Department of Energy
Savannah River Operations Office
P.O. Box A
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JUN 2 4 2024

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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
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: R-Area Groundwater (NBN) Biennial Effectiveness Monitoring Report in Support of R-Area Operable Unit (U) January 2021 through December 2022 (SRNS-RP-2023-00758, Revision 1, June 2024) and Savannah River Site's Responses to the Regulatory Comments on the Revision 0 Document, SEMS Number: 95

In accordance with the terms of the Federal Facility Agreement (FFA), the U. S. Department of Energy (DOE) is submitting the subject information for your review. The *R-Area Groundwater (NBN) Biennial Effectiveness Monitoring Report in Support of R-Area Operable Unit (U) January 2021 through December 2022* (SRNS-RP-2023-00758, Revision 0, August 2023) was submitted to the South Carolina Department of Health and Environmental Control (SCDHEC) and U.S. Environmental Protection Agency (EPA) for review on August 30, 2023. The SCDHEC's and EPA's comments were received on December 19, 2023, and January 2, 2024, respectively. The final responses were incorporated into the enclosed Revision 1 document. Please review the enclosures and provide your response within thirty (30) days of receipt. The effort and time that the EPA and the SCDHEC have given on the subject operable unit are greatly appreciated.

Comments or questions from your staff may be directed to me at (803) 952-7805, or the DOE Operable Unit Program Manager, Mr. Philip Prater, at (803) 952-9333.

Sincerely,

AVERY HAMMETT Digitally signed by AVERY HAMMETT
Date: 2024.06.18 13:40:32 -04'00'

Avery G. Hammett
FFA Project Manager, DOE-Savannah River
Remediation and Deactivation & Decommissioning Division

RDDD-24-139

JUN 2 4 2024

Ms. Susan Fulmer
Mr. Jon Richards 2

Enclosures:

1. R-Area Groundwater (NBN) Biennial Effectiveness Monitoring Report in Support of R-Area Operable Unit (U) January 2021 through December 2022 (SRNS-RP-2023-00758, Revision 1, June 2024) SEMS Number 95
2. SRS Response to the U.S. Environmental Protection Agency's Comments on the R-Area Groundwater (NBN) Biennial Effectiveness Monitoring Report in Support of R-Area Operable Unit (U) January 2021 through December 2022, SEMS Number: 95, SRNS-RP-2023-00758, Revision 0, August 2023
3. SRS Responses to the South Carolina Department of Health and Environmental Control's Comments on the R-Area Groundwater (NBN) Biennial Effectiveness Monitoring Report in Support of R-Area Operable Unit (U) January 2021 through December 2022, SEMS Number: 95, SRNS-RP-2023-00758, Revision 0, August 2023

cc:
J. Blalock, SCDHEC-Columbia
S. French, SCDHEC-Columbia
M. Reece, SCDHEC-Columbia
G. K. Taylor, SCDHEC-Columbia
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T. R. Fuss, SCDHEC-Aiken Environmental Affairs Office
G. O'Quinn, SCDHEC-Aiken Environmental Affairs Office
B. A. Cameron, SCDHEC-Aiken Environmental Affairs Office
H. L. Herlong, SCDHEC-Aiken Environmental Affairs Office

cc w/ encl:
M. McRae, TechLaw, Inc

GENERAL COMMENT

1. It is unclear whether data gaps exist in the lateral extent of tritium contamination. The Eastern and Western Tritium Plumes are shown on Figure 3, RAGW Monitoring Stations and 2022 Groundwater Plumes, as two distinct and separate plumes; however, there are no monitoring wells located between the two plumes to provide lateral delineation. Also, according to the A – A' cross-section stratigraphic profile in Figure 9, R-Area Cross-Section with RAGW Eastern Tritium Plume 2022, no wells are shown west of RPS004C to delineate the plume. Furthermore, a figure with a cross-section showing both the Eastern and Western Tritium Plumes is not presented to show whether the plumes are distinct and separate. *Please revise the EMR to discuss the apparent data gap in the lateral delineation of tritium plumes and include a cross-section that shows both the Eastern and Western Tritium Plumes.*

Response: Agree with Clarification.

The original three tritium plumes (Eastern, Western and Northern) were based on more extensive sampling locations (Figure 12, RAOU EMP, SRNS-RP-2010-01259, April 2011). The low tritium concentrations (0.44 pCi/mL and 1.5 pCi/mL, respectively) in 2010 at wells RDB 2D and RDB 3D separated the Eastern and Western tritium plumes. Also the divergent groundwater flow directions around R-Reactor (Figure E-1, RAGW EMR, SRNS-RP-2023-00758, April 2023) support separate plumes. Further, the large increase in groundwater tritium concentrations at well RDB 3D in (2017) was also accompanied by elevated C-14, which was not present in either the Eastern or Western tritium plumes. By 2022, the Northern tritium plume was effectively gone.

Regardless, in future RAGW EMRs, the Cross Section A – A' will include data from wells RDB 2D, RDB 3D, RDB003DU and RDB005C, depicting the Eastern and Western tritium plumes essentially connected by the new in-situ decommissioning (ISD) tritium plume centered on RDB 3D as indicated in the revised Figure 8 Cross Section A – A' figure (attached). This is a more appropriate depiction for Cross Section A – A', and also a more conservative depiction as there are no sample points between RDB 3D and RPS004C, as noted by the reviewer. The revised Figures 3, 4, and 5 (attached) have also been updated to show this near connection of the Eastern, Western, and ISD tritium plumes.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

SPECIFIC COMMENTS

1. **Section 3.1, RAGW Monitoring, Page 2 of 40:** The text states that the groundwater monitoring network consist of 28 wells, 4 seepline locations, and 7 surface water locations; however, there appears to be more than 28 wells and only six surface water locations shown on Figure 3, RAGW Monitoring Stations and 2022 Groundwater Plumes. *Please revise the EMR to address this discrepancy.*

Response: Agree with Clarification.

The number of RAGW monitoring wells has increased to 30 wells because 2 wells were installed to provide better monitoring coverage of the Eastern VOC Plume. Figure 3 and Table 1 include both RAGW monitoring wells and ISD wells. Please note, 2 wells are in both the ISD monitoring network and the RAGW monitoring network, as indicated in Table 1. Surface water location MCSW-03 was not shown on Figure 3, because it was dry; however, this location will be included in future reports even if it is dry. The text in section 3.1 will be revised to clarify the number of monitoring locations as follows:

> **"**The RAGW monitoring networks currently includes 30 groundwater wells, 4 seepline locations, and 7 surface water locations (Figure 3) (Table 1). The ISD monitoring network includes 11 wells. Two wells are in both the RAGW monitoring network and the ISD monitoring network. ~~The groundwater monitoring network currently includes 28 wells, 4 seepline locations, and 7 surface water locations (Figure 3) (Table 1).~~**"**

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

2. **Section 3.2, ISD Monitoring, Page 5 of 40 and Figure 5, Five ISD Monitoring Wells Sampled Annually (2018 through 2022), PDF Page 29:** There is a discrepancy between the wells listed in the first paragraph, page 5 versus Figure 5, Five ISD Monitoring Wells Sampled Annually (2018 through 2022). Specifically, well RDB003DU is included in the list of wells that were sampled for carbon-14 and tritium for five years on page 5, but is not shown in the corresponding Figure 5. A well identified as RDB 3DU is shown in Figure 5, but is not included in the list of wells that were sampled for carbon-14 and tritium for five years on page 5. As such, it is unclear if well RDB003DU and well RDB 3DU are the same well. *Please revise the EMR to ensure all well designations are consistently presented between text, figures and tables.*

Response: Agree.

Well RDB003DU and well RDB 3DU are the same well. The EMR will be revised to only use the correct well name of RDB003DU in the text, figures, and tables.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

3. **Section 4.1.1, Eastern VOC Plume, Page 8 of 40:** Well RWT003C is stated to have been sampled during 2021 and 2022 but is not shown on Figure 3, RAGW Monitoring Stations. *Please revise Figure 3, RAGW Monitoring Stations, to include well RWT003C.*

   Response: Clarification.

   In Figure 3, well RWT003C is located to the northeast of the R-Reactor Building Complex (105-C), just north of well RAG003DU.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

4. **Section 5.1.5, ISD, Page 16 of 40:** It is unclear if the annual monitoring event is scheduled during the rainy season/high water table conditions to ensure groundwater samples are collected to monitor potential source mobilization near the disassembly basin. The text states that the 2017 and 2020 increase in tritium and carbon-14 at well RDB 3D may be due to mobilization of a small shallow legacy spill near the disassembly basin, related to the recent high-water table levels. The EMR also notes that greater than average rainfall was measured at the Savannah River Site during 2020. *Please revise the EMR to state whether the in situ decommissioning (ISD) monitoring is being conducted during the rainy season.*

   Response: Clarification.

   The annual monitoring event is not scheduled during a "rainy season/high water table conditions". Statistically, October thru December are the dryer months while June thru August are the wetter months (SRNL, SRNL-RP-2021-00536, Table 3): **however, any month can be the wettest in a given year. Figure 12 indicates the water table was at near historic highs for the May 2017, October 2018, October 2020, and October 2022 sample events, while the September 2017, October 2019, and October 2021 sample events occurred at somewhat lower water table levels. Figure 12 also demonstrates the water levels over the last 5 years are significantly higher than all measurements since 2003. No revisions to the EMR are proposed.**

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

5. **Figure 3, RAGW Monitoring Stations and 2022 Groundwater Plumes, Page 21 of 40:** It is unclear if the Western Tritium Plume includes the ISD tritium plume that surrounds wells

RDB 3D/RDB 3DU. The legend for Figure 3 defines two tritium plumes, one surrounding wells RDB 3D/RDB 3DU and one surrounding well RDB005C, collectively referenced as the Western Tritium Plume in the legend; however, according to Figure 4, ISD Monitoring Wells (2022) and Figure 5, Five ISD Monitoring Wells Samples Annually (2018 through 2022), the Western Tritium Plume surrounds well RDB005C and the ISD Carbon-14 and Tritium Plume surrounds wells RDB 3D/RDB 3DU. *Please revise Figure 3 or Figures 4 and 5 to consistently show the extent of the Western Tritium Plume*.

Response: Agree.

Figures 4 and 5 correctly depict well RDB005C in the Western Plume and wells RDB 3D/RDB003DU in the ISD Carbon-14 and Tritium Plume. Figure 3 incorrectly showed these wells as part of the Western Plume. Figure 3 was corrected (see attached) to show well RDB005C in the Western Plume and wells RDB 3D/RDB003DU in the ISD Carbon-14 and Tritium Plume consistent with Figures 4 and 5.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

6. **Figure 4, ISD Monitoring Wells (2022), Page 22 of 40:** It is unclear why the Eastern Tritium Plume is not shown on the figure at RAG003DL/RAG003DU and RPS004C/RPS004DUR. *Please revise Figure 4 to include the Eastern Tritium plume.*

Response: Agree.

Figure 4 has been revised to include the Eastern Tritium Plume (see attached).

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

MINOR COMMENTS

1. **LIST OF TABLES, Page iv of vi:** The title for Table 2, RCOC Maximum Results for 2022 by Plume does not match the Table 2 title on page 39. The title in the list of tables should read "RCOC Maximum Results for 2021-2022 by Plume." *Please revise the title in the list of tables for Table 2.*

Response: Agree.

The name for Table 2 in the List of Tables will be corrected to match the Table 2 title on page 39.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

2. **LIST OF APPENDICES, Page iv of vi:** The title for Appendix A currently has incorrect years. The title should read "RAGW Data 2021-2022." *Please revise the title of Appendix A in the list of appendices.*

   Response: Agree.

   The title for Appendix A in the List of Appendices will be revised to "RAGW Data 2021-2022".

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

3. **LIST OF ABBREVIATIONS AND ACRONYMS, Page v of vi:** There are many abbreviations and acronyms used in the text that are not listed. *Please revise the list of abbreviations and acronyms to include Five-Year Remedy Review (5YRR), Gordon Aquifer (GA), Gordon Confining Unit (GCU), Refined Contaminants of Concern (RCOC), South Carolina Department of Health and Environmental Control (SCDHEC), Tan Clay Lower Clay (TCLC), Tan Clay Upper Clay (TCUC), United States Environmental Protection Agency (USEPA), and United States Department of Energy (USDOE). Also, the abbreviation "amsl" and its corresponding definition of "above mean sea level" should be moved to the correct alphabetical order on the list.*

   Response: Agree.

   The List of Abbreviations and Acronyms will be revised to list all acronyms used in the text in alphabetical order.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

4. **Section 4.1.4, Former Northern Tritium Plume, Page 12 of 40:** The text provides reference to contamination trends at well RSE 10DU as "Appendix C, Figure C-61"; however, contamination trends for this well are shown in Figure C-60, Time Series Plot for Tritium Station for RSE 10. *Please revise the text to provide the correct figure reference*.

   Response: Agree.

   The text will be revised to correctly reference Appendix C, Figure C-60 for RSE 10DU.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

5. **Section 5.1.5, ISD, Page 16 and Section 5.1.5, ISD, Page 16 of 40:** There is conflicting information reported for the carbon-14 trend in well RDB 3D. The text states that carbon-14 concentrations have decreased in well RDB 3D since 2017. However, Figure C-4, Time Series Plot for Carbon-14 Station for RDB003, indicate that these contaminants have been decreasing since 2020, not 2017. *Please revise the text to state that carbon-14 concentrations have decreased since 2020.*

Response: Agree.

The text in Section 5.1.5 will be revised as follows:

> "Tritium concentrations exceeded the MCL and detectable levels of carbon-14 were present at ISD monitoring well RDB 3D in 2021 and 2022, but tritium and carbon-14 concentrations have decreased since ~~2017~~ 2020 (Appendix C; Figure C-53 and Figure C-4, respectively)."

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

6. **Section 5.2, RAGW Recommendations, Page 17 of 40:** The abbreviation "RRSB" is used for the first time in the second paragraph but is not defined. *Please define the first use of "RRSB".*

Response: Clarification

In response to SCDHEC General Comment #2, the text in Section 5.2 will be revised and references to the R-Reactor Seepage Basin (RRSB) removed. Therefore, the acronym RRSB will no longer need to be defined or included in the acronym list.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

7. **Figure 3, RAGW Monitoring Stations and 2022 Groundwater Plumes, Page 21 of 40:** There is a duplicate well identifier for well RDB 2D. *Please remove the duplicate well identifier.*

Response: Agree.

The duplicate well name has been removed in the revised Figure 3 (attached).

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

8. **Figure D-4, Western Tritium Plume 2018, Page D-9 and Figure E-3, R-Area LAZ Well Water Elevations 2020, Page E-7 of E-8:** The figure titles list the incorrect year. *Please revise the figure title to reflect the correct year.*

Response: Agree.

The titles for Figures D-4 and E-3 will be revised to show the correct year (2022).

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

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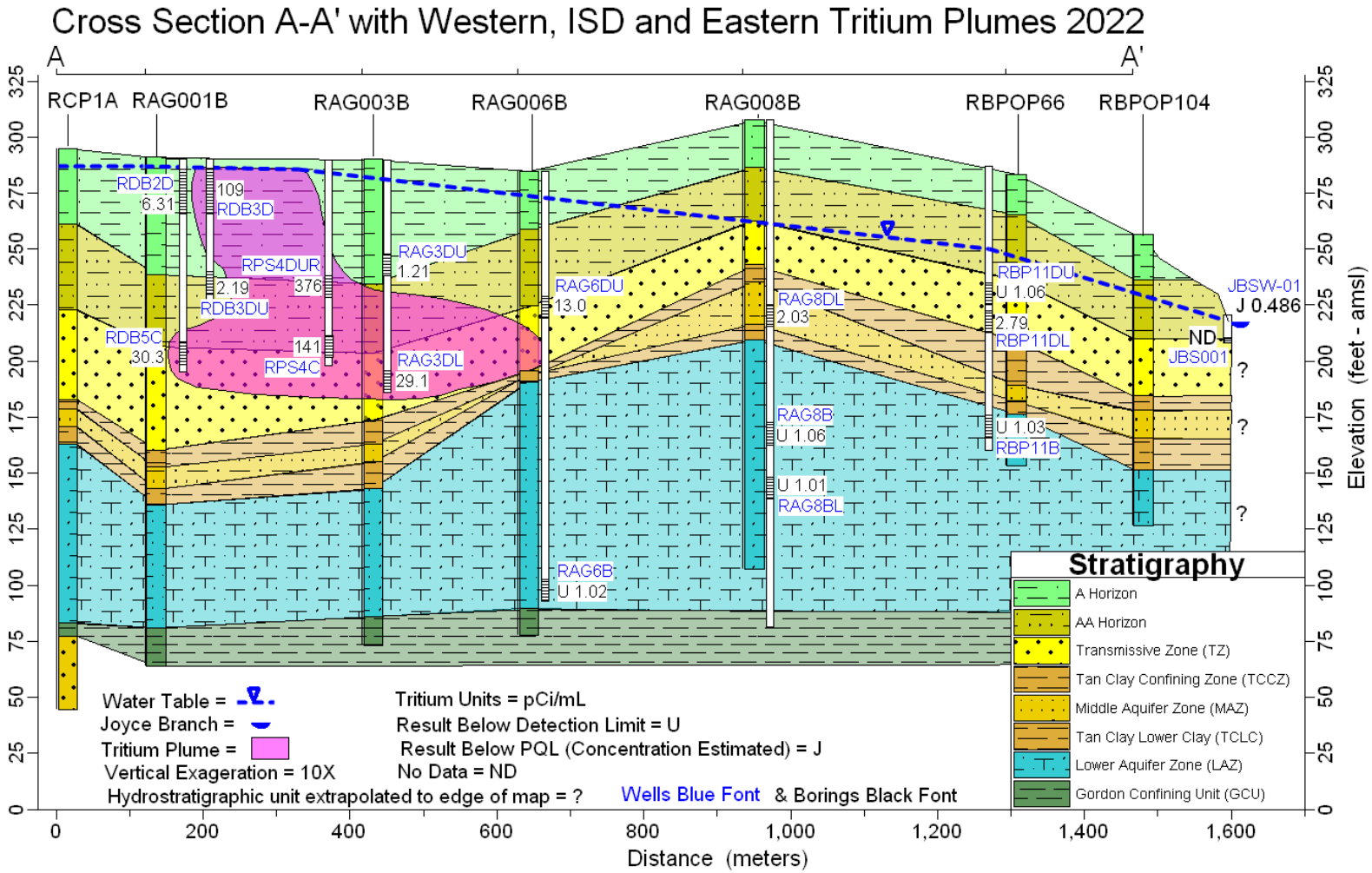
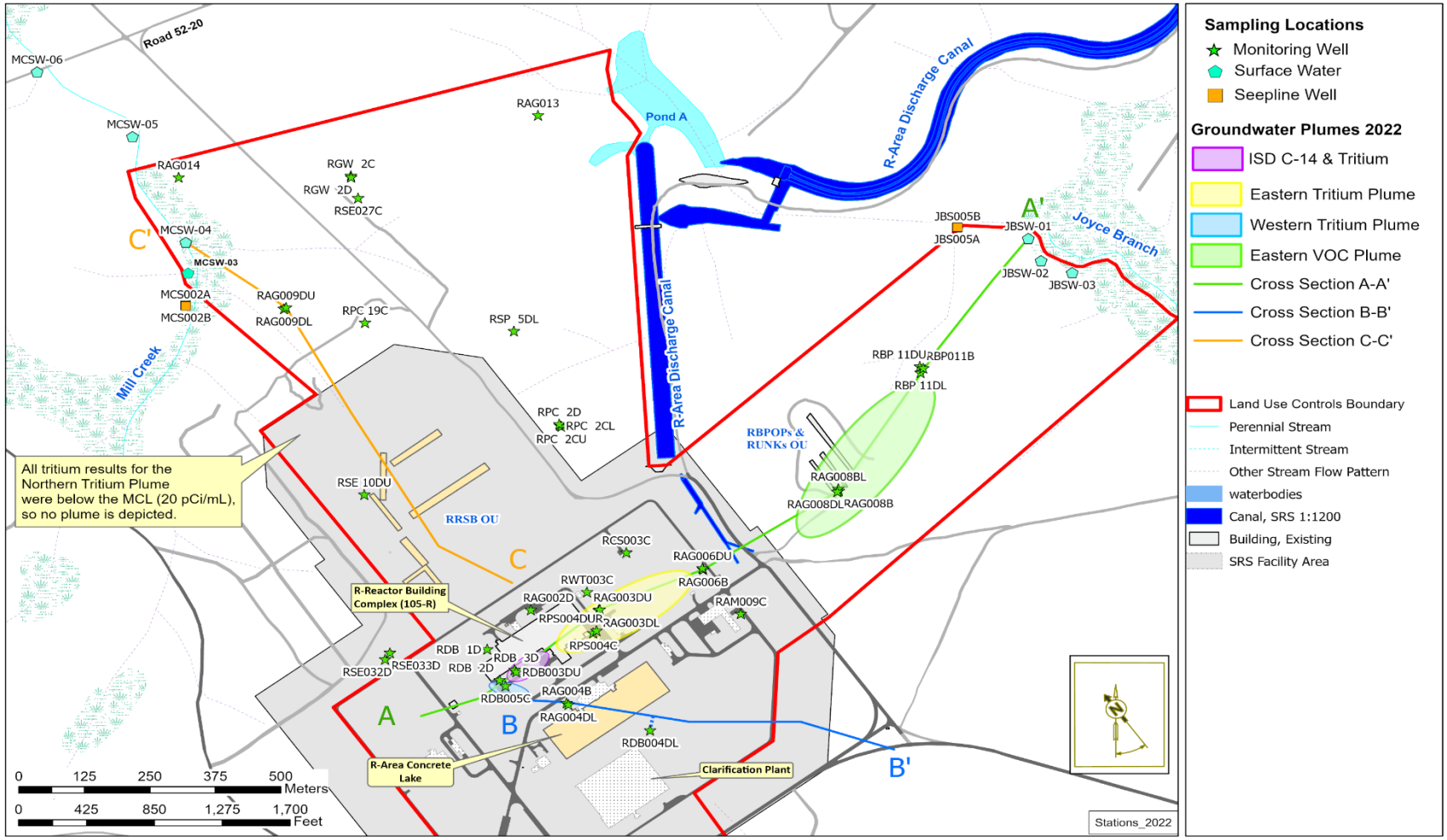
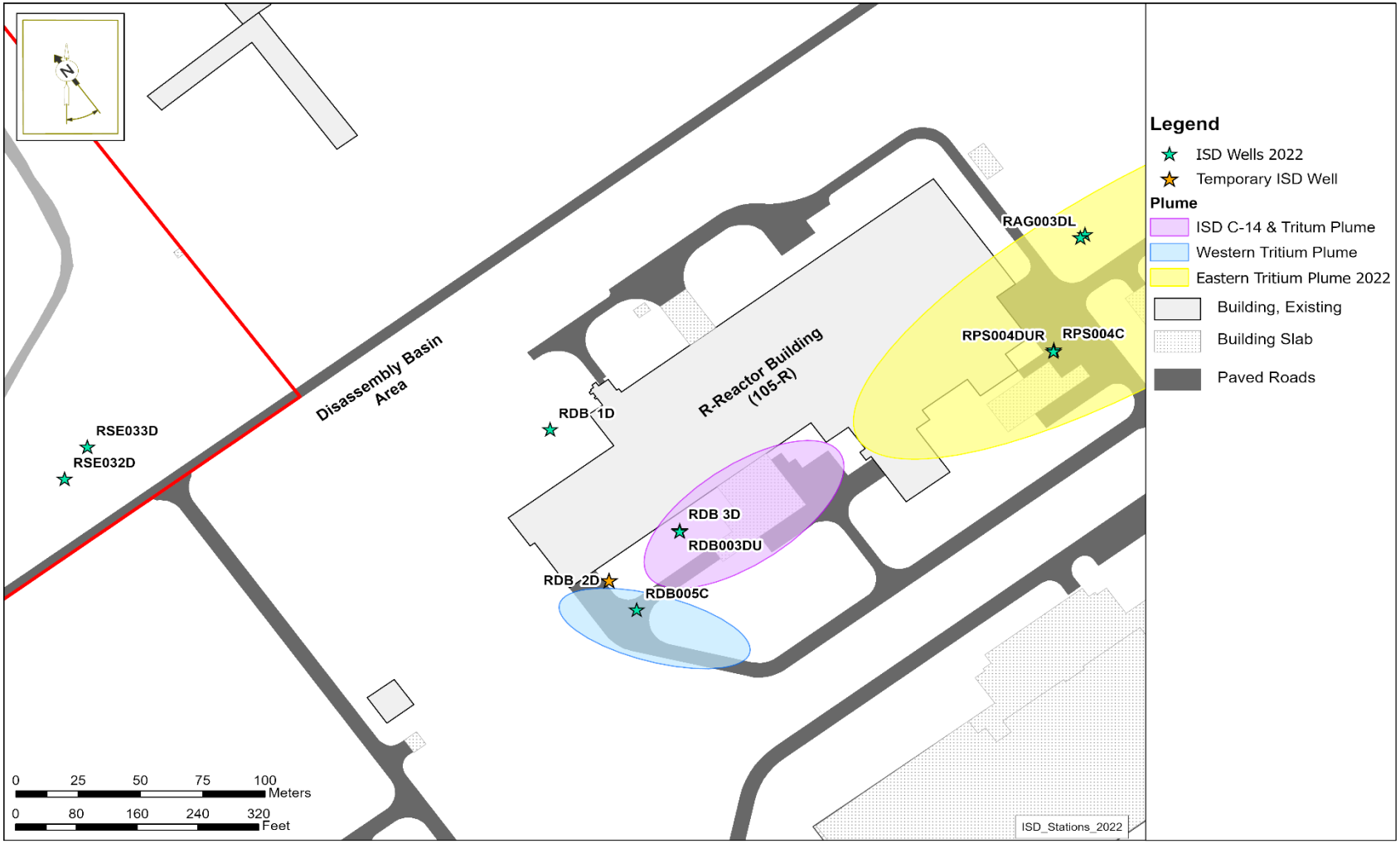


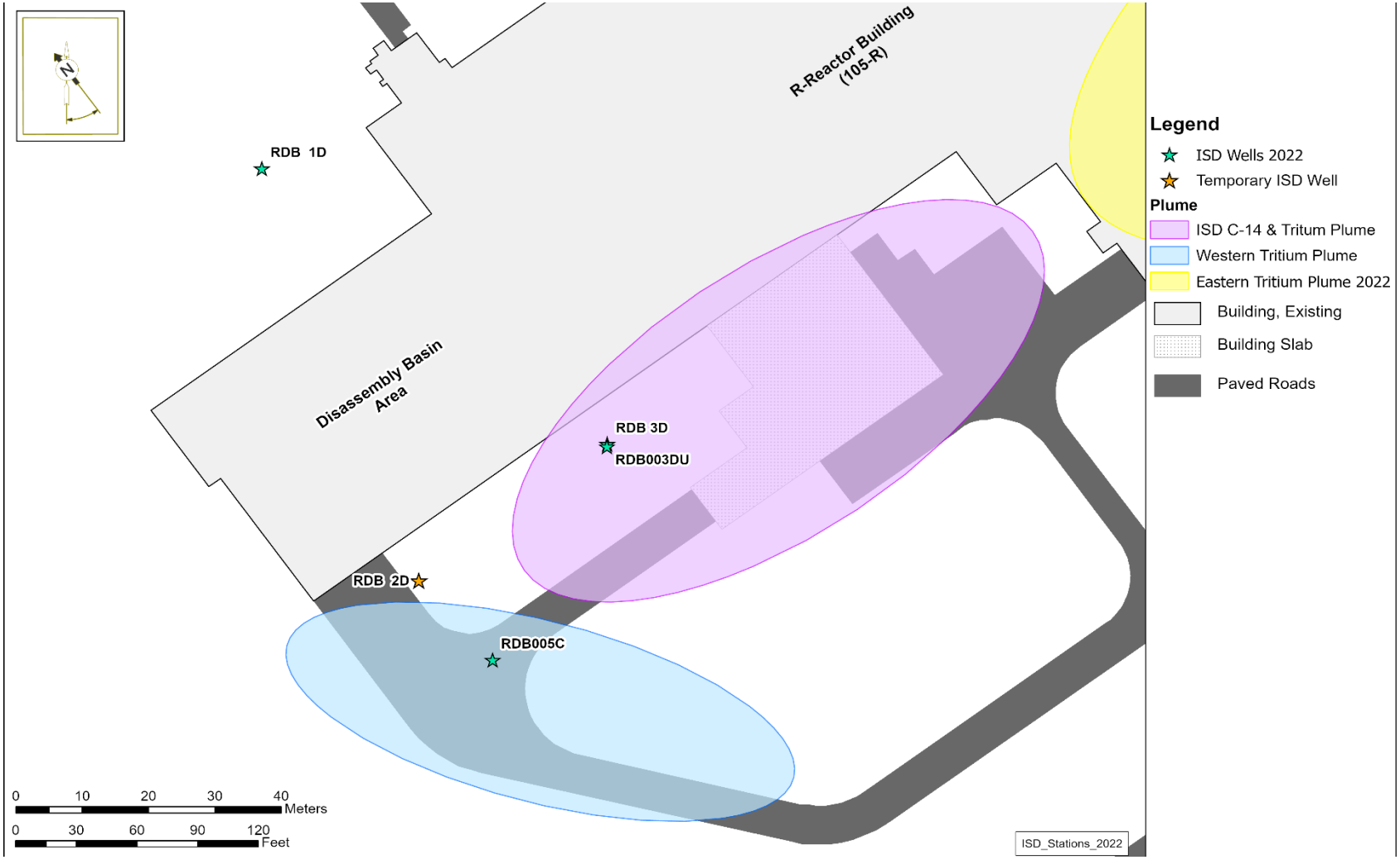
Revised Figure 9.(Figure 8 in Revision 1) RAGW Combined Western, ISD and Eastern Tritium Plumes Cross-Section 2022



Revised Figure 3. RAGW & ISD Monitoring Stations and Plumes 2022



Revised Figure 4. ISD Monitoring Wells (2022)



Revised Figure 5. Five ISD Monitoring Wells Sampled Annually (2018 through 2022)

GENERAL COMMENTS

1. Throughout the document, numerous errors and inconsistencies have been noted, and therefore, impacted the Department's decisions on the recommendations provided by the Project Team. Due to the number of errors, the Department cannot determine if reducing the sampling frequency as recommended in the document is the correct decision at this time. The following specific comments include examples of errors noted during the Department's review and should be addressed in the revised document. However, please note that this is not a comprehensive list of all errors in the document, and a critical peer review of the content of the document should be conducted.

   Response: Agree.

   A critical peer review of the R-Area Groundwater Biennial EMR Revision 1 document will be conducted by SRS.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

2. Based on the information presented in the document, the Department does not agree with the recommendation to reduce the monitoring frequency to biennial due to increasing TCE concentrations at plume definition well RAG008B. The 2011 EMP requires that RCOC concentrations are stable or decreasing before reducing the sampling frequency to biennial. As stated in the document and discussed in the Department's General Comment 3, TCE concentrations at RAG008B have been increasing since 2010. The TCE concentration at RAG008B was 24.2 µg/L in 2022, which is nearly three times the historical maximum concentration at this well based on the time series plot. Continued annual monitoring of the VOC plume is required to ensure the data quality objectives for MNA continue to be met per the 2011 EMP.

   Response: Clarification.

   SRS agrees the concentration at RAG008B has increased 3-fold since monitoring began at it in 2010. However, TCE concentrations have decreased at wells RAG008DL, RBP 11DL, RCS003C, RPS004C, and RWT003C during that same period. In 2010, TCE groundwater concentrations exceeded the MCL at 5 wells, but in 2022 only 2 wells exceeded the TCE MCL, and the overall R-Area average groundwater TCE concentration has decreased from 5.21 ug/L in 2011 to 2.38 in 2022 (attached R-Area Groundwater Average TCE Trends 2010-2022 Figure). SRS proposes to continue annual sampling at RAG008B, RAG008BL, and RBP011B. However, for other wells, SRS proposes biennial monitoring and also

biennial reporting for the RAGW EMR, because of the generally decreasing size and concentration of all the plumes.

Section 5.2 RAGW will be revised as follows:

"SRS recommends continued annual sampling for carbon-14 and tritium for another two sample events at five monitoring wells (RDB 1D, RDB 2D, RDB 3D, RDB003DU, and RDB005C) near the RBC to track carbon-14 and tritium concentrations. SRS proposes to continue annual sampling for VOCs and tritium at RAG008B, RAG008BL, and RBP011B. However, for other wells, SRS proposes biennial monitoring, and also biennial reporting for the RAGW EMR, because of the generally decreasing size and concentration of the tritium plumes.

No MNA Action Limits have been exceeded for the RAOU since monitoring began in 2011, ISD is functioning as designed, and all plumes are slowly decreasing in size and concentration. ~~The remedies for both RRSB OU and RAOU are evaluated in the Five-Year Remedy Review (5YRR) Report of SRS Operable Units with Groundwater Remedies, and the next 5YRR (Rev 0) is due Dec 2024. The project team proposes combining both RRSB OU and RAOU into a letter report in August 2026 and a full report due August 2028 to support the Dec 2029 5YRR submittal. Biennial sampling for the RAOU starting this year 2023, 2025, and 2027 to match the RRSB OU sampling schedule, and would support a combined report for both the RRSB OU and the RAOU.~~ With Core Team approval, the project team recommends ~~all~~ RAOU MNA sampling be conducted biennially to coincide with ~~a combined RRSB OU and~~ the RAOU report cycle with the exception of annual VOC and tritium sampling at RAG008B, RAG008BL, and RBP011B. ~~RAOU full ISD monitoring would continue on a 5-year sampling period (2022 and 2027) to coincide with the 5-year Remedy Review. The proposed schedule is the following:~~

~~2023: RAOU MNA, RAOU 5 ISD Wells, and RRSB Sampling (4Q23);~~

~~2024: RAOU and RRSB OU 5YRR;~~

~~2025: RAOU MNA, RAOU 5 ISD Wells, and RRSB Sampling (4Q25);~~

~~2026: RAOU and RRSB OU Letter Report (2023-2025 Data);~~

~~2027: RAOU MNA, RAOU 11 ISD Wells, and RRSB Sampling (4Q27);~~

~~2028: RAOU and RRSB OU Full Report (2027 Data); and~~

~~2029: RAOU MNA, RAOU 11 ISD Wells, and RRSB Sampling and 5YRR.~~

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

3. The document states that the Eastern VOC plume is bounded vertically and that downward migration of TCE is not occurring at RAG008 based on TCE results below detection limits at RAG008BL. The Department agrees that the VOC plume appears to be vertically defined, but there does appear to be downward migration of TCE between TZ well RAG008DL and LAZ well RAG008B. In 2010, TCE concentrations at RAG008DL and RAG008B were 22.5 µg/L and 7.1 µg/L, respectively. In 2022, TCE concentrations in the two wells have essentially flipped; 2022 concentrations were 7.16 µg/L at RAG008DL and 24.2 µg/L at RAG008B. The decreasing TCE trend at RAG008DL is more attributable to downward migration of the plume rather than natural attenuation. Groundwater monitoring should continue on an annual schedule to ensure that vertical migration of TCE does not continue to deeper aquifers, as required by the 2011 EMP.

   Response: Clarification.

   There is a downward hydraulic gradient between RAG008DL and RAG008B, as indicated by the water elevations for the two wells (234.96 ft-amsl and 225.50 ft-amsl, respectively). However, horizontal flow in the MAZ is typically much greater than vertical flow through the TCCZ lower clay unit (Groundwater Modeling for the C-Area Burning/Rubble Pit, WSRC-TR-2001-00298, Figures 3.3 and 3.4, pages 52 and 53, respectively). As TCE migrates downward through the TCCZ lower clay unit, it will undergo natural attenuation physical processes (diffusion, dispersion, and sorption) that decrease the concentration of TCE during transport and would not concentrate TCE during transport.

   It is more probable that historic higher concentrations from the TCE source area north of the R-Reactor Building (105-R) Assembly Area migrated downward through a window in the TCCZ during transport from the TCE source area to RAG008B. Evidence for such a window is identified in Figure 6in the EMR, which shows the TCCZ thins significantly near RAG006DU. It is plausible the TCCZ could be missing altogether slightly north of this location.

   Likewise, the decreasing TCE concentrations at RAG008DL are probably from the TCE plume migrating downgradient. Please also see the discussion in response #4 below. A revised Figure 6 (attached) includes an expansion of the TCE plume to depict a "window". SRS proposes to continue annual sampling at RAG008B, RAG008BL, and RBP011B. However, for other wells, SRS proposes biennial monitoring and also biennial reporting for the RAGW EMR, because of the generally decreasing size and concentration of all the plumes.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

4. The Department does not agree that the elevated TCE concentrations and increasing trends at RAG008B are attributable to plume migration from the R-Reactor Building as stated in Section 4.1.1. Based on the information presented in the document, it is more likely that multiple former source areas existed for TCE, including a source area closer to R-Reactor, and a separate source area closer to the RAG008 well cluster. This is supported by the historical lack of TCE detections at plume definition well RAG006B, which is located downgradient from R-Reactor and upgradient from RAG008B. RAG006B has been either non-detect or below 2 µg/L for the entire time that RAG008B has been increasing in TCE concentrations. If the increasing/elevated TCE concentrations in RAG008B were caused by plume migration from a source area near R-Reactor, this would have likely resulted in increasing/elevated concentrations at RAG006B prior to being observed in RAG008B. Additionally, if plume migration from R-Reactor to RAG008B is suspected, then DOE should evaluate whether any changes to the monitoring network are needed to ensure the objectives of the MNA remedy continue to be met.

   Response: Clarification.

   For clarity, a summary of the monitoring of the TCE source area north of the R-Reactor Building (105-R) Assembly Area is provided as follows:

   - **In 2007, during characterization of the groundwater contamination in R-Area, maximum TCE groundwater concentration was 416 ug/L at a direct push technology (DPT) location (RPSL-12) north of the R-Reactor Building (105-R) Assembly Area where TCE was used to clean reactor rods.**
   - **In 2008, two additional direct push locations (RPSL-21 and RPSL-24) in this area also had elevated groundwater TCE concentrations (48 ug/L and 97.7 ug/L, respectively). However, monitoring wells RAG002DU and RAG002D installed in 2007 and 2010, respectively, near these locations were unable to duplicate the high concentrations.**
   - **Between 2007 and 2010, downgradient wells RAG003DL and RWT003C had maximum TCE concentrations (18 ug/L and 37 ug/L, respectively), which are still above the MCL (5 ug/L).**
   - **In 1999, deeper MAZ/LAZ intervals (94 ft-bgs to 112 ft-bgs) from three DPTs (RBPOP-CPT-91, RBPOP-CPT-43 and RBPOP-CPT-65) identified a TCE hotspot (maximum TCE 302 ug/L, 130 ug/L and 69.7 ug/L, respectively) within the Eastern TCE plume, just upgradient of the RAG008 well cluster. In the shallower TZ intervals (43 ft-bgs to 67 ft-bgs) from these three DPTs, TCE was below detection or less than 1 ug/L which indicates the TCE hotspot was from an upgradient source, not**

the RBPOPs OU. This TCE hotspot in the MAZ/LAZ was attributed to a previous short-term release near the R-Reactor Building (105-R) (R-Area Groundwater Plume Transport Analysis, ERD-EN-2008-0061).

- **Collectively, data from these wells and DPTs indicate the only TCE source area is/was north of the R-Reactor Building (105-R) Assembly Area, which is where TCE was used in the reactor process from 1953 until 1964 when the reactor was shut down. Transport and attenuation from the R-Reactor TCE source is the most probable reason for the TCE increase in groundwater at RAG008B.**

It was thought RAG006B was too deep to identify plume migration from the R-Reactor Building (105-R), so RAG006DU was added back into the monitoring program in 2022 to help delineate plume migration from the R-Reactor Building (105-R).

No other TCE source has been identified in R-Area during multiple investigations. Acknowledging the increasing TCE concentration at RAG008B, SRS proposes to continue annual sampling at RAG008B, RAG008BL, and RBP011B. However, for other wells, SRS proposes biennial monitoring and also biennial reporting for the RAGW EMR, because of the generally decreasing size and concentration of all the plumes. No additional changes to the monitoring network are needed to ensure the objectives of the MNA remedy continue to be met.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

SPECIFIC COMMENTS

1. Table of Contents, page iii. The section titles for Section 4.0, Reporting, and Section 5.0, Summary and Recommendations, do not match the formatting used for other sections in the table of contents.

   Response: Agree.

   The formatting for the Table of Contents will be corrected in the Revision 1 EMR.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

2. List of Abbreviations and Acronyms, page v. The three aquifer zones (UAZ, MAZ, and LAZ) are capitalized when spelled out on page 2 of the document but are all lowercase in the list of acronyms.

   Response: Agree.

   The List of Abbreviations and Acronyms will be corrected in the Revision 1 EMR.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

3. List of Appendices, page iv. Appendix A is titled "RAGW Data 2019-2020," but Appendix A shows that the data were collected in 2021 and 2022.

   Response: Agree.

   The Appendix A title in the List of Appendices will be corrected in the Revision 1 EMR to show "RAGW Data 2021-2022".

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

4. List of Abbreviations and Acronyms, page v. Please move the acronym "amsl" to the beginning of the list of acronyms so that they are in alphabetical order.

   Response: Agree.

   The List of Abbreviations and Acronyms will be corrected in the Revision 1 EMR to list acronyms and abbreviations in alphabetical order.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

5. List of Abbreviations and Acronyms, page v. The acronym EQL is used in Table A-1 and should be added to the list of acronyms.

   Response: Agree.

   The acronym "EQL" will be included in the List of Abbreviations and Acronyms in the Revision 1 EMR.

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

6. Section 3.1, RAGW Monitoring, page 2. The last sentence of the third paragraph states, "Any maintenance work that changes any of the well information (e.g., reference elevation) will be discussed in the next report." Please explain whether there is any planned upcoming maintenance work that is expected to change any of this information, since the meaning of this sentence is unclear in this context.

   Response: Clarification

   There is no planned upcoming maintenance work in addition to the normal maintenance SRS conducts on the wells as needed. The statement was included to explain that any maintenance work that changes the well information would be discussed in the next report. For example, if a well is damaged and needs to be replaced, this activity would be discussed in the next EMR report. The following sentence will be added to this paragraph to clarify maintenance actions for the RAGW monitoring network.

   > "No maintenance actions were identified since the last RAGW EMR, and no changes/additions were needed to any of the monitoring stations."

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

7. Section 3.3, Groundwater Flow Directions, page 5. The second paragraph states that potentiometric surfaces were not mapped for the MAZ due to the limited number of wells in the aquifer. Appendix E, Figure E-2 is titled "R-Area MAZ Well Water Elevations 2022" and appears to show groundwater contours and groundwater flow path based on MAZ well groundwater elevations. Please clarify.

   Response: Agree.

   The last sentence in the second paragraph of section 3.3 will be revised as follows:

   > "The MAZ was ~~not~~ contoured with the available ~~due to the limited number of~~ wells within the ~~aquifer~~MAZ."

   Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

8. Section 3.3, Groundwater Flow Directions, page 5. The last paragraph on page 5 describes the radial flow pattern in the TZ and cites Figure 2, which shows potentiometric surfaces from 1996. The text of the report should also cite the relevant figure in Appendix E that shows the most recent groundwater contours based on the most recent data.

Response: Agree.

The first sentence in the third paragraph of section 3.3 will be revised as follows:

> "Within the RAOU LUC boundary, groundwater in the TZ of the UAZ was demonstrated to flow radially from a local mounded area centered to the northeast of the RBC (Figure 2 and Figure E-2) (Hiergesell 1998 and SRNS 2011)."

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

9. Section 4.1.1, Eastern VOC Plume, page 8. The first paragraph states, "VOCs are constrained vertically to the UAZ…but TCE results above the MCL (5 µg/L) have been confirmed in the LAZ of the UTRA at plume definition well RAG008B." This statement does not make sense. If TCE is above the MCL and at its maximum concentration in an LAZ well, then VOCs are not constrained vertically to the UAZ. Please explain and revise the statement appropriately.

Response: Agree.

The second sentence in the first paragraph of section 4.1.1 will be revised as follows:

> "VOCs are constrained vertically to the ~~UAZ of the~~ UTRA, primarily in the sandy TZ (Figure 6), but TCE results above the MCL (5 µg/L) have been confirmed in the LAZ of the UTRA at plume definition well RAG008B."

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

10. Section 4.1.1, Eastern VOC Plume, page 9. The fifth paragraph on the page ("Plume definition well RPS004C…") contains multiple errors. Please see the examples below.

    a. The first sentence describes RPS004C as a plume definition well. This differs from how the well is described in Table 1 ("Source Area Monitoring Well, ISD Source Well") and Table A-1 ("ISD Source and VOC Well"). Please explain which is correct and revise the document appropriately.

    Response: Agree.

Table 1 is correct as Well RPS004C is used to monitor the Eastern Tritium Plume (source area), Eastern VOC Plume (plume definition), and ISD performance. The "Well Use" column in Table A-1 will be corrected as follows: "ISD, Tritium Source & VOC Well."

Section 4.1.1 only discusses the Eastern VOC Plume, so the first sentence in the sixth paragraph of section 4.1.1 will be revised as follows:

> "VOC ~~P~~plume definition well RPS004C and ISD well RPS~~SP~~004DUR were the only monitoring stations that had detectable VC groundwater concentrations in 2022 (1.64 µg/L and 2.04 µg/L, respectively).

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

b. The first sentence describes the other well as RSP004DUR, which appears to be a typo based on Table 1 and should be revised.

Response: Agree.

Please see the revised sentence in comment response 10a.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

c. The last sentence of the paragraph misspells RPS004C as RSP004C; please revise.

Response: Agree.

This sentence will be revised as follows:

> "Overall, VC concentrations at well RPS~~SP~~004C indicate a decreasing trend since sampling began in 2007 (Appendix C, Figure C-16)."

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

d. Please explain why a time series plot was generated and referenced in the paragraph for RPS004C and not for RPS004DUR.

Response: Clarification.

Well RPS004DUR was installed specifically for ISD performance monitoring, so no VOC analyses were performed in the year prior to 2022. VOC analysis was added to the 4Q22 RPS004DUR sample for improved monitoring of the Eastern VOC Plume, although there are insufficient data for a time-series plot. No changes are proposed to the document.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

11. Section 4.1.4, Former Northern Tritium Plume, page 13. It is inaccurate to say that "All Mill Creek surface water stations continue to remain well below the MCL," if MCSW-03 was dry and could not be sampled. Please revise.

    Response: Agree.

    This sentence will be revised as follows:

    "All Mill Creek surface water stations, with the exception of well MCSW-03 which was dry and could not be sampled, continue to remain well below the MCL, with a maximum observed concentration of 1.68 pCi/mL in well MCSW-04 in October 2022."

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

12. Table A-1, RAOU EMR Monitoring Wells, pages A-3 through A-6. For some of the wells in the table, the Sampling Event Water Elevation column indicates that water level was not measured, but most of these wells have potentiometric surface values and were apparently used to construct the potentiometric surface maps in Appendix E. Please explain and revise the table/figures appropriately.

    Response: Agree.

    The software that creates Table A-1 had a communication error with the data base and did not extract all water elevations. This software error has been corrected. All the missing water elevations have been added to the revised Table A-1 (attached).

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

13. Table A-1, RAOU EMR Monitoring Wells, page A-3. RAG008DL is identified as a MAZ well in Table A-1, but Table 1 identifies it as a TZ well.

Response: Agree.

Table 1 is incorrect and will be revised to identify well RAG008DL as an MAZ well consistent with Table A-1.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

14. Table A-1, RAOU EMR Monitoring Wells, page A-4. Table A-1 includes 2022 VOC analytical results for ISD wells RAG003DU, RAG003DL, and RPS004DUR. Table 1 does not identify these wells as Eastern VOC Plume wells, and Section 3.2 of the document indicates that ISD wells are generally sampled every five years for carbon-14, chlorine-36, iodine-129, and tritium. It is unclear why select ISD wells were sampled for VOCs in 2022. Please explain.

Response: Clarification.

Wells RAG003DU, RAG003DL and RPS004DUR are monitored specifically for ISD performance, so no VOC analyses were performed in these wells prior to 2022. However, VOC analyses were added for these wells in the 4Q22 sample event for improved monitoring of the Eastern VOC Plume. No changes are proposed to the document.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

15. Table 1, RAGW Monitoring Stations, pages 37 and 38. Please add two columns to the table with top of screen and bottom of screen for each well measured in feet below ground surface (bgs).

Response: Clarification.

The top and bottom elevations are provided in feet above mean sea level (ft-amsl) in Table 1. The top and bottom screen depths (Feet Below Top of Casing [ft-TOC]) can be obtained by subtracting Screen Top Elevations and Screen Bottom Elevations from the Top of Casing (TOC) Elevations in Table 1. No changes are proposed for the report.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

16. Figures 1 through 7, pages 19 through 26. Multiple figures show an area to the east of R-Area, near the RAG008 well cluster, with three long, thin rectangles. The legend in Figure 3 identifies these as existing buildings, but there were no buildings visible in a

satellite GIS image dated 10/6/22. Please explain what this area is, and revise figures as needed if no buildings are present. If this area was significant to previous operations at R-Area, please identify it in future figures.

Response: Agree/Clarification.

The three long and thin rectangles near the RAG008 well cluster in the figures represent the R-Area Bingham Pump Outage Pits (643-8G, 643-9G, and 643-10G) (RBPOP) and R-Area Unknown Pits #1, #2, and #3 (RUNKs) OU. The RBPOPs and RUNKs OU A final Record of Decision for the RBPOPs and RUNKs OU was issued in 2003 to document institutional controls as the selected remedy. The RBPOPs and RUNKs OU will be labeled on appropriate figures in the Revision 1 EMR.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

17. Figure 1, RAOU Location, page 19. The legend for the figure is very low resolution and difficult to read. Please revise the figure appropriately.

Response: Agree.

Figure 1 has been enlarged so the text is easier to read (attached).

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

18. Figure 2, RAGW Groundwater Plumes (2010) and LUC Boundary, page 20. The text of the document cites Figure 2 when describing the radial flow pattern observed in the TZ (see Specific Comment 6), but the figure does not indicate which aquifer zone the potentiometric contours were drawn based on.

Response: Agree/Clarification.

The 1998 regional water table contours in Figure 2 are from the 1998 regional water table map report based on the Upper Three Runs Aquifer (UTRA) zones (UAZ, MAZ, and LAZ) in R-Area and the Gordon Aquifer (GA) in the lower portions of Upper Three Runs Creek and near the Savannah River. In section 3.3, a reference to the regional water table report will be added for Figure 2 and the following reference will be added section 6.0 References:

"Hiergesell, R.A., 1998. *A regional water table map for the Savannah River Site and related coverages*, WSRC-TR-98-0045, Westinghouse Savannah River Company, Aiken, SC 29808"

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

19. Figure 3, RAGW Monitoring Stations and 2022 Groundwater Plumes, page 21. Figure 3 shows the Western Tritium Plume as two distinct plume areas centered around RDB 005C and RDB 3. In Figures 4 and 5, the two plume areas are differentiated as the Western Tritium Plume around RDB 005C and the ISD C-14 & Tritium Plume around RDB 3. The text of the document discusses the two plume areas separately in Section 5. If the report text and Figures 4 and 5 are correct in differentiating between the two plumes, then Figure 3 should be revised to be consistent with the rest of the document.

    Response: Agree.

    Figure 3 has been revised (attached) to show 3 plume areas: 1) Western Tritium Plume; 2) ISD C-14 and Tritium Plume; and 3) Eastern Tritium Plume.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

20. Figure 3, RAGW Monitoring Stations and 2022 Groundwater Plumes, page 21. The figure appears to be missing a well ID label for RPC 2CL, which is presumably located near RPC 2D and RPC 2CU based on the UTM-N and UTM-E locations provided in Table 1.

    Response: Agree.

    Figure 3 has been revised (attached) to show all 3 well labels (RPC 2D, RPC 2CU, and RPC 2CL).

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

21. Figure 6, RAGW Eastern VOC Plume 2010 Data, page 25. The legend identifies the circles on the figure as monitoring well locations, but the concentrations are provided in units of µg/kg instead of µg/L. Please revise the figure appropriately.

    Response: Agree.

    Figure 6 (now referred to as Figure 7) has been revised (attached) to have the correct units (ug/L) for the well data.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

22. Figures 8 through 11, Cross Sections, pages 27 through 30. Please add a cross section of the Western Tritium Plume along A-A'.

    Response: Agree.

    Figure 9 (now referred to as Figure 8) has been revised (attached) to include all three tritium plumes along Cross Section A-A'.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

23. Figures 8 through 11, Cross Sections, pages 27 through 30. Please change the units on the axes from meters amsl to feet amsl so that they match the units used in Table 1 to describe well construction details.

    Response: Agree.

    The cross sections have been revised (attached) to show elevations in feet – above mean sea level.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

24. Figures 8 through 11, Cross Sections, pages 27 through 30. In addition to monitoring well locations, the cross sections include what appear to be lithology borings or other borings that are not monitoring wells (e.g., Figure 8, Cross Section A-A', boring RCP1A). Please clarify what these borings are. Please revise the cross sections to identify what these locations represent.

    Response: Agree.

    The lithology CPTs (RBPOP-66 and RBPOP-104) and soil borings (RCP 1A, RAG001B, RAG003B, RAG006B and RAG008B) are used to create the cross section, and the monitoring wells are projected onto that cross section. The revised figures (attached) use different font colors to differentiate wells from soil borings and lithology CPTs.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

25. Figures 8 through 11, Cross Sections, pages 27 through 30. For monitoring well clusters with multiple screen zones, the cross sections do not clearly indicate which screen zone and contaminant concentration corresponds to which well. For example, Figure 8 labels the RAG008 cluster at the top of the figure as "RAG008B, BL & DL," but does not indicate which well is which in the cross section. In the above example for RAG008, there is no clear pattern to the way the wells are listed (i.e., they are not in order of "shallow, intermediate, deep," or, "deep, intermediate, shallow"). Please revise the cross sections so that well clusters are clearly labeled.

    Response: Agree.

    In the revised cross section figures (attached), the well names have been placed near their screen zones with the TCE or tritium result.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

26. Figure 8, R-Area Cross Section with RAGW Eastern VOC Plume 2022, page 27. The cross section includes a TZ well labeled as RAG006DU which is also shown on Figure 3, but there are no additional details about this well elsewhere in the document, including Table 1 with RAGW well details, Table A-1 with 2021 and 2022 analytical results, and Figure C-29 with the time series plot for TCE for RAG006. The cross section in Figure 8 includes a TCE concentration of 1.40 µg/L for RAG006DU. If this well exists, please add it to the relevant places in the document where it is missing.

    Response: Agree.

    Well RAG006DU will be included in Table 1, Table A-1 and Figure C-29 in the Revision 1 EMR.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

27. Appendix C, Time Series Plots. For time series plots of contaminants with an MCL, the legend includes a gray line showing the GWPS or MCL. The lines that are used are difficult to see and differentiate from the regular lines in the plot. Please change this to a large, dashed line or other more obvious marker for the MCL.

    Response: Agree.

    The time series plots will be revised to show a thicker dashed line for the MCL or GWPS. The revised Figure C-29 (attached) is an example of how time series charts will look in the revised 2023 RAGW EMR.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

28. Appendix C, Time Series Plots. The legends included at the bottom of the time series plots are incomplete. The legends for the time series plots in this document generally show plots for individual wells with squares indicating the result for a specific sampling date, but there are other shapes included in the plots, including circles and triangles. In other SRS documents, different shapes in the time series plots may correspond to sampling results below the PQL, results qualified as J values, or detections above the PQL.

    Response: Agree.

    The legend should have been included on the time series plots to identify square symbols for results below the detection limit, triangle symbols for results detected between the MDL and EQL/PQL, and circle symbols for results greater than the EQL/PQL. The time series plots will be corrected in the revised RAGW EMR to include the legend.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

29. Appendix C, Time Series Plots. For previous sampling events where an RCOC was not detected above the method detection limit (MDL), the result is plotted on the time series plot at the PQL. For the 2021 and 2022 sampling results, similar results appear to be plotted at the MDL rather than the PQL, despite the analytical results in Table A-1 reporting the results as "<EQL (1)" or similar. For example, see Figure C-24, Time Series Plot for cis-1,2-DCE for RCS003. Results from 2014 through 2021 are plotted at 1 µg/L. The 2022 result was plotted slightly above 0.3 µg/L, even though Table A-1 reports both the 2021 and 2022 results as <EQL (1). This is an inaccurate representation of current and historical analytical data, and all affected plots should be revised.

    Response: Agree.

    Table A-1 in the 2023 EMR document is correct. The software that generates the TSP charts automatically selects the "result value" to generate the charts. Further review revealed that data entry errors occurred when the lab populated the result field. These errors have been corrected, and the correct TSP charts that correlate with Table A-1 will be generated for the revised RAGW EMR.

    Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

30. Appendix E, Potentiometric Surfaces, pages E-1 through E-8. There are multiple errors and deficiencies in the Appendix E figures that need revision. Please see the following comments regarding the figures in Appendix E and ensure all errors are addressed. The comments below include examples of errors in the figures but may not be a comprehensive list of all errors.

Response: Agree.

As indicated by the response to GC#1, a critical peer review of the R-Area Groundwater Biennial EMR Revision 1 document will be conducted.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

a. There are multiple references to 2020 water elevations in the figure titles and legends.

Response: Agree.

References to 2020 have been revised to 2022 in the figures (attached) and text in Appendix E.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

b. Monitoring well locations on the figures are labeled with groundwater elevation and the aquifer zone where the well is screened, but well IDs are not labeled. Please revise these figures to include well IDs for the monitoring wells shown on each figure.

Response: Agree/Clarification.

There is sufficient space to include the well names with the water elevations in revised Figures E-2 and E-3, but adequate space is not available to make this change for Figure E-1.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

c. Figure E-1, R-Area TZ Well Water Elevations 2022, page E-3. Please see the following comments.

i. Multiple TZ wells are marked with orange squares, but the legend indicates that purple squares represent TZ wells.

Response: Agree.

The orange squares will be replaced with purple squares on the figure to correspond to the legend.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

ii. The legend indicates that a red pentagon marks seepline locations, but seepline locations MCS002 and JBS005 are marked with green triangles and orange squares, respectively.

Response: Agree.

Figure E-1 (attached) will be corrected to show red pentagons for the seepline wells.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

iii. Many of the symbols marking well locations are obscured by the groundwater elevation labels.

Response: Clarification.

This is primarily an issue with Figure E-1, which has many wells close together. The revised Figure E-1 has minimized the overlapping of water elevations on the station symbol, including rounding all water elevations to 1 decimal place to make more room for symbols.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

iv. There are two A/AA wells to the southeast, outside of the LUC boundary, that are not labeled with groundwater elevations.

Response: Agree.

These wells are part of the R-Area Rubble Pile OU that were not sampled in 2022 and have been removed from the revised Figure E-1 (attached).

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

v. Figure E-1 depicts groundwater elevations for approximately 43 locations, plus the two unlabeled A/AA wells to the southeast, for a total of approximately 45 wells on the figure. Table 1 only identifies 32 of the RAGW wells as either A/AA or TZ wells, meaning there are approximately 13 wells on the figure not included in Table 1 as A/AA or TZ wells. Please clarify what these extra points on the figure are.

Response: Clarification.

Figure E-1 uses all the wells sampled in R-Area, not just the RAOU wells, in order to provide better coverage for the potentiometric surface.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

vi. The groundwater elevation contour intervals used in the figure are inconsistent and the figure should be revised with consistent intervals. The figure includes the following contours in ft amsl: 285, 280, 270, 265, 260, 250. Please revise the figures to include consistent 5-ft or 10-ft contour intervals.

Response: Agree.

The revised figures all have 10-ft contour intervals for consistency.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

vii. Please explain why the 250 ft amsl contour ends abruptly at the R-Area Discharge Canal. There are wells to the west of the canal with groundwater elevations between 250 and 260 ft amsl.

Response: Clarification/Agree.

Figure E-1 (attached) will be corrected to depict the 250-ft amsl continuing across the R-Area Discharge Canal around the two wells to the north and then to Mill Creek where the 250 ft amsl surface contour crosses the creek.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

viii. Please explain why additional contours were not drawn to the northeast of R-Area downgradient from the 250 ft amsl contour. The potentiometric surface towards Joyce Branch decreases from approximately 244 ft amsl at the two

unlabeled wells near the 250 ft amsl contour, to 219.6 ft amsl at seepline locations to the west of Joyce Branch.

Response: Clarification/Agree.

Figure E-1 (attached) will be corrected to depict the 250 ft-amsl continuing across the R-Area Discharge Canal around the two wells to the north and then to Mill Creek where the 250 ft-amsl surface contour crosses the creek. Additional contours will be placed between the 250 ft-amsl contour and Joyce Branch.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

ix. The potentiometric contours are inaccurate based on the groundwater elevations and well locations presented on the figure, and over half of the monitoring points on the figure are not within the correct contours. Please re-draw the contours to reflect the groundwater elevations measured in 2022.

Response: Clarification/Agree.

Where two wells are co-located or nearly co-located, preference is given to the greater of the two potentiometric elevations. It is recognized that the 280 ft-amsl contour is incorrectly drawn and will be corrected in the revised Figure E-1 (attached). The 285 ft-amsl contour will be removed to display only 10 ft contour intervals.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

d. Figure E-2, R-Area MAZ Well Water Elevations 2022, page E-5. Please see the following comments.

i. MAZ wells are marked with purple stars which are not included in the legend. The legend indicates that MAZ wells are marked with orange stars.

Response: Agree.

The purple stars have been replaced with orange stars.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

ii. The figure includes RAM009C and a well from the RAG008 cluster, but Table 1 does not identify any of these wells as MAZ wells.

Response: Agree.

Table 1 has been revised to label wells RAM009C and RAG008DL as MAZ wells.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

iii. RAG014 is identified as a MAZ well but was not used to draw the contours as there is no 270 ft amsl contour on the figure.

Response: Clarification.

Table 1 and Table A-1 list RAG014 as a TZ well, and list well RSE 27C as the MAZ well in the northern portion of the RAOU boundary. However, well RSE 27C had a water elevation of 260.22 ft-amsl in 4Q22 and the 270 value was a typographical error. Because only a single well location is posted in the northern portion of the RAOU, it was decided to leave the contour off the map.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

31. Figure E-3, R-Area LAZ Well Water Elevations 2022, page E-7. The figure includes groundwater elevation values for LAZ wells RPC 2CL (247.15 ft amsl) and RPC 2CU (256.17 ft amsl). Despite being adjacent to each other and both being screened in the LAZ, there was nearly a ten-foot difference in groundwater elevation between the two wells in 2022. It appears that the groundwater elevation from RPC 2CU was used to construct the potentiometric contours due to the well being located between the 260-ft amsl and 250-ft amsl contours. Please explain why the RPC 2CU groundwater elevation was used rather than RPC 2CL and ensure this is made clear in figures of future documents.

Response: Clarification.

Well RPC 2CU is screened in the upper portion of the LAZ (screen zone elevation = 158.67 – 148.67 ft-amsl), while well RPC 2CL is screened in the lower portion of the LAZ (screen zone elevation = 107.35 – 97.35 ft-amsl). The 50-ft elevation difference in the screen zones is what gives rise to the head difference in the two wells and indicates a downward gradient in the LAZ at this location. The RPC

2CU value (256.17 ft-amsl) was selected as it more accurately represents the top of the LAZ potentiometric surface.

Responsible Party: Terry Killeen, (803) 952-6850, terry.killeen@srs.gov

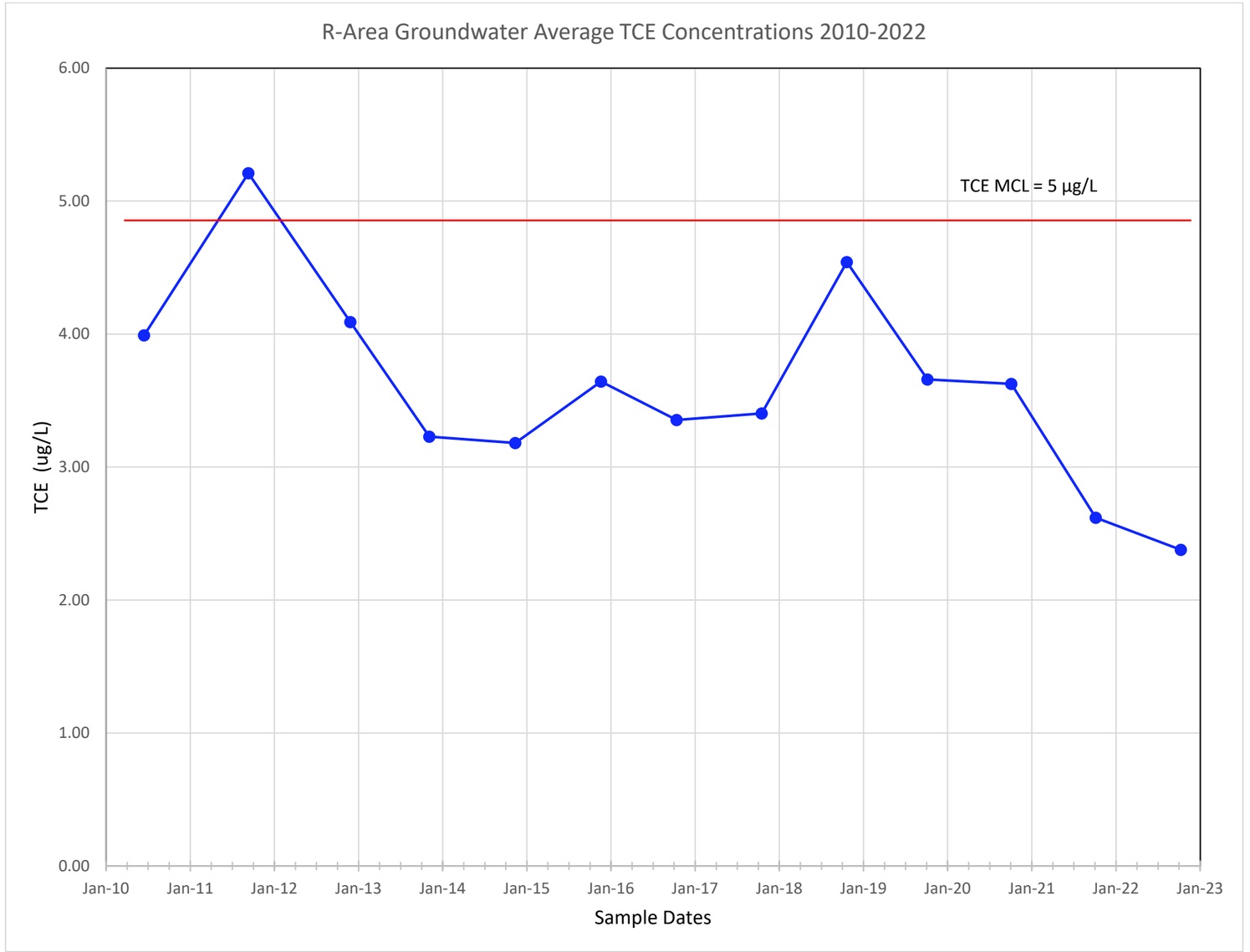

R-Area Groundwater Average TCE Concentrations 2010-2022
6.00
5.00
4.00
3.00
2.00
1.00
0.00
TCE (ug/L)
TCE MCL = 5 µg/L
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Sample Dates

Table A-1. RAOU EMR Monitoring Wells, 2021 - 2022

			Field Data								VOCs					Radionuclides			
			SAMPLE COLLECTION DATE	SPECIFIC CONDUCTANCE	WATER TEMPERATURE	TURBIDITY	SAMPLING EVENT WATER ELEVATION	OXYGEN	OXIDATION-REDUCTION POTENTIAL	FIELD CONDITIONS	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	CARBON-14	CHLORINE-36	IODINE-129	TRITIUM
		Unit		uS/cm	degC	NTU	ft	mg/L	mV		ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**	**GWPS**			**15**					**5**	**2**	**70**	**70**	**5**	**2,000**	**700**	**1**	**20**
RSE032D	ISD Background Well	A_UAZ_UTRAU	12-Oct-2022	27	19.2	1.5	275.29	2.29	277	NC	NR	NR	NR	NR	NR	<EQL (23.7)	<EQL (90)	<EQL (0.5)	[0.344]
RSE033D	ISD Background Well	TZ_UAZ_UTRAU	12-Oct-2022	28	19.5	1.4	274.99	4.06	320	NC	NR	NR	NR	NR	NR	<EQL (24.6)	<EQL (90)	<EQL (0.5)	[0.429]
RDB_2D	ISD Temporary	TZ_UAZ_UTRAU	06-Oct-2021	239	28.8	9.1	286.56	NR	NR	NC	NR	NR	NR	NR	NR	[14.1]	NR	NR	30.4
			18-Oct-2022	242	24.5	58.8	287.4	2.73	100	NC	NR	NR	NR	NR	NR	<EQL (26.6)	<EQL (90)	<EQL (0.5)	6.31
RAG008BL	Plume Boundary Well	LAZ_UTRAU	06-Jul-2021	246	20.1	13.1	226.66	NS	NS	NC	NR	<EQL (1)	NR	<EQL (1)	<EQL (1)	NR	NR	<EQL (2.27)	<EQL (1.43)
			23-Nov-2021	255	18.6	8	225.91	NS	NS	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	<EQL (0.966)
			13-Jun-2022	246	19.6	8.4	225.26	4.3	174	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	<EQL (1.52)
			11-Oct-2022	247	19.3	1.4	225.43	6.78	242	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[-0.03]
JBS005A	LUC Boundary Seepline Well	TZ_UAZ_UTRAU	12-Oct-2021	84	18.8	661	219.92	1.66	66	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.813]
			18-Oct-2022	44	18.9	25.3	219.6	4.6	141	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[0.53]	NR	NR	NR	[0.981]
JBS005B	LUC Boundary Seepline Well	TZ_UAZ_UTRAU	12-Oct-2021	13	19	12.1	219.76	7.58	155	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	<EQL (1.03)
			18-Oct-2022	13	19	2.3	219.6	4.3	158	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.427]
MCS002A	LUC Boundary Seepline Well	A_UAZ_UTRAU	12-Oct-2021	33	20.1	644	260.95	NR	NR	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.37)
			18-Oct-2022	31	19.1	1000	259.5	4.6	227	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.249]
MCS002B	LUC Boundary Seepline Well	A_UAZ_UTRAU	12-Oct-2021	28	20.1	130	261.12	NR	NR	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.02)
			18-Oct-2022	18	19.3	320	259.5	4.4	210	NC	NR	NR	NR	NR	NR	NR	NR	NR	[-0.009]
RAG004DL	Plume Boundary Well	TZ_UAZ_UTRAU	05-Oct-2021	36	20.1	0.5	271.49	3.72	158	NC	NR	NR	NR	NR	NR	NR	NR	NR	2.38
			11-Oct-2022	36	20.1	1.9	269.83	4.19	176	NC	NR	NR	NR	NR	NR	NR	NR	NR	1.86
RAG008B	Plume Definition Well	LAZ_UTRAU	12-Oct-2021	218	19.3	3.5	226.62	5.56	163	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	20	NR	NR	NR	<EQL (1.04)
			11-Oct-2022	209	19.3	1	225.5	8.01	230	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	24.2	NR	NR	NR	[0.302]
RPC 19C	Plume Boundary Well	LAZ_UTRAU	06-Oct-2021	28	18.8	0.8	255.72	4.6	234	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.09)
			12-Oct-2022	27	20.1	1.9	254.64	9.23	282	NC	NR	NR	NR	NR	NR	NR	NR	NR	[-0.011]
RAG002D	Plume Definition Well	A_UAZ_UTRAU	05-Oct-2021	165	23.2	6.6	283.57	6.23	-58	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	NR
			18-Oct-2022	160	22.4	7.1	283.55	4.8	80	NC	<EQL (1)	<EQL (1)	<EQL (1)	[0.36]	<EQL (1)	NR	NR	NR	NR
RAG004B	Plume Definition Well	LAZ_UTRAU	05-Oct-2021	29	20.1	1.7	253.7	4.66	161	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (0.911)
			11-Oct-2022	33	20.1	2	254.64	4.06	151	NC	NR	NR	NR	NR	NR	NR	NR	NR	[-0.079]
RAG006B	Plume Definition Well	LAZ_UTRAU	05-Oct-2021	219	19.8	0.6	234.89	6.62	152	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	<EQL (0.896)
			11-Oct-2022	221	19.1	2.3	233.79	3.35	177	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.061]
RAG006DU	Plume Definition Well	TZ_UAZ_UTRAU	11-Oct-2022	40	20.0	0.90	265.35	6.75	220	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.40	NR	NR	NR	13.0

Table A-1. RAOU EMR Monitoring Wells, 2021 - 2022

			Field Data								VOCs					Radionuclides			
			SAMPLE COLLECTION DATE	SPECIFIC CONDUCTANCE	WATER TEMPERATURE	TURBIDITY	SAMPLING EVENT WATER ELEVATION	OXYGEN	OXIDATION-REDUCTION POTENTIAL	FIELD CONDITIONS	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	CARBON-14	CHLORINE-36	IODINE-129	TRITIUM
		Unit		uS/cm	degC	NTU	ft	mg/L	mV		ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**	**GWPS**			**15**					**5**	**2**	**70**	**70**	**5**	**2,000**	**700**	**1**	**20**
RAG008DL	Plume Definition Well	MAZ_UTRAU	12-Oct-2021	29	20.1	1.1	236.76	3.27	220	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	7.29	NR	NR	NR	1.95
			11-Oct-2022	29	19.1	0.3	234.96	7.04	261	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	7.16	NR	NR	NR	2.03
RAG009DL	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	16	18.9	11.9	264.17	3.31	314	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (0.984)
			11-Oct-2022	16	20.1	23.8	264.92	8.3	254	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.42]
RAG009DU	Plume Definition Well	A_UAZ_UTRAU	06-Oct-2021	27	18.8	1.6	265.2	3.53	306	NC	NR	NR	NR	NR	NR	NR	NR	NR	6.84
			11-Oct-2022	26	19.8	0.9	266.23	8.68	294	NC	NR	NR	NR	NR	NR	NR	NR	NR	5.66
RAG013	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	25	20.7	2.3	256.8	NR	NR	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1)
			11-Oct-2022	22	19	6.6	256.11	5.21	161	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.16]
RAG014	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	39	19.4	1.3	253.4	3.77	168	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.05)
			11-Oct-2022	41	18.6	6.3	252.19	5.21	161	NC	NR	NR	NR	NR	NR	NR	NR	NR	[-0.064]
RAM009C	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	37	23.1	927	254.94	3.6	94	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.941]
			12-Oct-2022	32	22.8	1000	248.09	3.6	120	NC	<EQL (1)	<EQL (1)	<EQL (1)	[0.49]	<EQL (1)	NR	NR	NR	2.32
RBP 11DL	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	32	19.2	0.4	247.51	4.02	242	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	5.3	NR	NR	NR	2.87
			11-Oct-2022	37	19.5	2.3	244.22	4.1	253	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	4.26	NR	NR	NR	2.79
RBP 11DU	Plume Definition Well	A_UAZ_UTRAU	06-Oct-2021	32	19.9	0.2	247.28	4.82	271	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[0.36]	NR	NR	NR	<EQL (1.11)
			11-Oct-2022	32	19.3	1.6	243.93	3.9	256	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.249]
RBP011B	Plume Boundary Well	LAZ_UTRAU	06-Oct-2021	202	19	6.9	~~NS~~225.94	5.35	223	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.37	NR	NR	NR	<EQL (1.01)
			11-Oct-2022	198	19.6	13.9	~~NS~~224.93	5	165	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.07	NR	NR	NR	[0.302]
RCS003C	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	25	21.5	56.6	266.68	2.04	204	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.5	NR	NR	NR	1.2
			12-Oct-2022	25	19.1	113	266.67	2.1	206	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.31	NR	NR	NR	1.21
RDB004DL	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	37	18.4	2.8	268.21	4.32	312	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.02)
			12-Oct-2022	34	19.1	6.9	268.51	5.46	258	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.365]
RGW 2C	Plume Definition Well	LAZ_UTRAU	06-Oct-2021	75	19.2	14.9	254.14	6.63	229	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (0.982)
			12-Oct-2022	76	19.1	5	253.25	7.05	201	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.108]
RGW 2D	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	22	19	10.7	260.62	4.96	251	NC	NR	NR	NR	NR	NR	NR	NR	NR	2.28
			12-Oct-2022	22	18.9	7.6	260.48	6.7	278	NC	NR	NR	NR	NR	NR	NR	NR	NR	2.2
RPC 2CL	Plume Definition Well	LAZ_UTRAU	06-Oct-2021	89	19.3	3.1	247.65	4.8	164	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.446]
			12-Oct-2022	81	19.9	1.1	247.15	7	23	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.978]
RPC 2CU	Plume Definition Well	LAZ_UTRAU	06-Oct-2021	22	19	0.9	256.37	4.4	257	NC	NR	NR	NR	NR	NR	NR	NR	NR	2.59
			12-Oct-2022	28	19.7	2.1	256.17	6.6	201	NC	NR	NR	NR	NR	NR	NR	NR	NR	3.34

Table A-1. RAOU EMR Monitoring Wells, 2021 - 2022

			Field Data								VOCs					Radionuclides			
			SAMPLE COLLECTION DATE	SPECIFIC CONDUCTANCE	WATER TEMPERATURE	TURBIDITY	SAMPLING EVENT WATER ELEVATION	OXYGEN	OXIDATION-REDUCTION POTENTIAL	FIELD CONDITIONS	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	CARBON-14	CHLORINE-36	IODINE-129	TRITIUM
		Unit		uS/cm	degC	NTU	ft	mg/L	mV		ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**	**GWPS**			**15**					**5**	**2**	**70**	**70**	**5**	**2,000**	**700**	**1**	**20**
RPC_2D	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	20	19.6	3.6	269.5	4.1	203	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.3)
			12-Oct-2022	19	22	37.4	268.73	5.93	128	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.176]
RSE027C	Plume Definition Well	MAZ_UTRAU	06-Oct-2021	19	19.6	4.8	~~NS~~261.02	4.3	230	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (0.939)
			12-Oct-2022	19	19.2	4.4	~~NS~~ 260.22	3.83	266	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.114]
RSP_5DL	Plume Definition Well	TZ_UAZ_UTRAU	06-Oct-2021	93	19.2	3.4	~~NS~~ 263.4	3.16	112	NC	NR	NR	NR	NR	NR	NR	NR	NR	[1.03]
			17-Oct-2022	76	23.2	6.6	~~NS~~ 263.69	4.3	80	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.936]
RAG003DL	ISD Source Well	TZ_UAZ_UTRAU	18-Oct-2022	71	20.3	9.6	270.17	4.7	159	NC	<EQL (1)	[0.94]	<EQL (1)	2.22	[0.54]	<EQL (37.7)	<EQL (90)	<EQL (0.5)	29.1
RAG003DU	ISD Source Well	A_UAZ_UTRAU	18-Oct-2022	38	20.7	4.1	269.72	4.5	137	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[0.72]	<EQL (23.9)	<EQL (90)	NR	1.21
RDB_1D	ISD Source Well	A_UAZ_UTRAU	06-Oct-2021	202	26.1	1	287.5	NR	NR	NC	NR	NR	NR	NR	NR	<EQL (23)	NR	NR	<EQL (1.1)
RDB_1D	ISD Source Well	A_UAZ_UTRAU	18-Oct-2022	239	25.2	3.3	286.9	1.88	155	NC	NR	NR	NR	NR	NR	<EQL (25.1)	<EQL (90)	<EQL (0.5)	[0.252]
RDB_3D	ISD Source Well	A_UAZ_UTRAU	06-Oct-2021	238	25	14.8	284.4	NR	NR	NC	NR	NR	NR	NR	NR	95	NR	NR	353
			18-Oct-2022	223	24	13.8	285.64	2.23	110	NC	NR	NR	NR	NR	NR	35.4	<EQL (90)	<EQL (0.5)	109
RDB003DU	ISD Source Well	A_UAZ_UTRAU	06-Oct-2021	22	21.6	13.2	276.5	NR	NR	NC	NR	NR	NR	NR	NR	<EQL (28.5)	NR	NR	2.26
			18-Oct-2022	213	24.2	3.9	277.1	2.39	117	NC	NR	NR	NR	NR	NR	<EQL (24)	<EQL (90)	<EQL (0.5)	2.19
RDB005C	ISD & Tritium Source Well	TZ_UAZ_UTRAU	06-Oct-2021	42	23.9	186	273.29	2.5	46	NC	NR	NR	NR	NR	NR	<EQL (23.1)	NR	NR	32.7
			12-Oct-2022	24	24.4	185	267.61	5.56	226	NC	NR	NR	NR	NR	NR	<EQL (24.9)	<EQL (90)	<EQL (0.5)	30.3
RPS004C	ISD, Tritium Source & VOC Well	TZ_UAZ_UTRAU	06-Oct-2021	74	24.1	12.6	~~NS~~ 271.96	0.1	16	NC	<EQL (1)	1.52	<EQL (1)	16.7	1.44	NR	NR	NR	137
			18-Oct-2022	72	21.5	14.9	~~NS~~ 270.17	2.77	131	NC	<EQL (1)	1.64	<EQL (1)	9.73	[0.98]	<EQL (23.3)	<EQL (90)	<EQL (0.5)	141
RPS004DUR	ISD Source Well	A_UAZ_UTRAU	17-Oct-2022	180	22.2	4	~~NS~~ 272.63	1.6	-20	NC	<EQL (1)	2.04	<EQL (1)	1.36	<EQL (1)	<EQL (23.9)	<EQL (90)	<EQL (0.5)	376
RSE 10DU	Source Well	A_UAZ_UTRAU	05-Oct-2021	46	24.3	4.3	~~NS~~ 276.72	4.86	209	NC	NR	NR	NR	NR	NR	NR	NR	NR	18.8
			17-Oct-2022	49	25.6	29	~~NS~~ 276.90	4	228	NC	NR	NR	NR	NR	NR	NR	NR	NR	16.6
RWT003C	Source Well	TZ_UAZ_UTRAU	06-Oct-2021	26	21.9	20.4	~~NS~~ 270.29	2.2	8	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[0.41]	NR	NR	NR	NR
			17-Oct-2022	26	21.2	18.3	~~NS~~ 266.26	2.7	183	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	NR
JBSW-01	Surface Water	Unknown	12-Oct-2021	26	19	7.9	NA	5.25	104	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	<EQL (1.11)
			12-Oct-2022	778	17.8	4.7	NA	6.19	186	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.486]
JBSW-02	Surface Water	Unknown	12-Oct-2021	24	18.9	4	NA	4.97	108	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	<EQL (1.1)
			12-Oct-2022	760	17.9	4.3	NA	5.99	174	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.425]
JBSW-03	Surface Water	Unknown	12-Oct-2021	25	19.1	4.5	NA	5.27	116	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	<EQL (1.1)
			12-Oct-2022	783	21.1	5.1	NA	6.12	179	NC	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NR	NR	NR	[0.437]
MCS002A	Seepline Well	Unknown	12-Oct-2021	33	19.1	644	260.95	NR	NR	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.37)

Table A-1. RAOU EMR Monitoring Wells, 2021 - 2022

			Field Data								VOCs					Radionuclides			
			SAMPLE COLLECTION DATE	SPECIFIC CONDUCTANCE	WATER TEMPERATURE	TURBIDITY	SAMPLING EVENT WATER ELEVATION	OXYGEN	OXIDATION-REDUCTION POTENTIAL	FIELD CONDITIONS	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	CARBON-14	CHLORINE-36	IODINE-129	TRITIUM
		Unit		uS/cm	degC	NTU	ft	mg/L	mV		ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**	**GWPS**			**15**					**5**	**2**	**70**	**70**	**5**	**2,000**	**700**	**1**	**20**
			18-Oct-2022	31	21.1	1000	259.50	NR	NR	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.21)
MCS002B	Seepline Well	Unknown	12-Oct-2021	28	19.3	130	261.12	NR	NR	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.02)
			18-Oct-2022	18	17.8	320	259.50	NR	NR	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.05)
MCSW-03	Surface Water	Unknown	12-Oct-2021	33	18.2	2.4	NA	4.95	156	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.15)
MCSW-03	Surface Water	Unknown	10-Oct-2022	NS	NS	NS	NA	NS	NS	DRY	NR	NR	NR	NR	NR	NR	NR	NR	NS
MCSW-04	Surface Water	Unknown	12-Oct-2021	33	18.4	2.0	NA	4.98	126	NC	NR	NR	NR	NR	NR	NR	NR	NR	[0.934]
MCSW-04	Surface Water	Unknown	11-Oct-2022	71	17.8	2.5	NA	2.41	170	NC	NR	NR	NR	NR	NR	NR	NR	NR	1.68
MCSW-05	Surface Water	Unknown	12-Oct-2021	24	17.7	3.8	NA	4.09	185	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.18)
MCSW-05	Surface Water	Unknown	12-Oct-2022	22	17.2	7.3	NA	2.55	213	NC	NR	NR	NR	NR	NR	NR	NR	NR	0.567
MCSW-06	Surface Water	Unknown	12-Oct-2021	21	18.3	2.1	NA	5.47	210	NC	NR	NR	NR	NR	NR	NR	NR	NR	<EQL (1.14)
MCSW-06	Surface Water	Unknown	13-Oct-2022	19	17.8	2.6	NA	4.22	203	NC	NR	NR	NR	NR	NR	NR	NR	NR	0.689

Table A-2 Abbreviations and Definitions	
[0.425]	EPA Functional Guideline Code of 'J' was applied to the result, indicating an estimated quanity.
<EQL (1)	Constituent was below detection. The sample-specific practical quantitation limit is in parentheses.
20.4	Result exceeds applicable limit.
REJ	Result Rejected.
	Result is less than the applicable limit and without EPA Functional Guideline qualifiers.
NS	Requested to be sampled but was not. See comments as to why not.
NA	Not Applicable for this station or sample.
NR	Not a required sample analysis.

Table A-2 Field Comments	
C	Continuously pumping well / flowing stream
DRY	Dry well. No sample collected.
NS	Not sampled.
T	High turbidity. Some portions of the sample may not be analyzed.
X	Well pumped dry. Samples collected after well recovered.
N	Field parameters not stable when sample collected.
NC	No comment.

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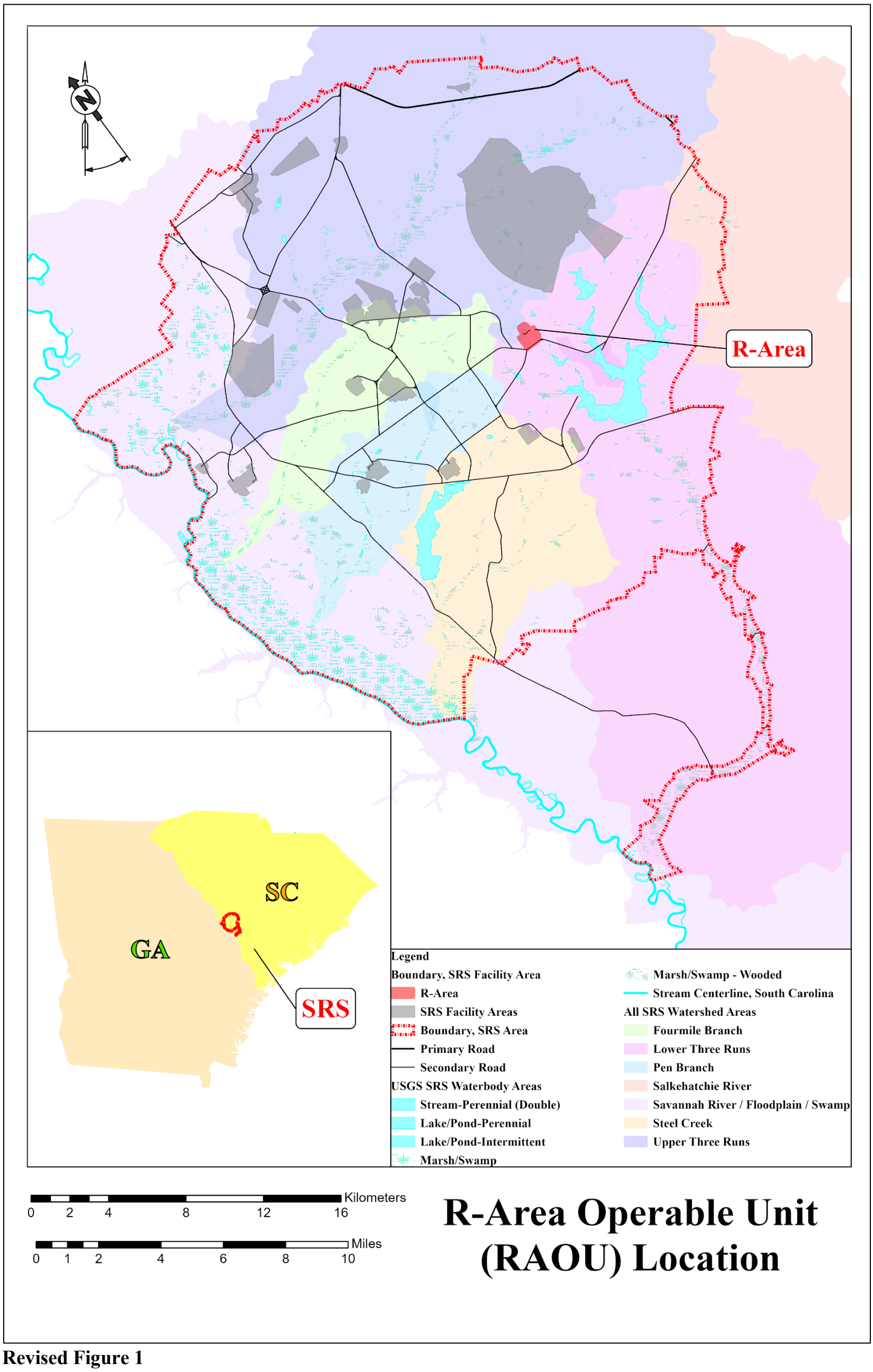
Revised Table 1. RAGW Monitoring Stations

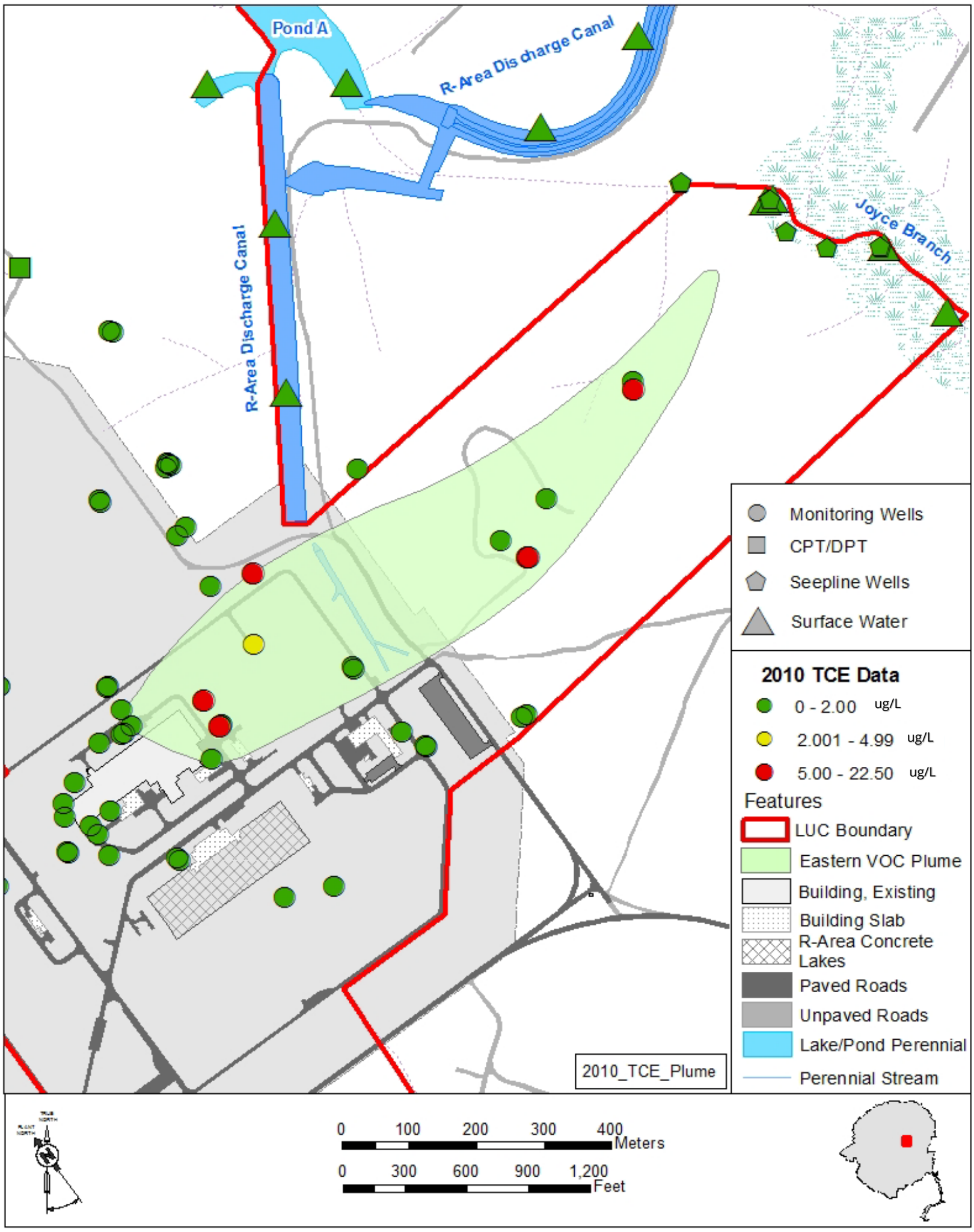
Plume	Station ID	Aquifer Zone	Purpose	UTM-N	UTM-E	Top of Casing	Screen Top Elevation	Screen Bottom Elevation
						(ft amsl)		
Eastern VOC	RAG002D	A/AA	Plume Definition Monitoring Well	3681720.40	446009.30	293.15	263.15	253.15
Eastern VOC	RWT003C	TZ	Source Area Monitoring Well	3681758.00	446116.35	292.46	204.00	194.00
Eastern VOC and Tritium	JBS005A	TZ	LUC Boundary Seepline Well	3682523.90	446822.19	228.80	220.30	217.80
Eastern VOC and Tritium	JBS005B	TZ	LUC Boundary Seepline Well	3682524.90	446823.38	222.70	215.20	212.70
Eastern VOC and Tritium	JBSW-01	NA	LUC Boundary Surface Water	3682501.80	446958.40	NA	NA	NA
Eastern VOC and Tritium	JBSW-02	NA	LUC Boundary Surface Water	3682455.00	446982.80	NA	NA	NA
Eastern VOC and Tritium	JBSW-03	NA	LUC Boundary Surface Water	3682430.00	447042.20	NA	NA	NA
Eastern VOC and Tritium	RAG006DU	TZ	Plume Definition Monitoring Well	3681805.30	446338.11	287.05	102.80	92.80
Eastern VOC and Tritium	RAG006B	LAZ	Plume Definition Monitoring Well	3681805.30	446338.11	287.05	102.80	92.80
Eastern VOC and Tritium	RAG008B	LAZ	Plume Definition Monitoring Well	3681970.60	446596.74	309.84	172.83	162.83
Eastern VOC and Tritium	RAG008BL	LAZ	Plume Boundary Monitoring Well	3681975.1	446596.0	310.26	148.74	138.74
Eastern VOC and Tritium	RAG008DL	MAZ	Plume Definition Monitoring Well	3681968.80	446594.12	310.08	225.45	215.45
Eastern VOC and Tritium	RAM009C	MAZ	Plume Definition Monitoring Well	3681712.18	446409.86	290.67	197.20	187.20
Eastern VOC and Tritium	RBP 11DL	TZ	Plume Definition Monitoring Well	3682219.05	446752.89	290.07	222.59	212.59
Eastern VOC and Tritium	RBP 11DU	A/AA	Plume Definition Monitoring Well	3682232.04	446751.49	289.43	231.87	221.80
Eastern VOC and Tritium	RBP011B	LAZ	Plume Boundary Monitoring Well	3682219.00	446753.00	286.20	175.71	165.70
Eastern VOC and Tritium	RCS003C	TZ	Plume Definition Monitoring Well	3681841.00	446191.38	292.12	202.12	192.12
Eastern VOC and Tritium, and ISD Performance	RPS004C	TZ	Source Area Monitoring Well, ISD Source Well	3681671.76	446128.19	292.90	211.30	201.30
Former Northern Tritium	MCS002A	A/AA	LUC Boundary Seepline Well	3682360.70	445350.21	263.30	260.30	254.80
Former Northern Tritium	MCS002B	A/AA	LUC Boundary Seepline Well	3682359.10	445350.70	263.40	255.90	253.40
Former Northern Tritium	MCSW-03	NA	LUC Boundary Surface Water	3682428.70	445355.00	NA	NA	NA
Former Northern Tritium	MCSW-04	NA	LUC Boundary Surface Water	3682493.70	445350.70	NA	NA	NA
Former Northern Tritium	MCSW-05	NA	LUC Boundary Surface Water	3682716.00	445249.00	NA	NA	NA

Revised Table 1. RAGW Monitoring Stations *(Continued/End)*

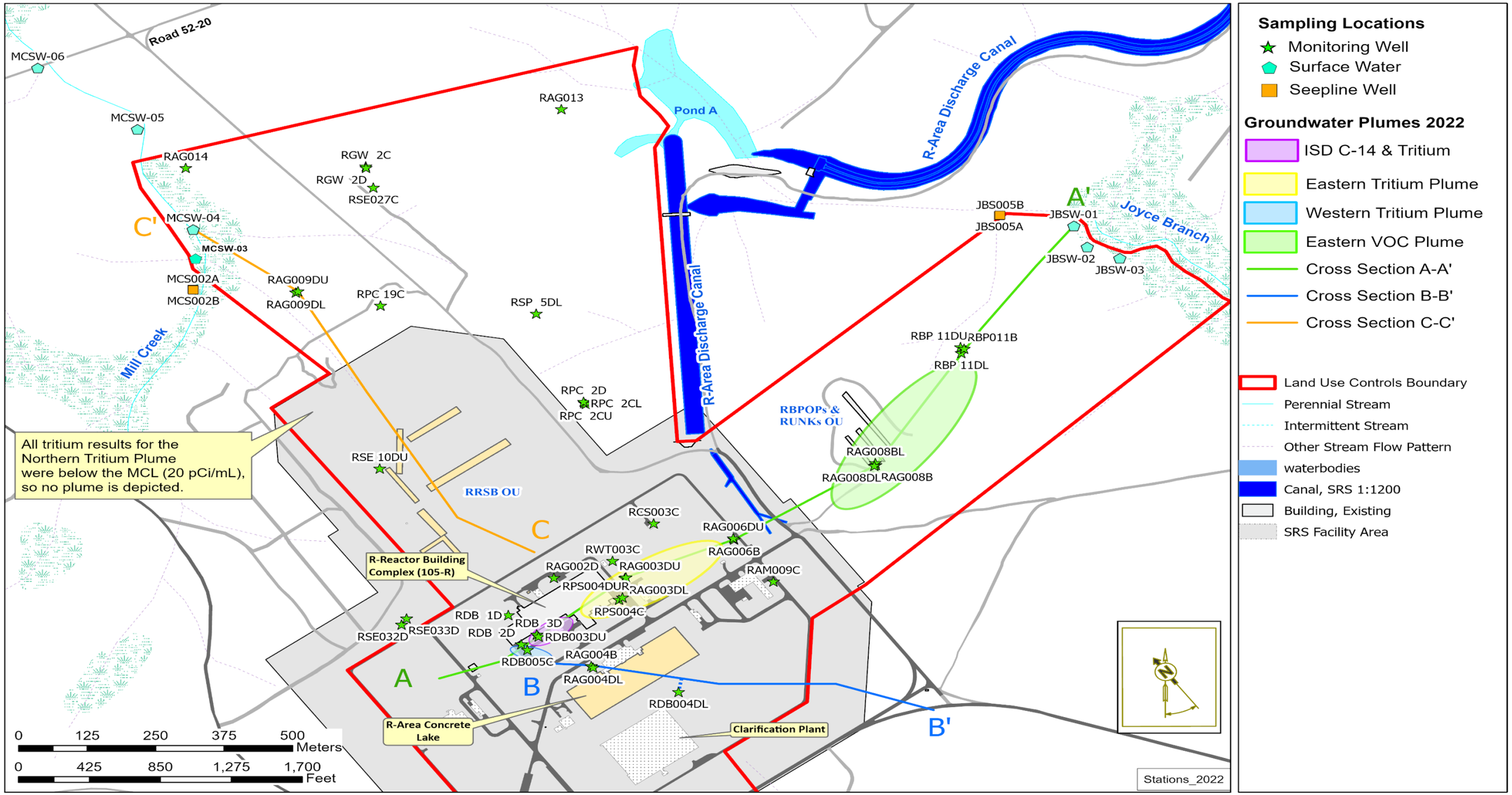
Plume	Station ID	Aquifer Zone	Purpose	UTM-N	UTM-E	Top of Casing	Screen Top Elevation	Screen Bottom Elevation
						(ft amsl)		
Former Northern Tritium	MCSW-06	NA	LUC Boundary Surface Water	3682852.00	445067.00	NA	NA	NA
Former Northern Tritium	RAG009DL	TZ	Plume Definition Monitoring Well	3682353.32	445538.11	283.72	193.10	183.10
Former Northern Tritium	RAG009DU	A/AA	Plume Definition Monitoring Well	3682356.13	445542.13	283.66	241.13	231.13
Former Northern Tritium	RAG013	TZ	LUC Boundary Monitoring Well	3682760.27	446022.85	266.10	202.50	192.50
Former Northern Tritium	RAG014	TZ	Plume Definition Monitoring Well	3682629.87	445337.18	278.00	201.00	191.00
Former Northern Tritium	RGW 2C	LAZ	Plume Definition Monitoring Well	3682633.20	445665.82	306.83	151.83	141.83
Former Northern Tritium	RGW 2D	TZ	Plume Definition Monitoring Well	3682629.97	445666.21	307.48	200.00	190.00
Former Northern Tritium	RPC 2CL	LAZ	Plume Definition Monitoring Well	3682107.95	446064.67	294.85	107.35	97.35
Former Northern Tritium	RPC 2CU	LAZ	Plume Definition Monitoring Well	3682106.22	446067.51	294.87	158.67	148.67
Former Northern Tritium	RPC 2D	A/AA	Plume Definition Monitoring Well	3682111.08	446063.41	294.60	279.39	259.39
Former Northern Tritium	RPC 19C	LAZ	Plume Boundary Monitoring Well	3682324.35	445692.68	304.22	160.22	150.22
Former Northern Tritium	RSE 10DU	A/AA	Source Area Monitoring Well	3681962.80	445691.31	283.72	273.10	253.00
Former Northern Tritium	RSE027C	MAZ	Plume Definition Monitoring Well	3682586.20	445679.59	308.52	178.94	168.94
Former Northern Tritium	RSP 5DL	TZ	LUC Boundary Monitoring Well	3682306.51	445976.95	296.82	186.52	176.52
Western Tritium	RAG004B	LAZ	Plume Boundary Monitoring Well	3681524.54	446077.40	293.05	125.56	115.56
Western Tritium	RAG004DL	TZ	Plume Definition Monitoring Well	3681521.36	446080.81	293.49	218.80	208.80
Western Tritium	RDB004DL	TZ	Plume Boundary Monitoring Well	3681467.14	446236.70	294.11	213.40	203.40
Western Tritium, ISD Performance	RDB005C	TZ	Source Area Monitoring Well, ISD Source Well	3681560.48	445960.77	293.49	208.60	198.60
ISD Performance	RSE032D	A/AA	ISD Background Well	3681616.50	445731.16	301.9	262.6	252.6
ISD Performance	RSE033D	TZ	ISD Background Well	3681630.20	445740.30	302.5	221.1	211.1
ISD Performance	RAG003DL	TZ	ISD Source Well	3681719.82	446138.79	292.7	195.9	185.9
ISD Performance	RAG003DU	A/AA	ISD Source Well	3681721.20	446140.70	292.5	237.9	227.9
ISD Performance	RDB 1D	A/AA	ISD Source Well	3681637.70	445925.99	292.7	285.5	265.5
ISD Performance	RDB 2D	A/AA	ISD Temporary Well	3681572.94	445949.65	292.9	285.7	265.7
ISD Performance	RDB 3D	A/AA	ISD Source Well	3681594.41	445978.05	293.0	285.8	265.8
ISD Performance	RDB003DU	A/AA	ISD Source Well	3681589.92	445981.24	293.1	238.7	228.7
ISD Performance	RPS004DUR	A/AA	ISD Source Well	3681676.74	446134.42	293.0	238.2	228.2



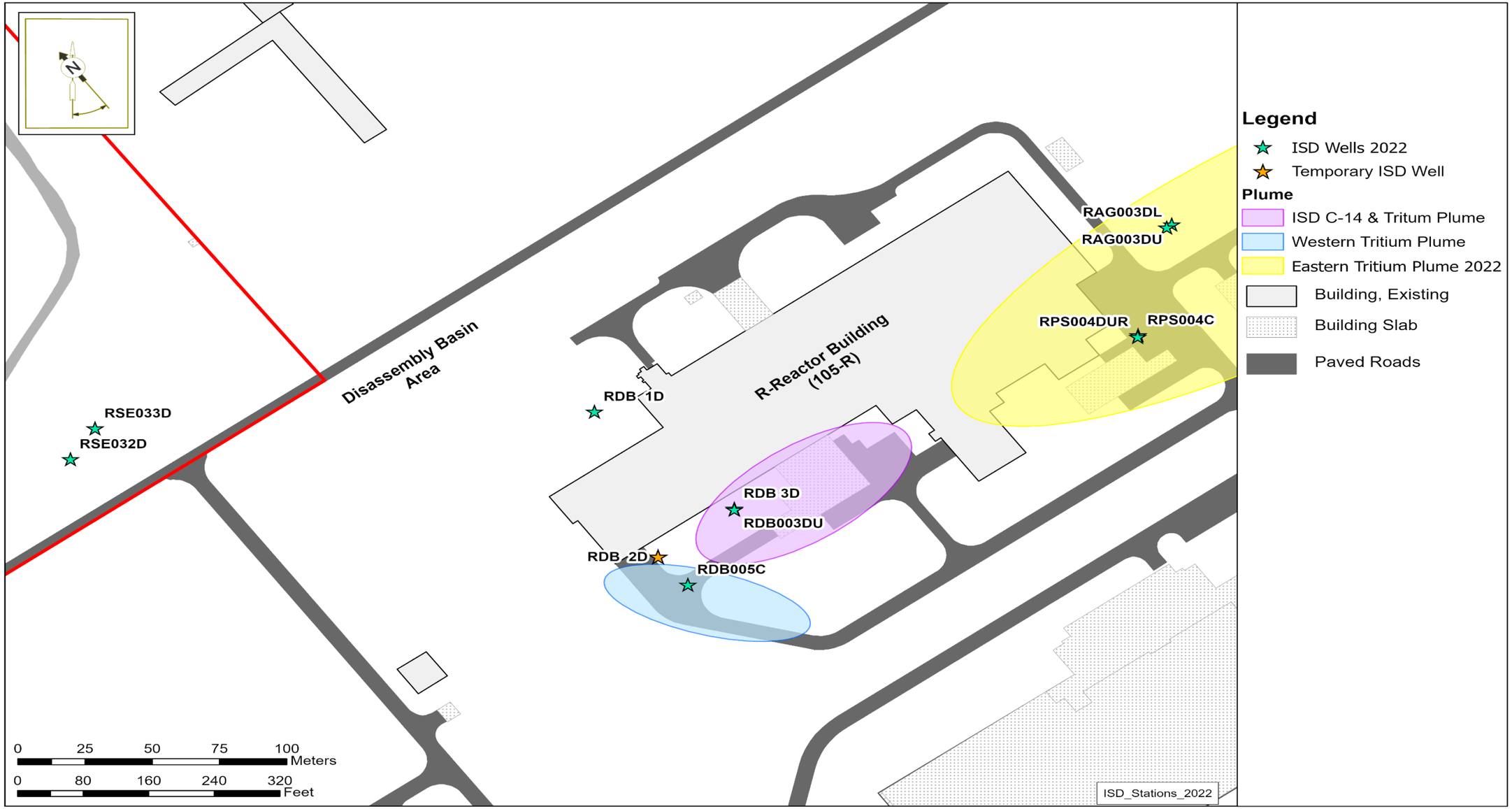
Revised Figure 1



Revised Figure 6 (Now Figure 7 in Revision 1)



Revised Figure 3



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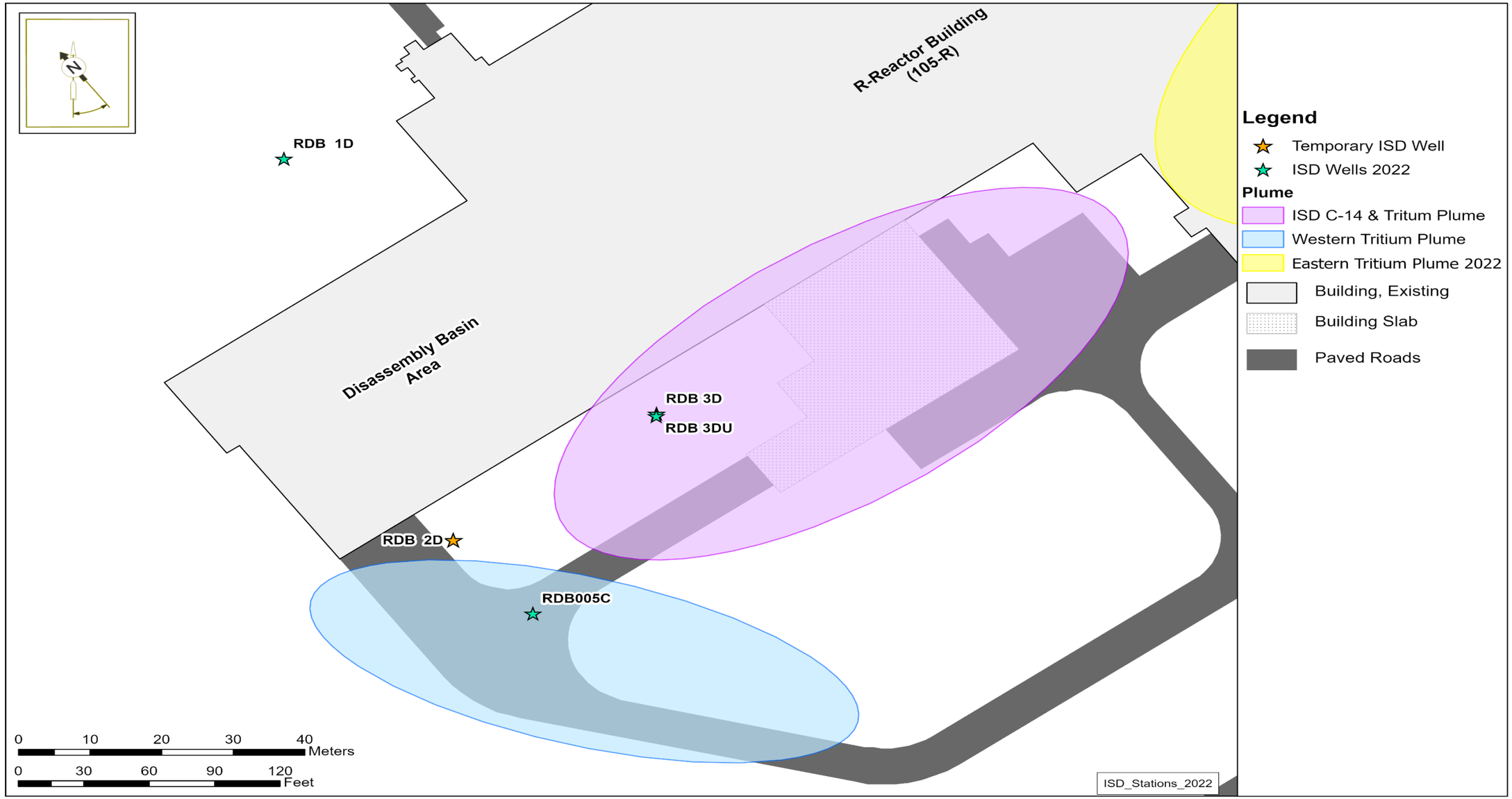

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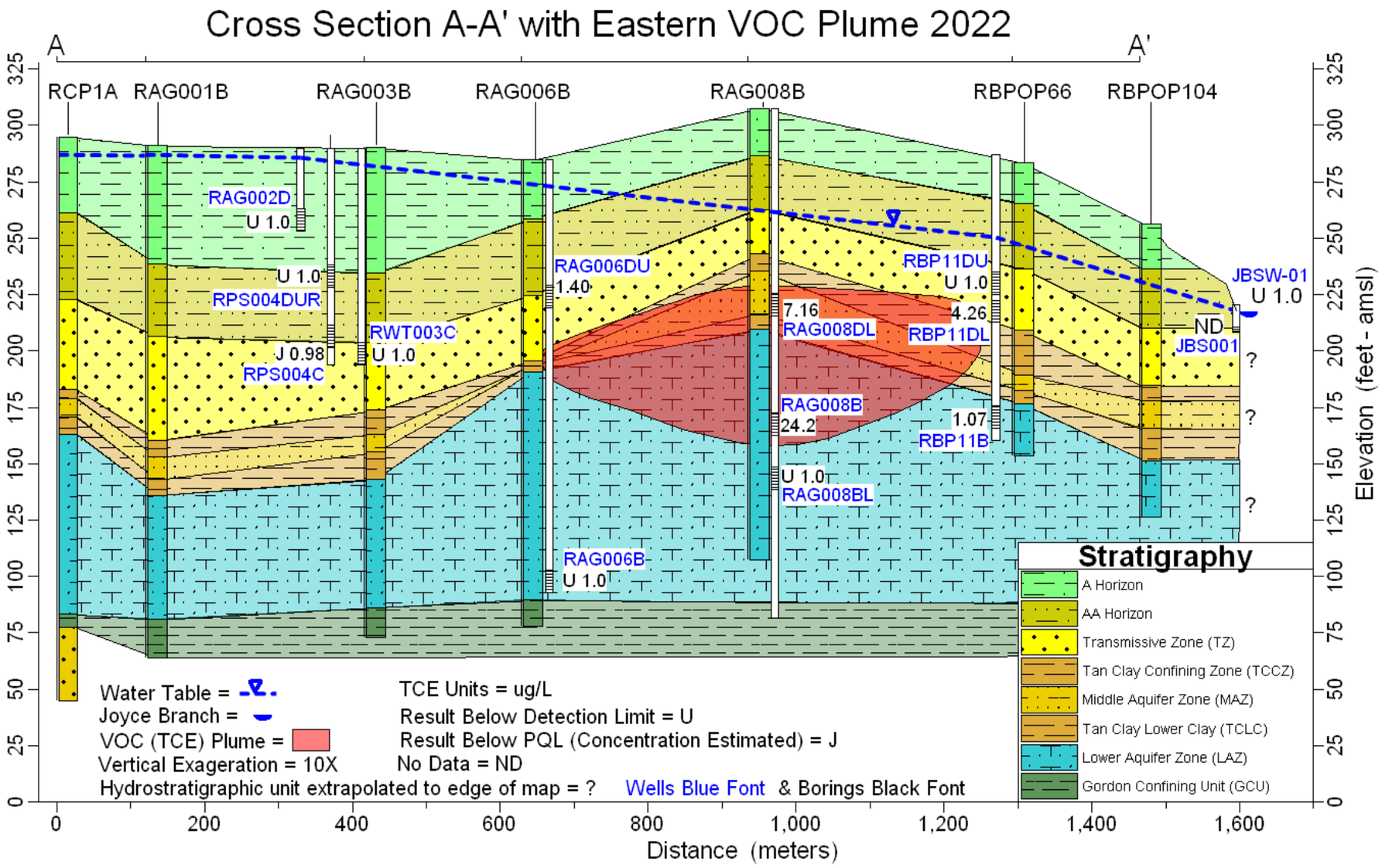
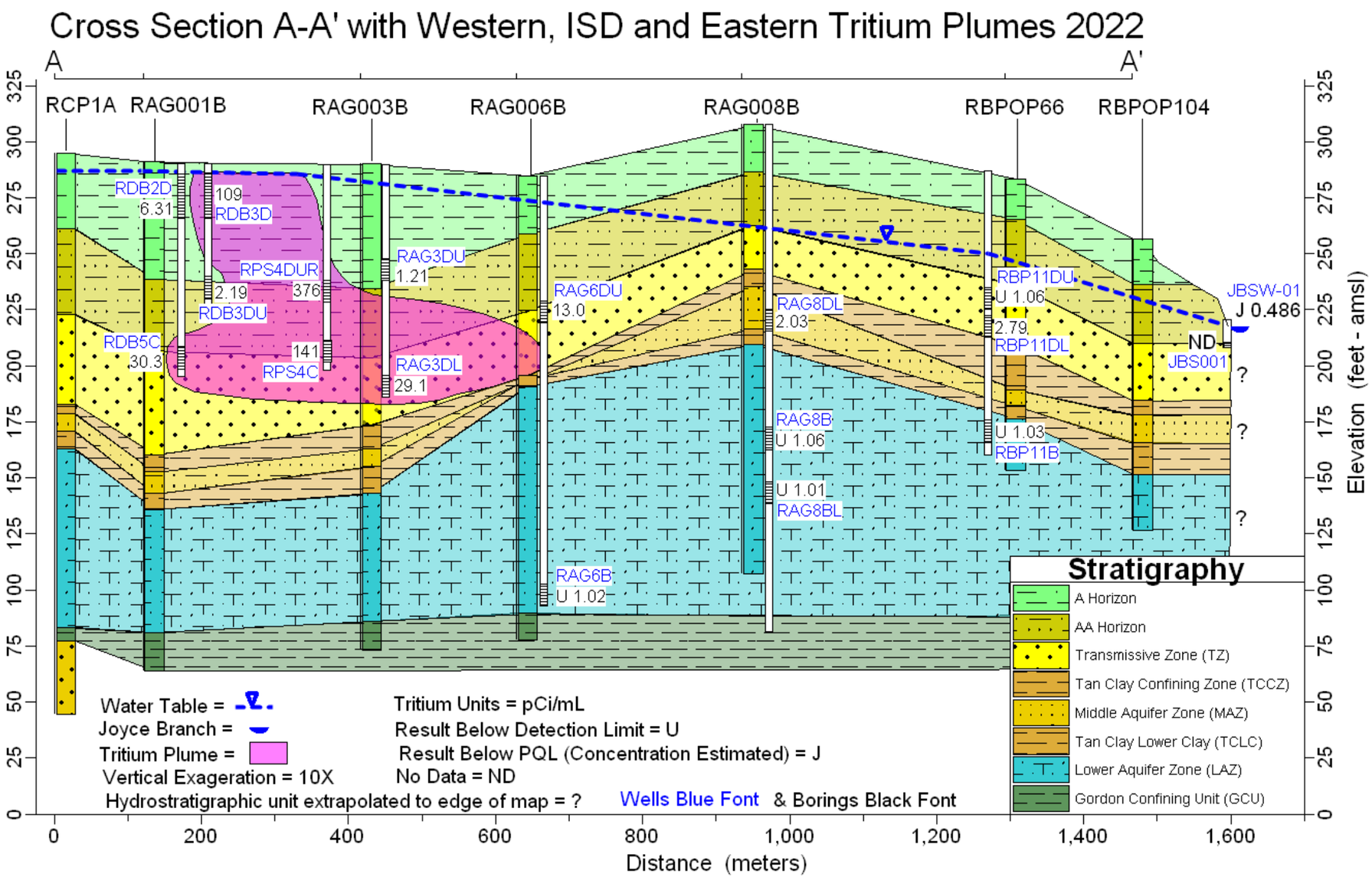
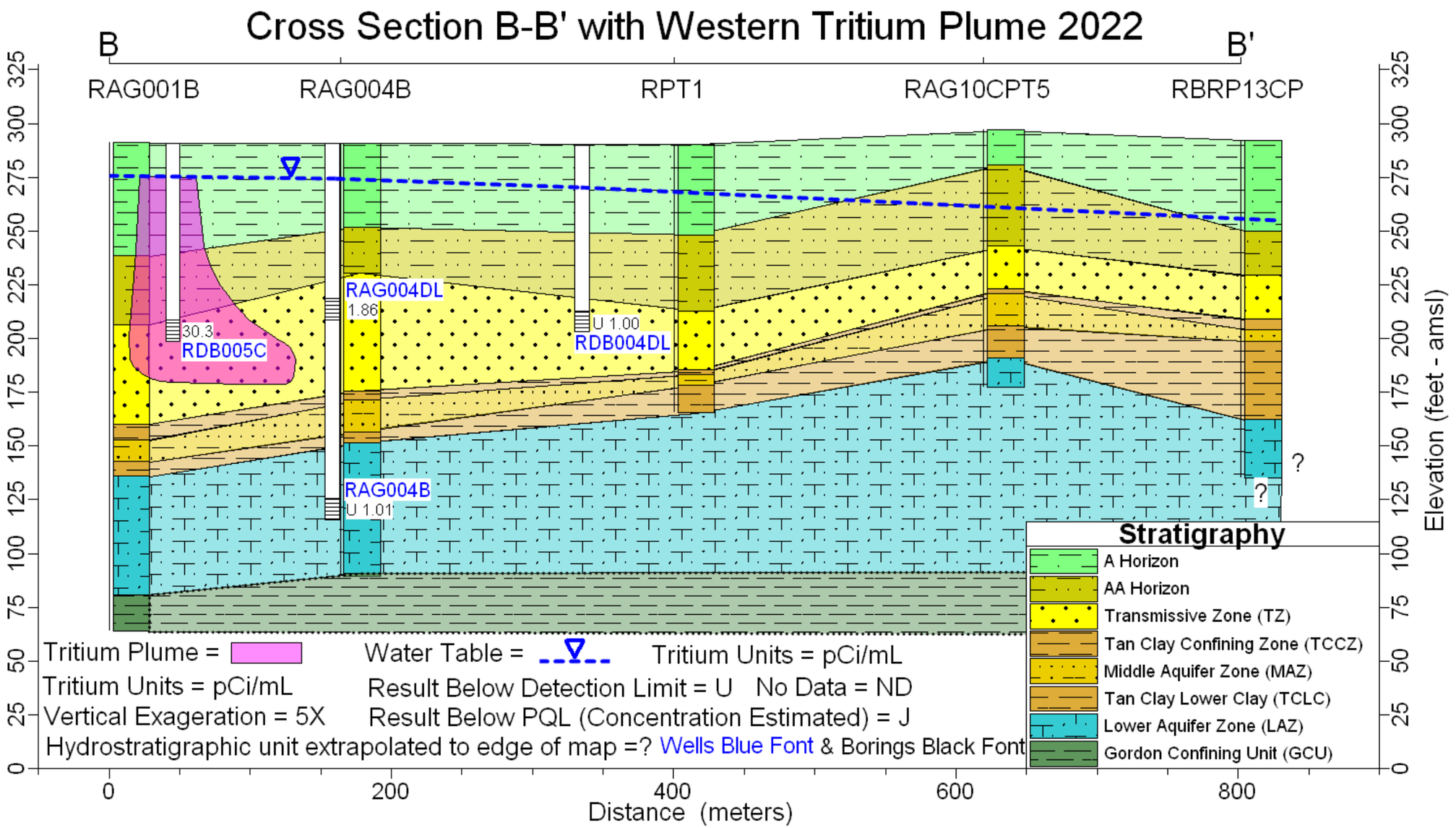


Revised Figure 8 (Now Figure 6 in Revision 1)



Revised Figure 9 (Now Figure 8 in Revision 1)



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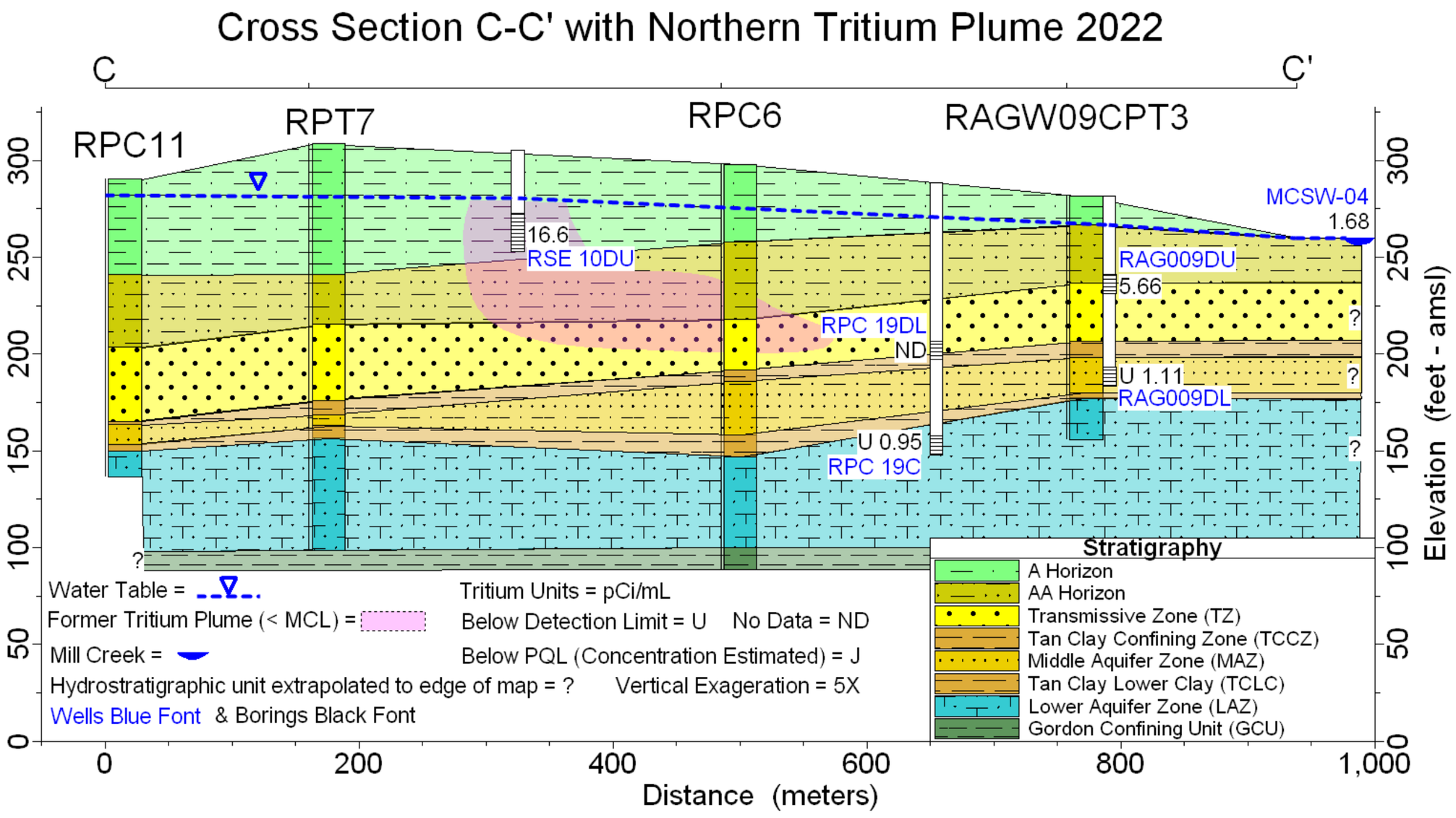

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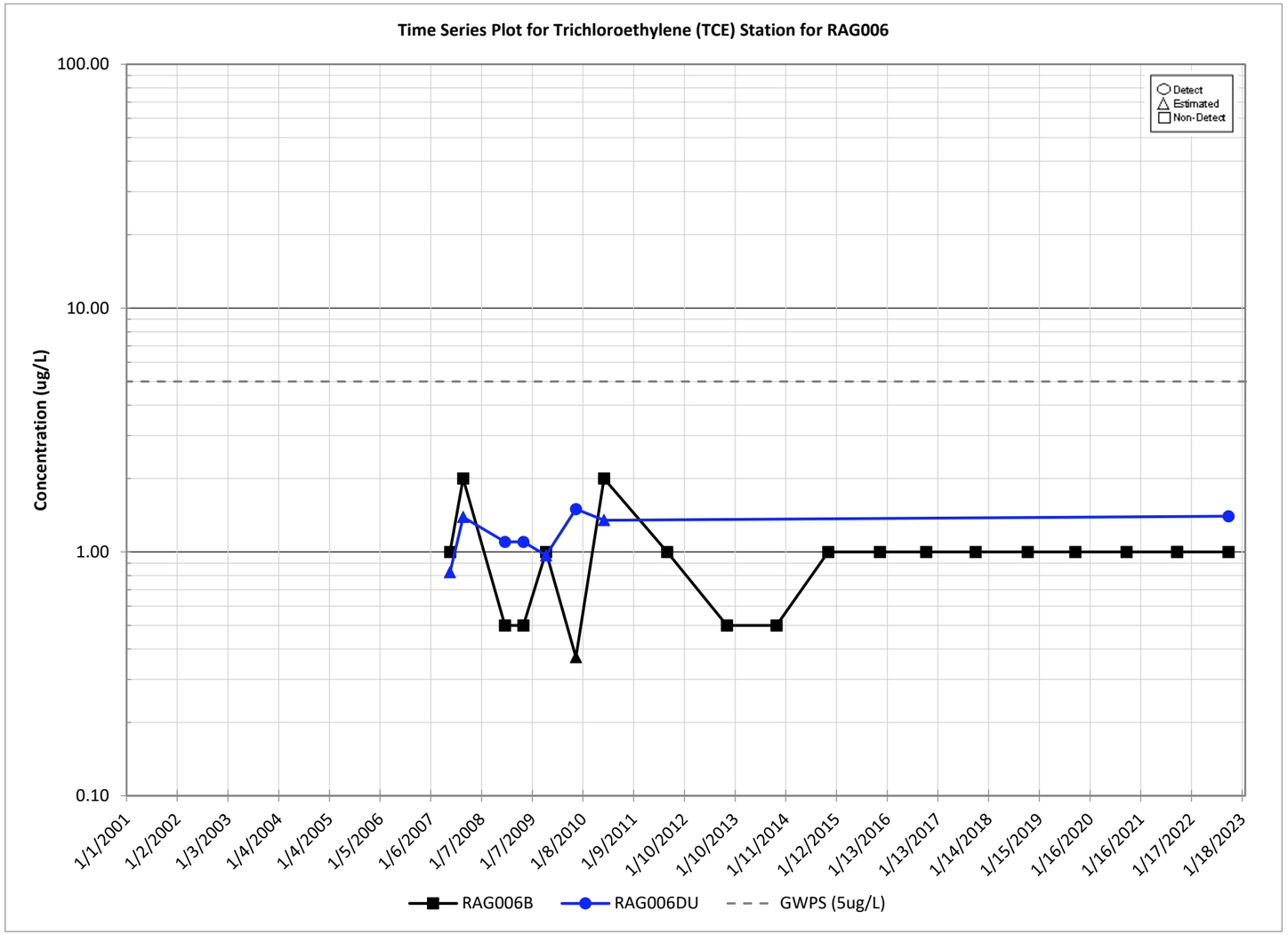

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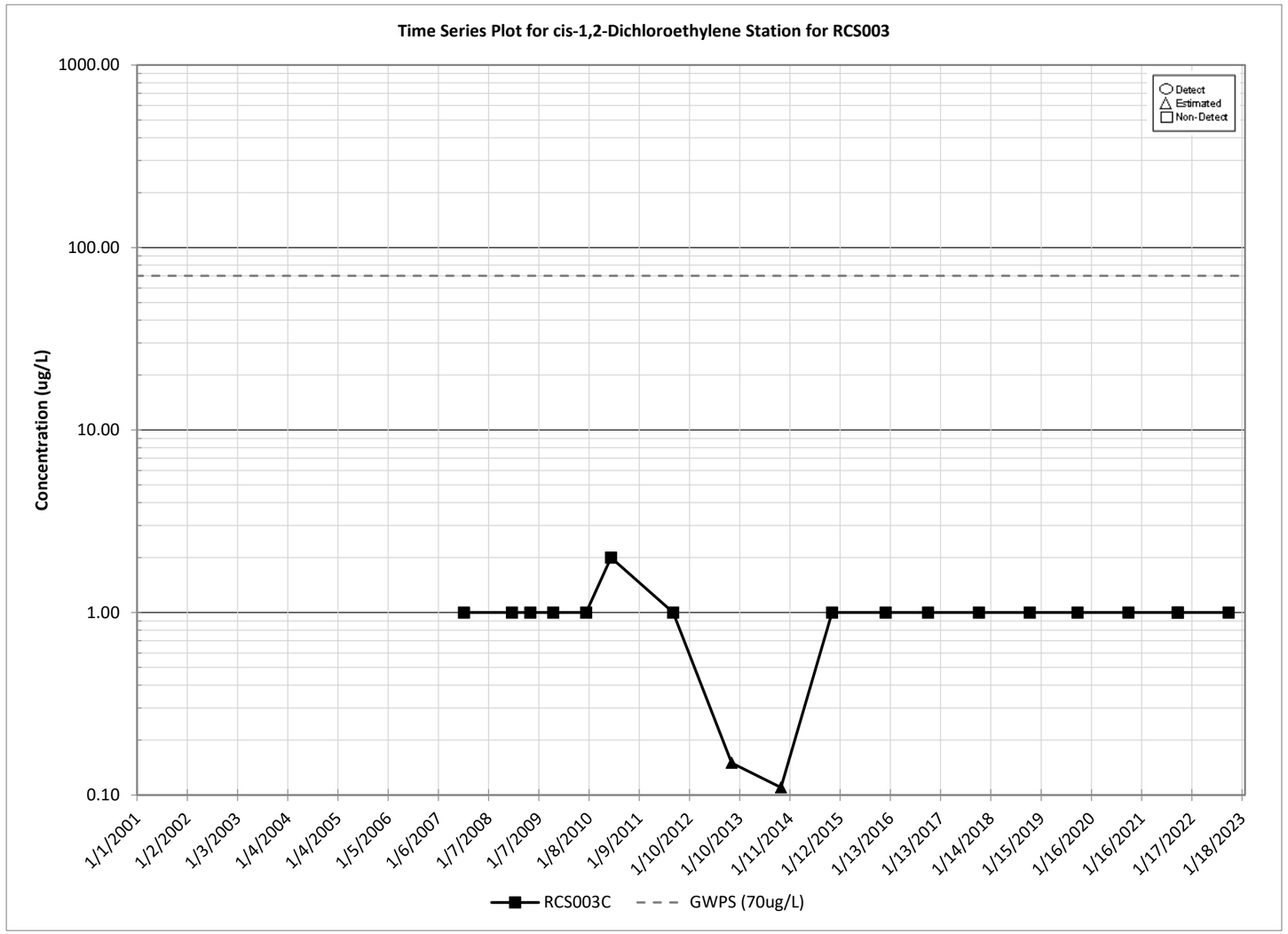

Revised Figure C-24

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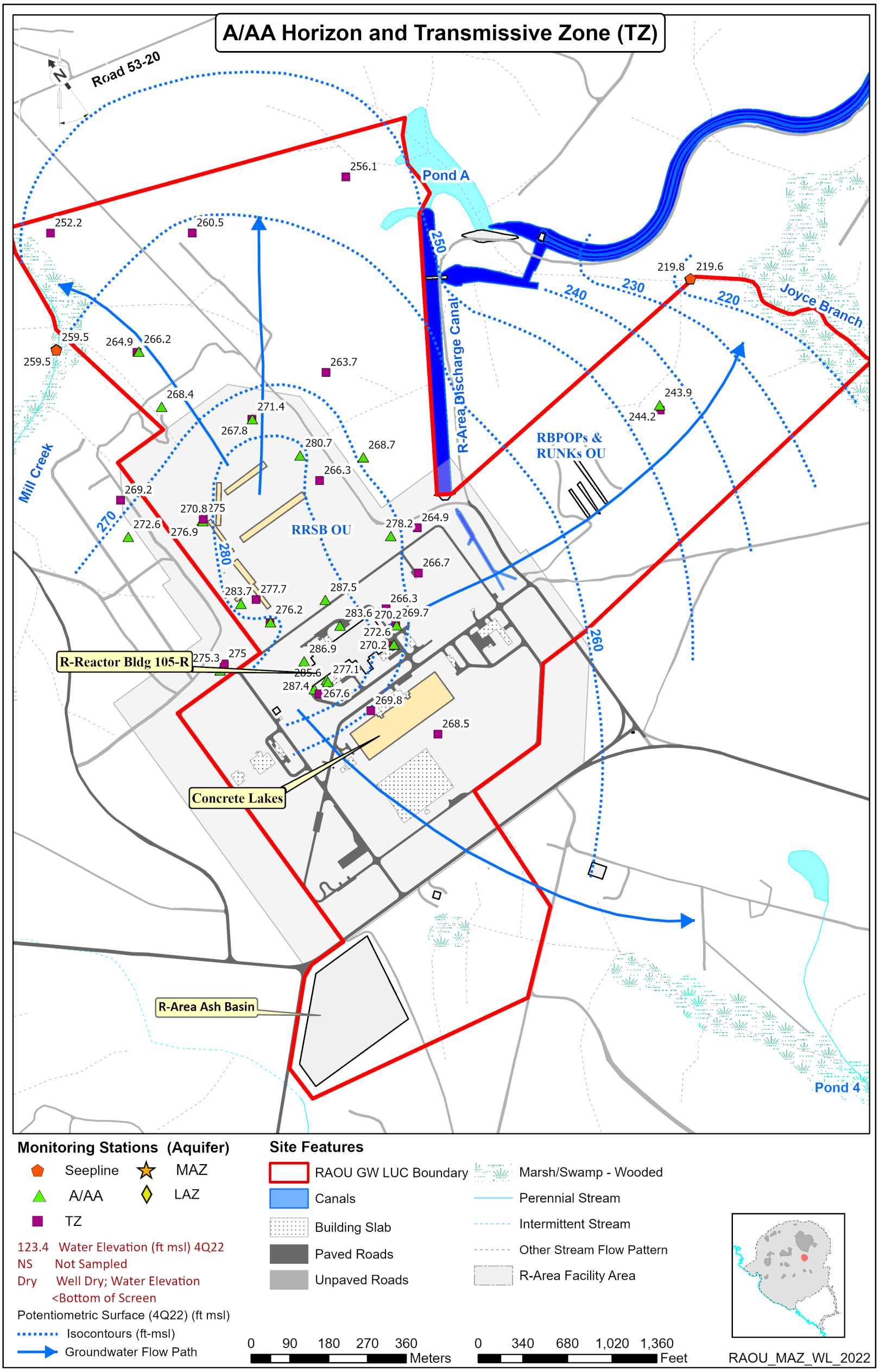
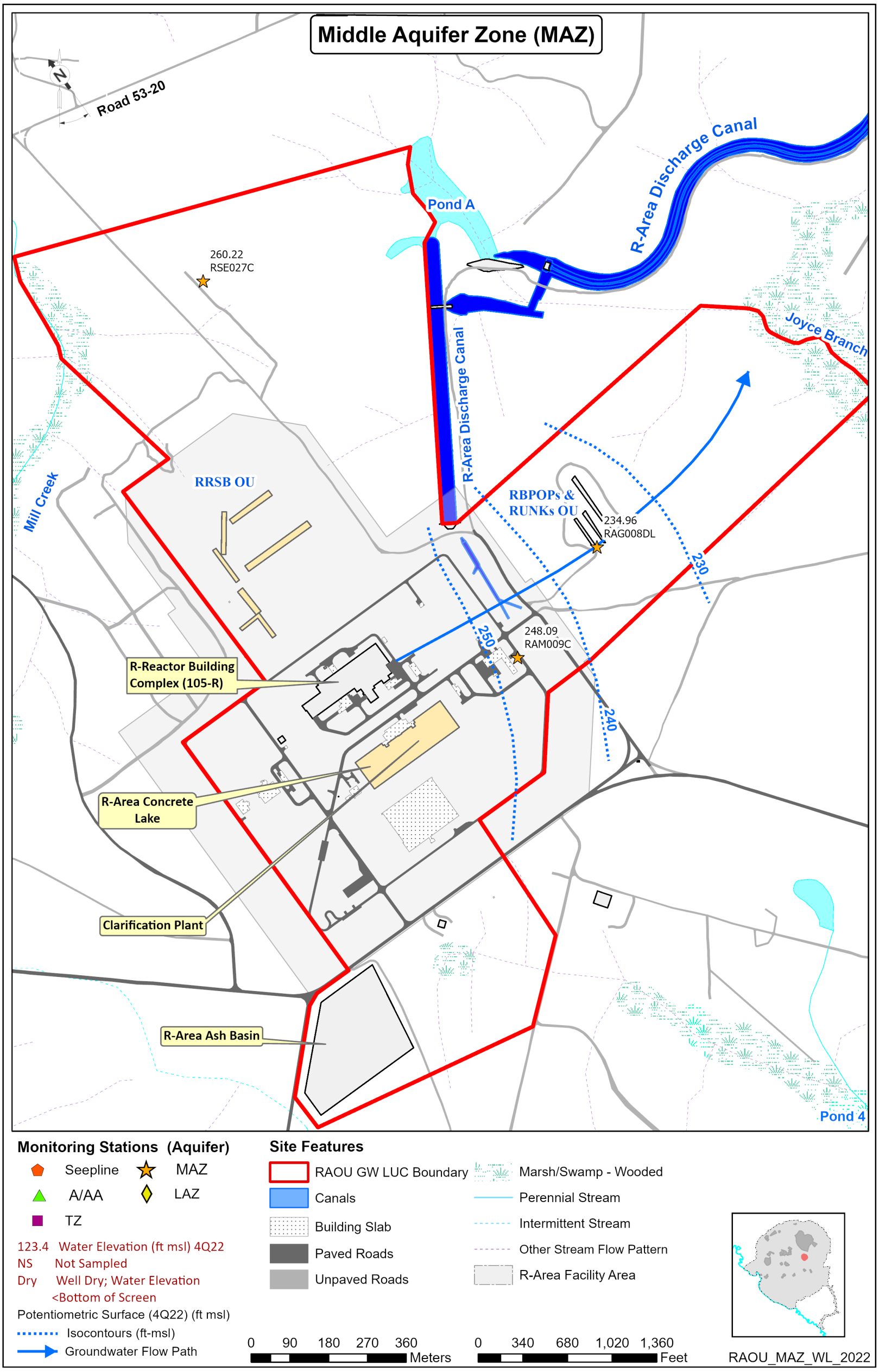


Revised Figure E-1



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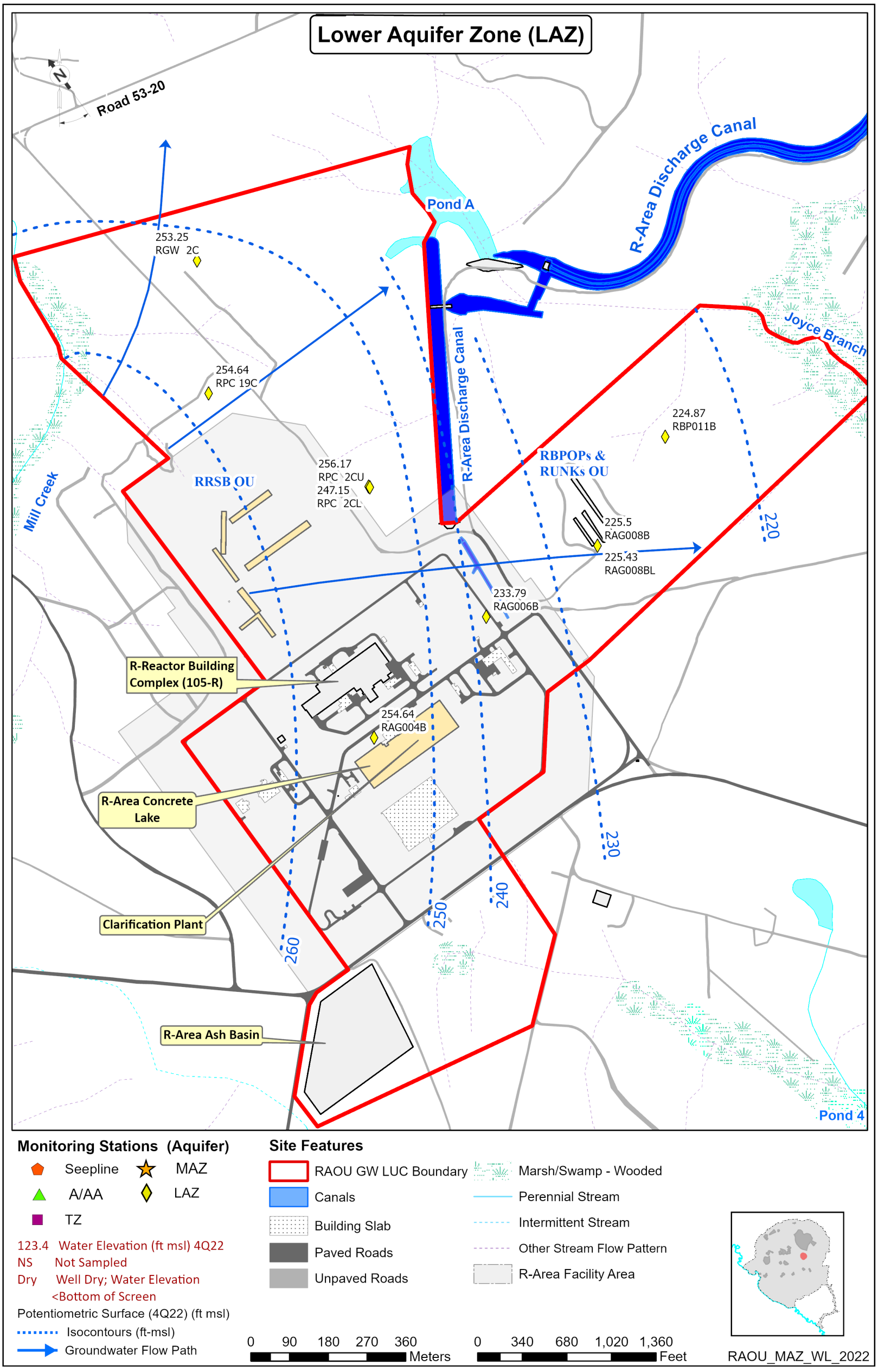

Revised Figure E-3

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