact to both Groundwater and Surface Water.

3. Figure 1-5. Upper Three Runs IOU Conceptual Site Model, page 1-35. Please add unit ID #456, Steed Pond, G-Area, to the UTR IOU CSM.

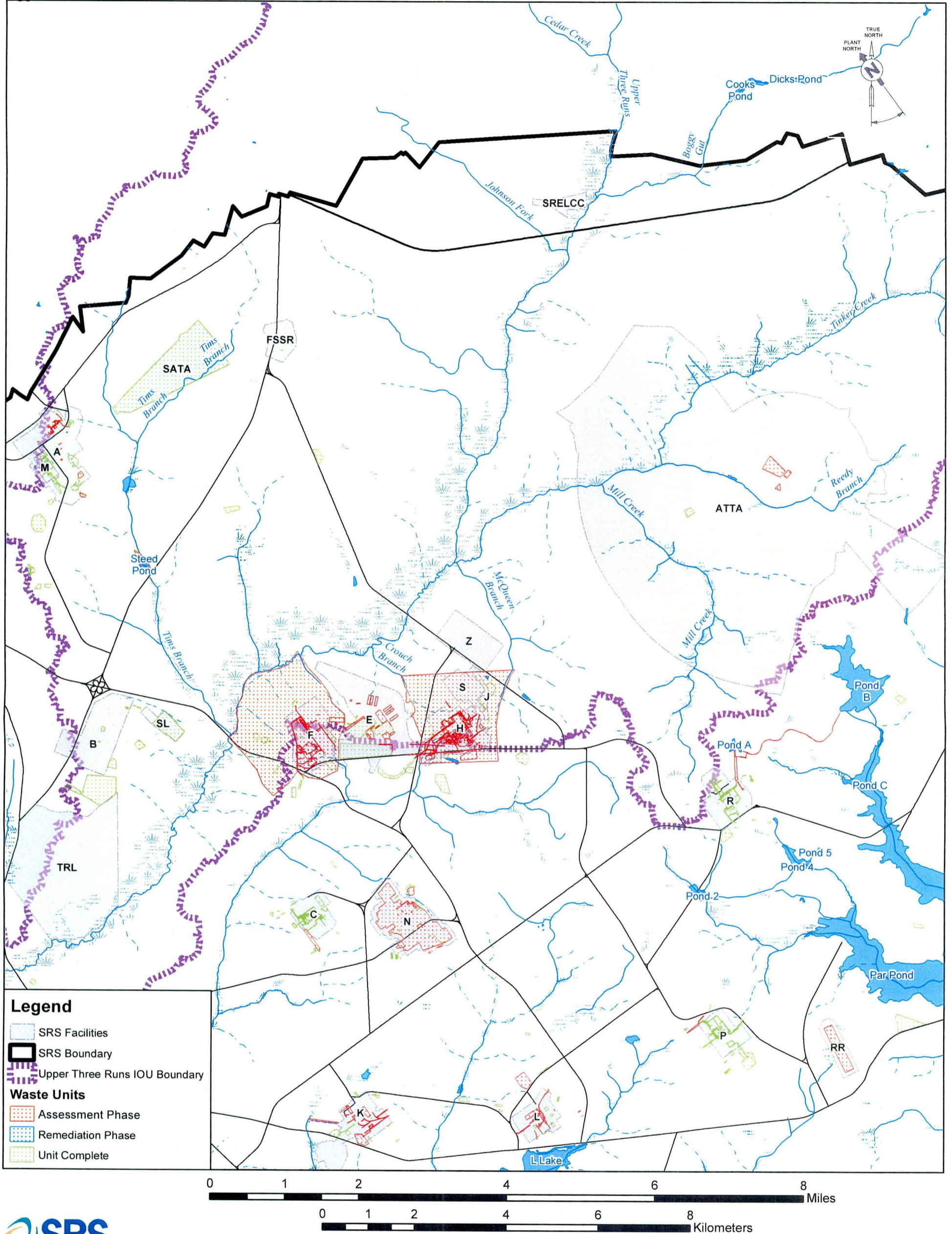
Response: Clarification. Unit 456 is appropriately included under Contaminant Migration Pathways as Tim's Branch, Steed Pond (456) in the revised Figure 1-6.

4. Section 2.1.3, Ecological Benchmark Screening and Results (Surface Water), page 2-15. The last sentence on this page states that the DDD exceedance in the Tinker Creek subunit is one detect out of 70 samples; Table 2-5 shows 9 analyses. Please correct or explain.

Response: Agree. The text will be revised to state "one detect out of 70 9 samples."

5. Table 1-1 Operable Units Associated with the Upper Three Runs IOU, page 1-53 of 1-58. Area H, Unit ID #275, please correct the FFA start date to 2039 under the Unit Status column.

Response: Agree. The date will be corrected as noted to 2039.



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

To place on the North American Datum 1983, move the projectionline 13 meters south and 15 meters west.

Disclaimer

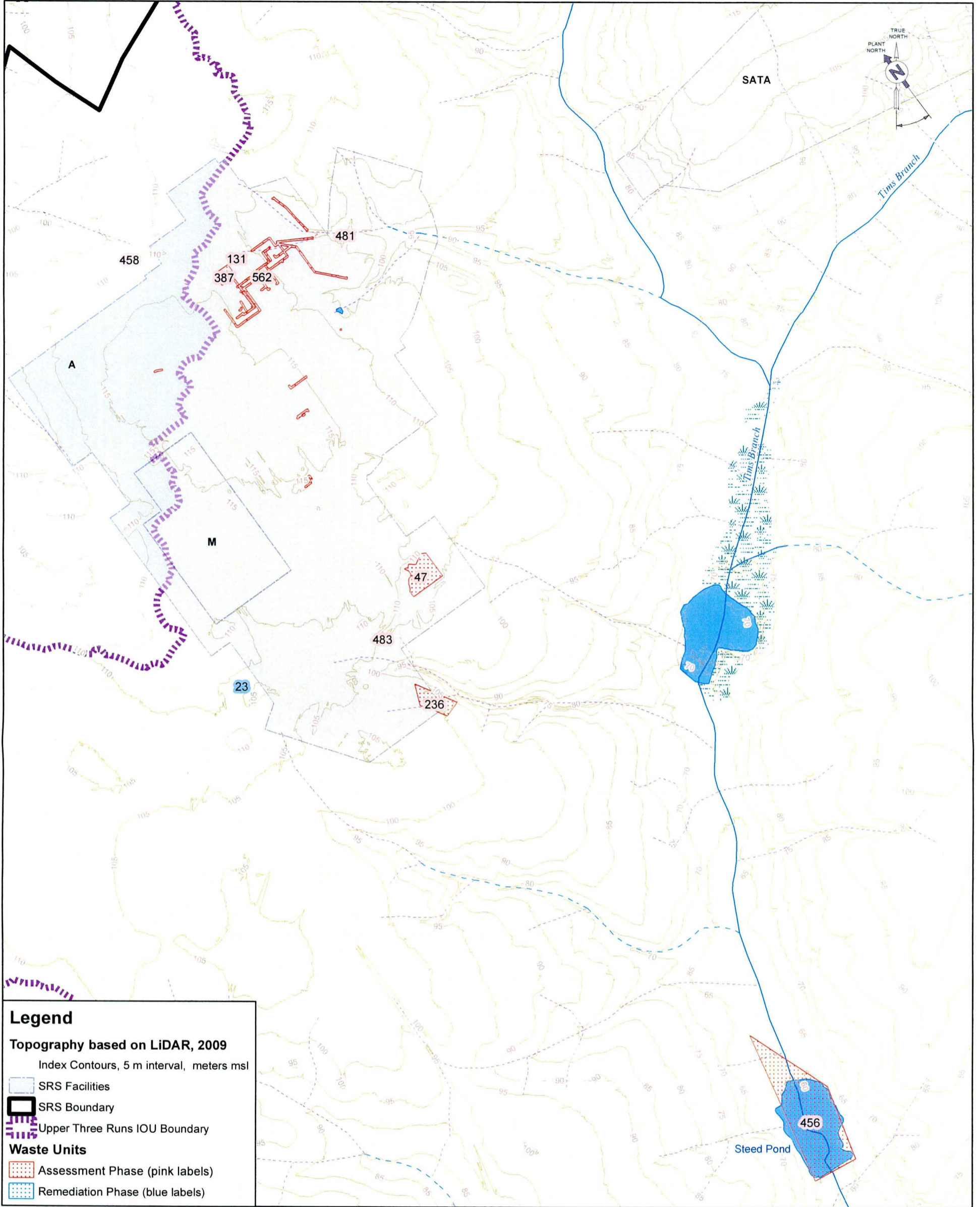
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Figure 1-3: Operable Units Associated with the UTR IOU

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Aiken, South Carolina



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		TITLE Operable Units Associated with the UTR IOU	
		CREATED BY Natalie Lopez	DATE 06/25/18



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

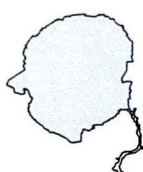
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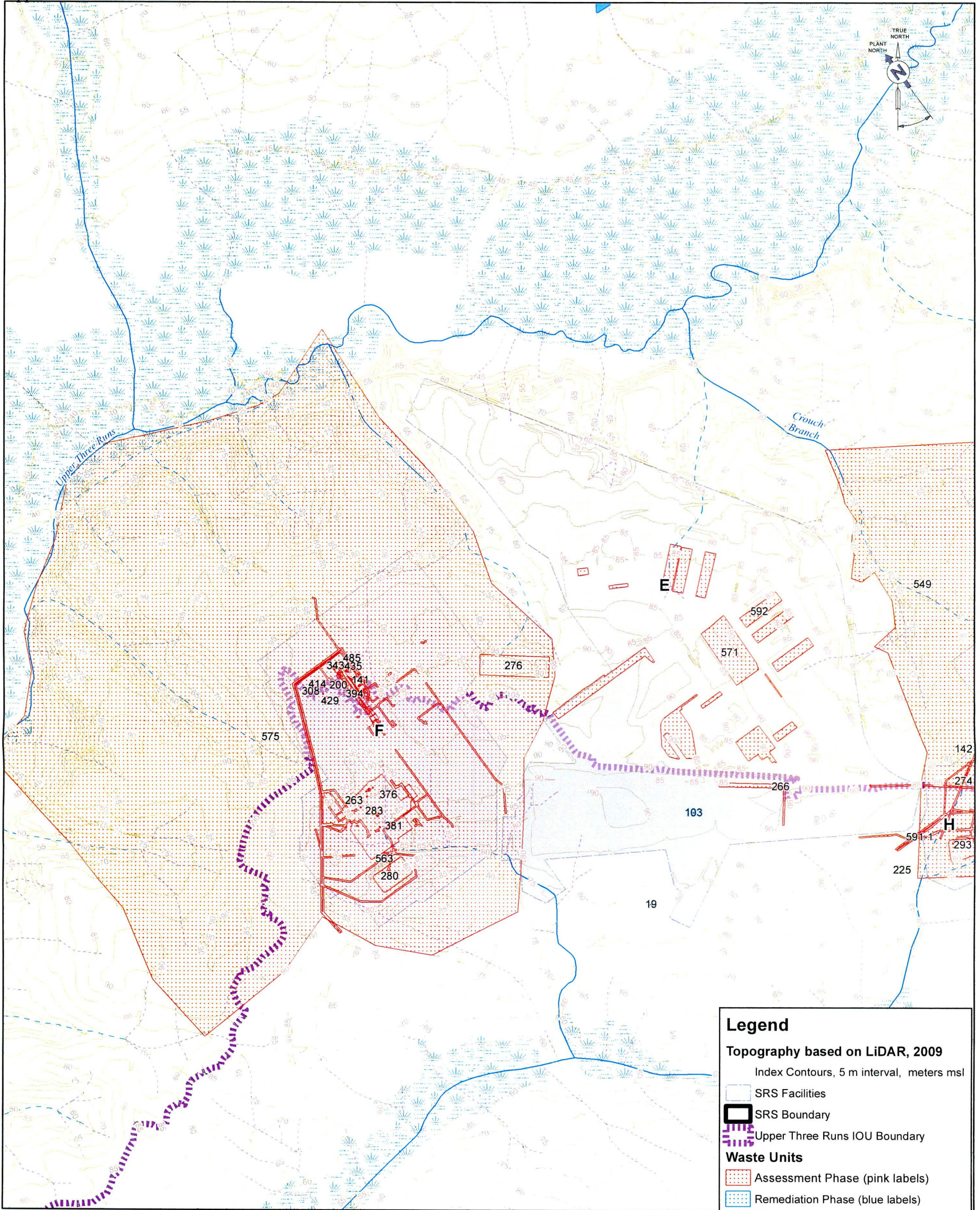
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Figure 1-4a: Operable Units and Topography Associated with the UTR IOU - A/M Area and G Area Unit Steed Pond

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		TITLE Operable Units and Topography Associated with the UTR IOU - A/M Areas	
		CREATED BY Natalie Lopez	DATE 06/19/18



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
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Figure 1-4b: Operable Units and Topography Associated with the UTR IOU - F Area, E Area, and G Area Unit GSA Western Groundwater OU

Savannah River Site
Aiken, South Carolina



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UTRIOUFIG1 5bGIS2018	1	05/22/18	SRS
TITLE Operable Units and Topography Associated with the UTR IOU - F and E Areas			
CREATED BY	DATE	APPROVED BY	DATE
Natalie Lopez	05/22/18	Susan Blas	05/22/18

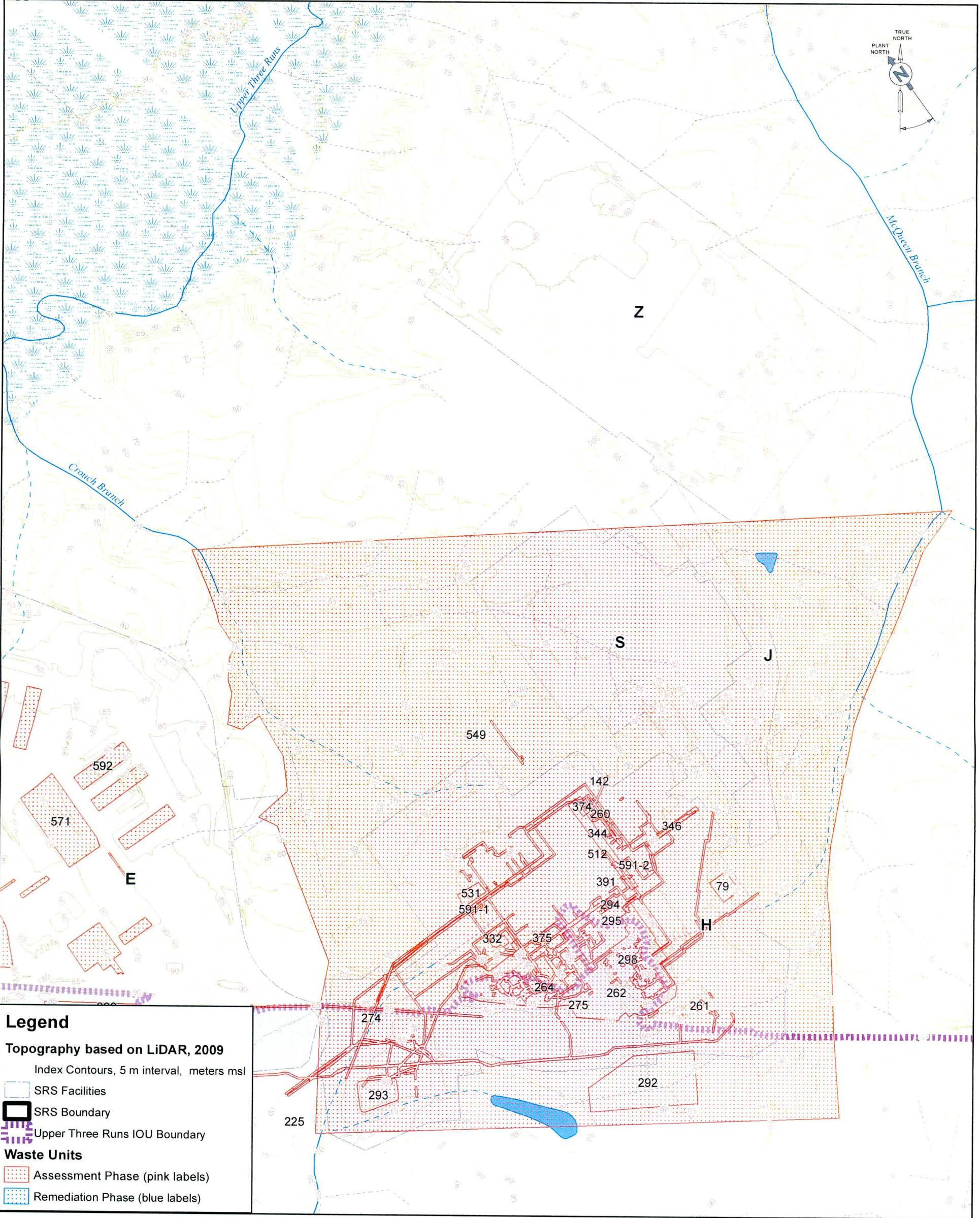


Figure 1-4c: Operable Units and Topography Associated with the UTR IOU - H, S and Z Areas



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

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Operable Units and Topography Associated with the UTR IOU - H, S and Z Areas			
CREATED BY	DATE	APPROVED BY	DATE
Natalie Lopez	05/22/18	Susan Blas	05/22/18

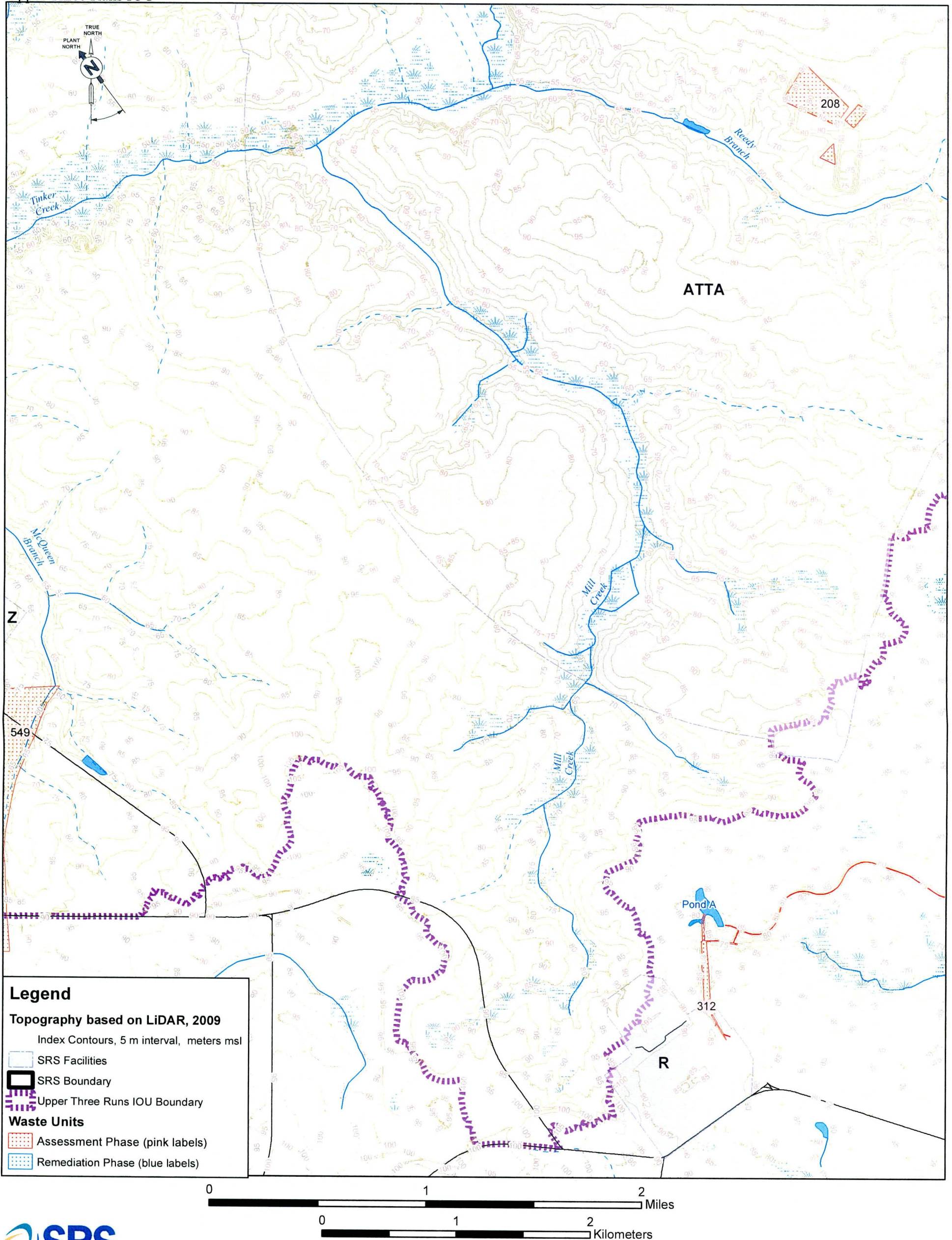


Figure 1-4d: Operable Units and Topography Associated with the UTR IOU - R Area and G Area Unit ATTA



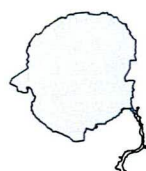
Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

To place on the North American Datum 1983, move the projection line 13 meters south and 15 meters west.

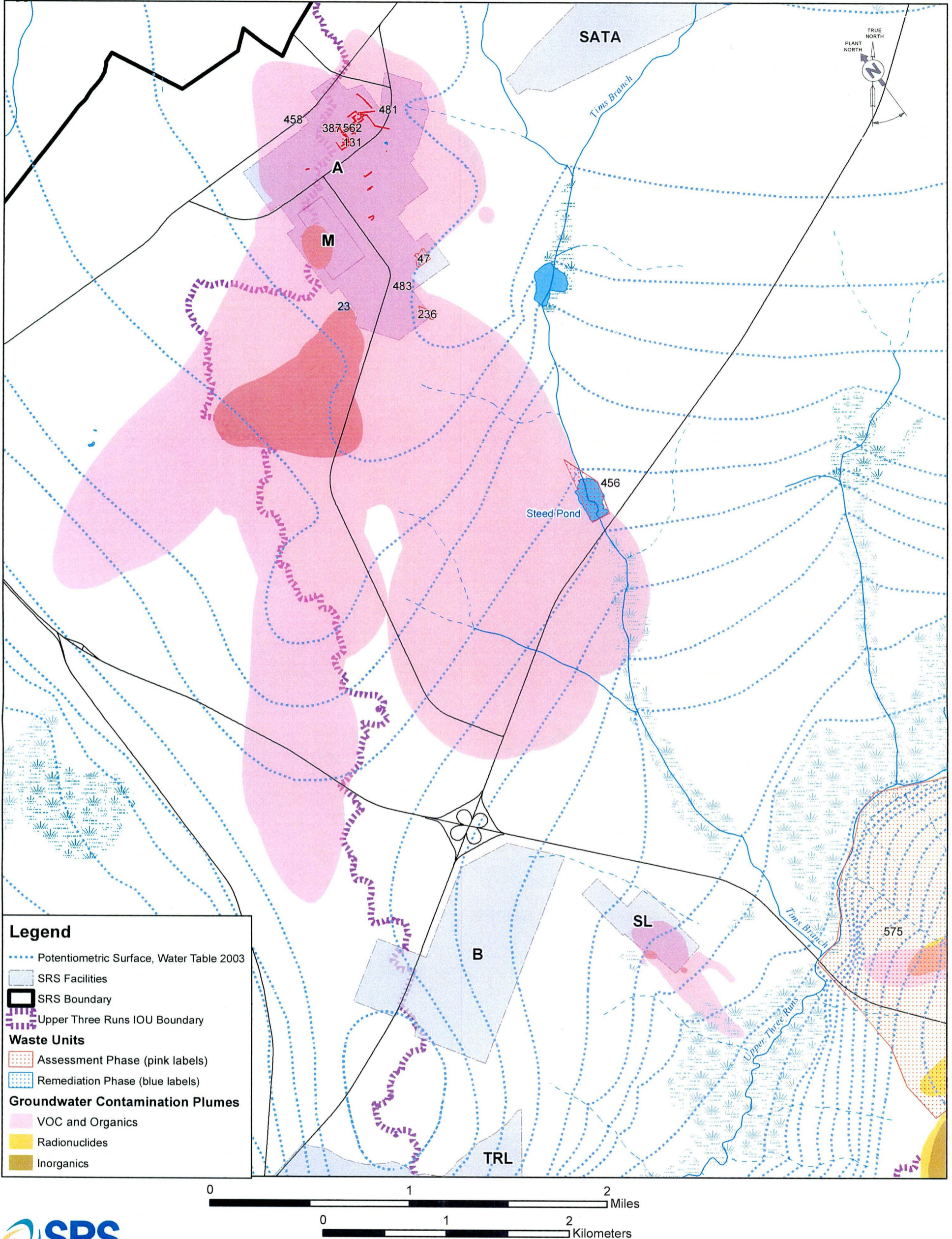
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		TITLE Operable Units and Topography Associated with the UTR IOU - R and G Areas	
		CREATED BY Natalie Lopez	DATE 05/22/18



Legend

- Potentiometric Surface, Water Table 2003
- SRS Facilities
- SRS Boundary
- Upper Three Runs IOU Boundary

Waste Units

- Assessment Phase (pink labels)
- Remediation Phase (blue labels)

Groundwater Contamination Plumes

- VOC and Organics
- Radionuclides
- Inorganics



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

To place on the North American Datum 1983, move the projectionline 13 meters south and 15 meters west.

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Figure 1-5a: Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU - A/M Area, B Area, and G Area Unit Steed Pond

Savannah River Site
Aiken, South Carolina



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		TITLE Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU - A/M and B Areas	
		CREATED BY Natalie Lopez	DATE 06/19/18

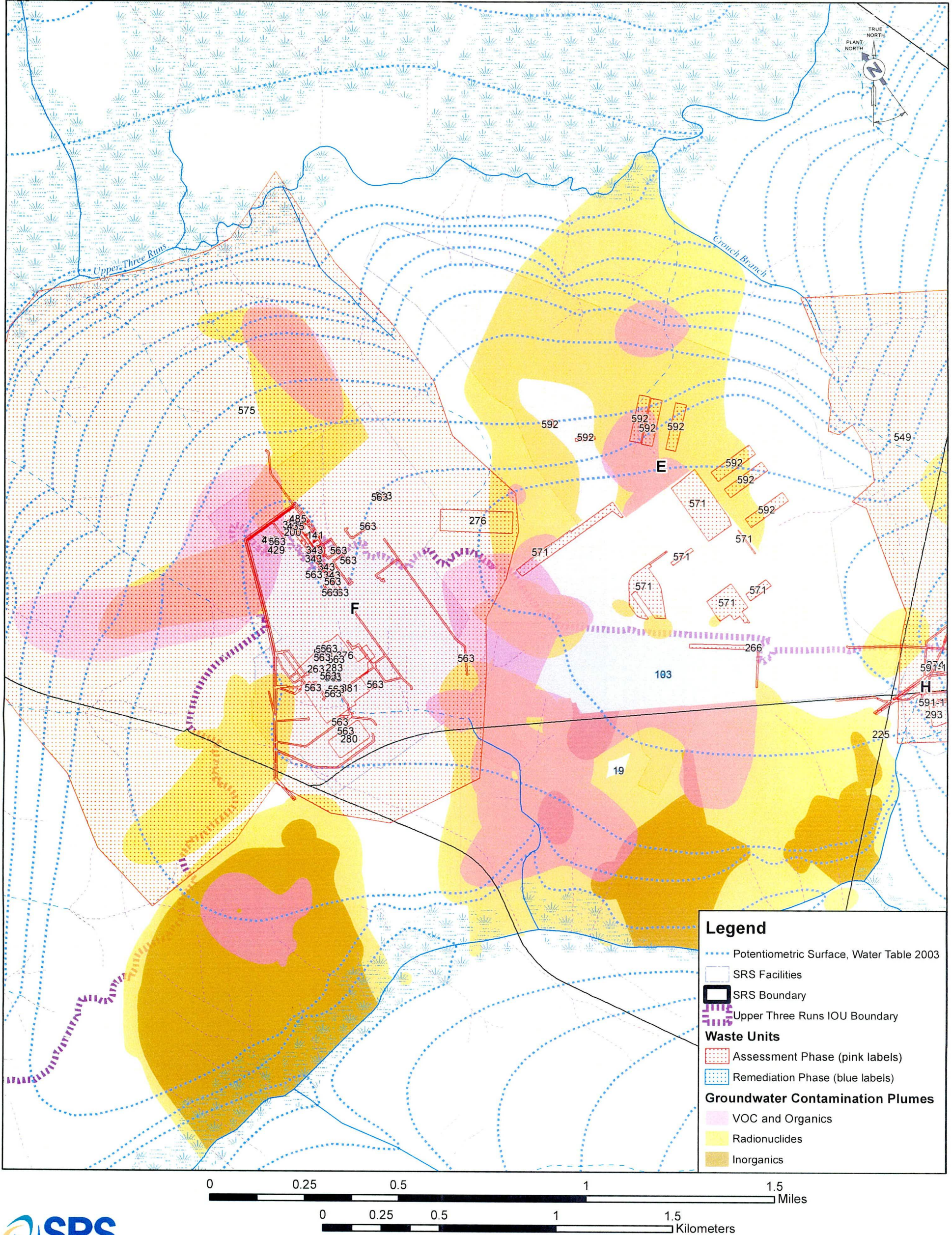


Figure 1-5b: Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU - F Area, E Area, and G Area Unit GSA Western Groundwater OU



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

To place on the North American Datum 1983, move the projection line 13 meters south and 15 meters west.

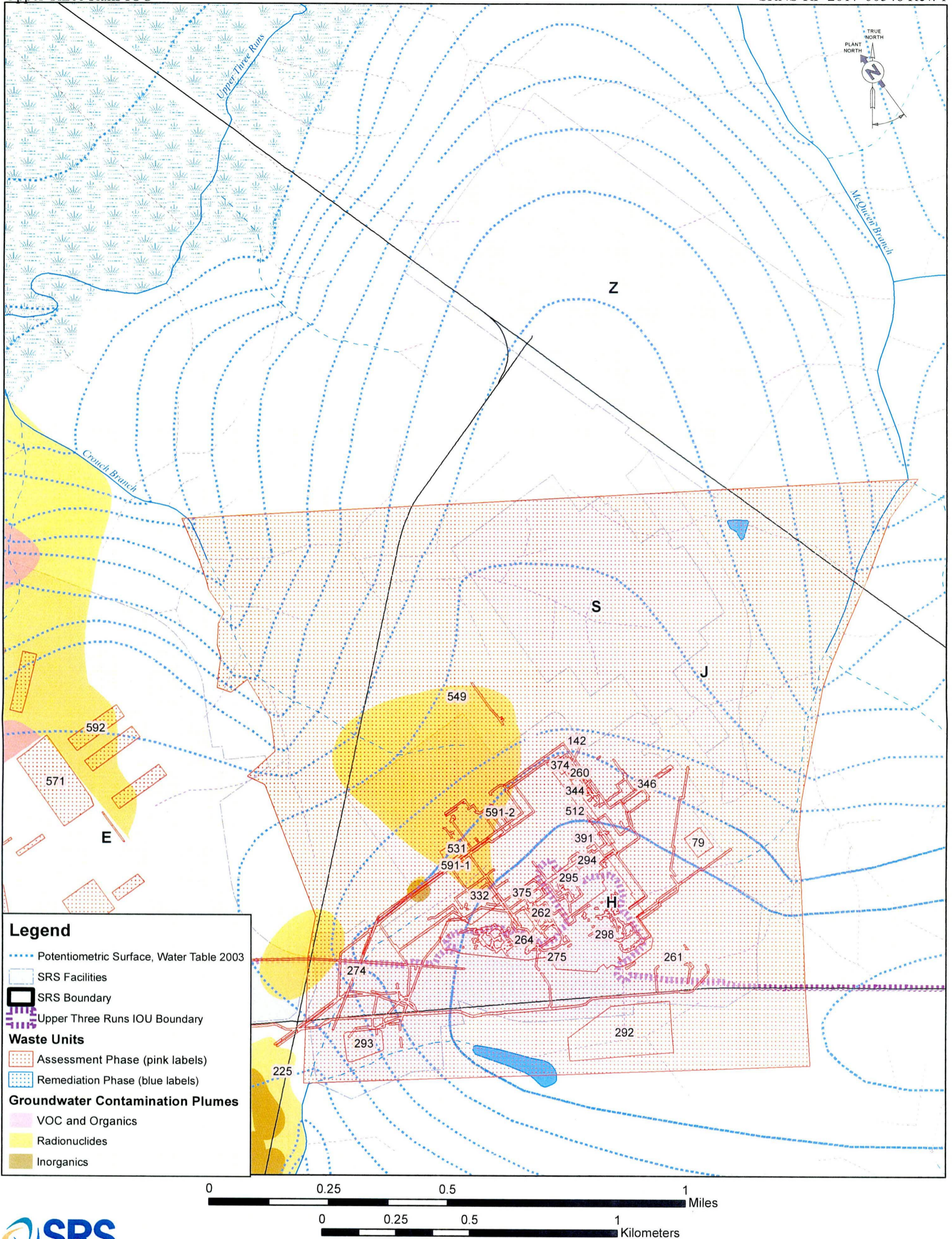
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UTRIOUFIG1_6bGIS2018	1	06/19/18	SRS
Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU - F and E Areas			
CREATED BY	DATE	APPROVED BY	DATE
Natalie Lopez	06/19/18	Susan Blas	06/19/18



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

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Figure 1-5c: Operable Units, Potentiometric Contours, and Groundwater Plumes Associated with the UTR IOU - H, S and Z Areas

Savannah River Site
Aiken, South Carolina



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		TITLE Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU - H, S and Z Areas	
		CREATED BY Natalie Lopez	DATE 05/22/18

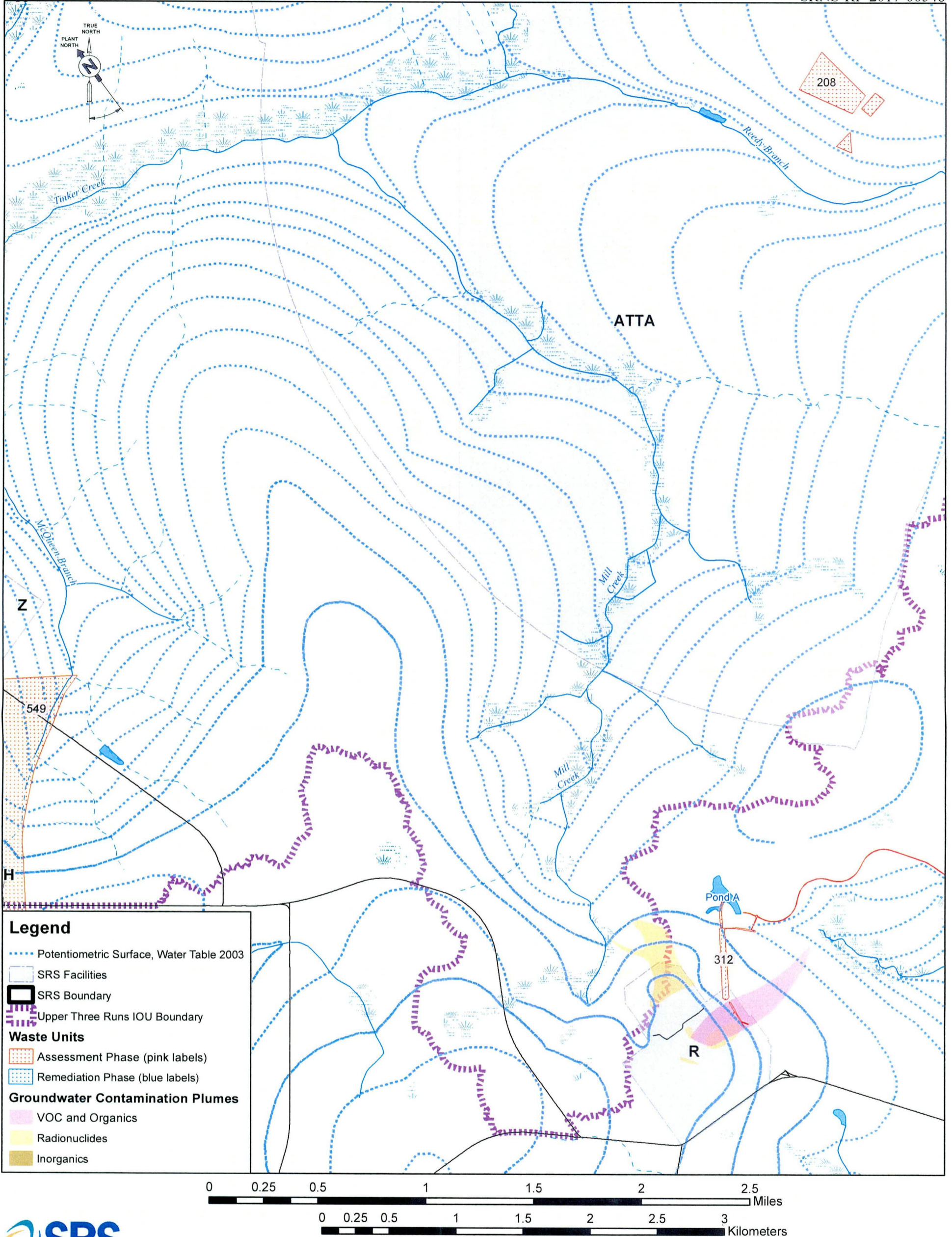


Figure 1-5d: Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU - R Area and G Area Unit ATTA



Projection: Universal Transverse Mercator
Datum: North American Datum 1927
Zone: 17

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		TITLE Operable Units, Potentiometric Contours and Groundwater Plumes Associated with the UTR IOU - R and G Areas	
		CREATED BY Natalie Lopez	DATE 06/19/18

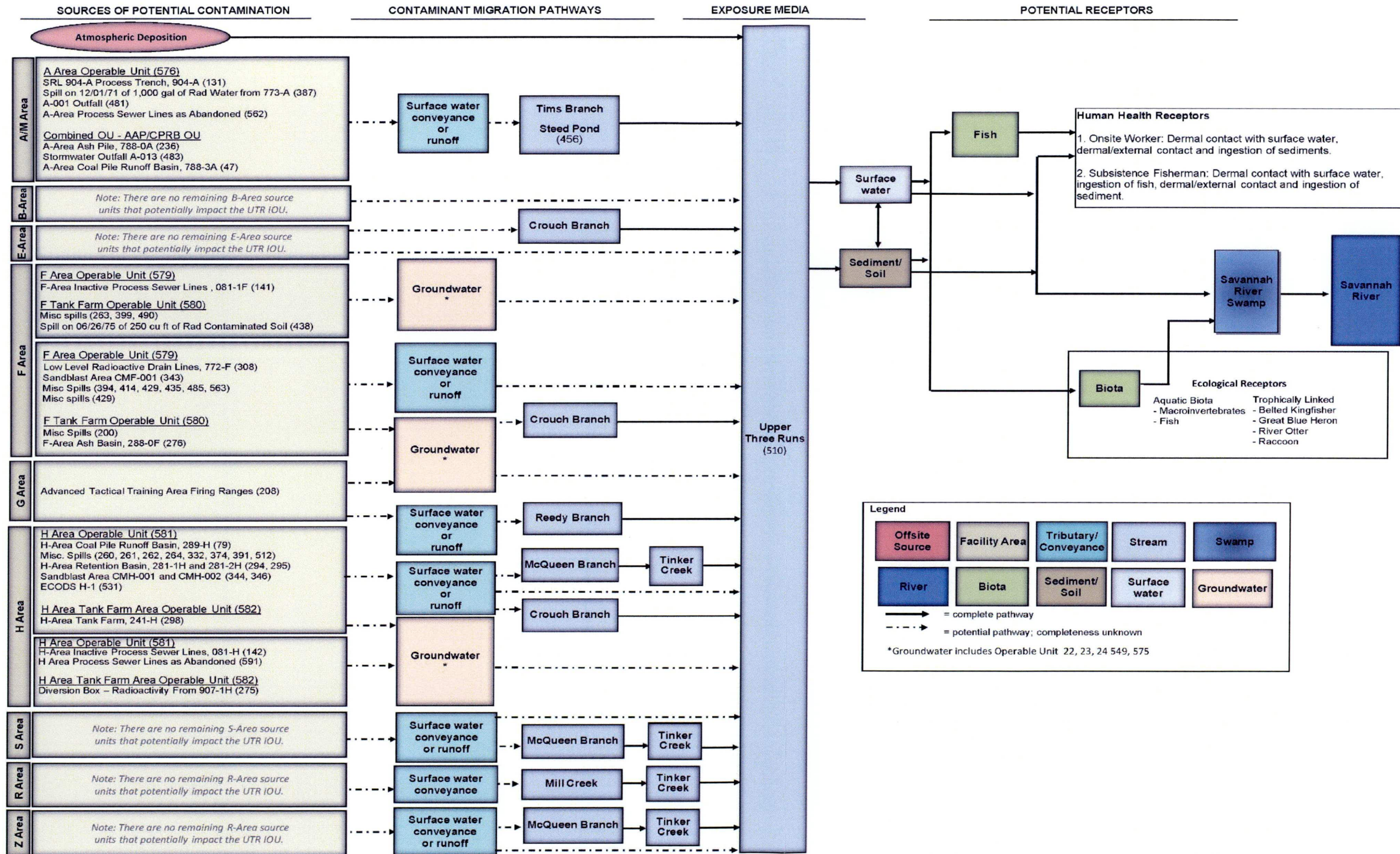


Figure 1-56. Upper Three Runs IOU Conceptual Site Model