



Department of Energy
 Savannah River Operations Office
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MAR 18 2024

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

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

Dear Ms. Fulmer and Mr. Richards:

SUBJECT: Savannah River Site's Responses to the Regulatory Comments on the 2022 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report (U) (SRNS-RP-2023-00875, Revision 0, August 2023) SEMS Numbers: 21, 29

In accordance with the terms of the Federal Facility Agreement (FFA), the U.S. Department of Energy (DOE) is submitting the subject comment responses for your review. The U.S. Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC) provided comments on the report on November 15, 2023, and December 19, 2023, respectively. The report will not be revised; however, all comment responses will be included and/or addressed in the next report, as applicable. Please review these responses and provide your approval thirty (30) days from receipt. The time and effort 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) 952-7805, or the DOE Operable Unit Program Manager, Mr. Philip Prater, at (803) 952-9333.

Sincerely,

AVERY HAMMETT Digitally signed by AVERY
HAMMETT
Date: 2024.03.14 09:02:56 -04'00'

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

RDDD-24-126

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Ms. Susan Fulmer
Mr. Jon Richards

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Enclosures:

1. SRS Responses to the SCDHEC Comments on the 2022 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report (U) (SRNS-RP-2023-00875, Revision 0, August 2023) SEMS Numbers: 21, 29
2. SRS Responses to the EPA Comments on the 2022 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report (U) (SRNS-RP-2023-00875, Revision 0, August 2023) SEMS Numbers: 21, 29

cc:

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SRS plans to rework the format of the 2023 TNX annual report to follow the guidance of the *Environmental Compliance and Area Completion Projects Regulatory Document Handbook* (SRNS-RP-2022-00330). Although these format changes will subsequently affect the specific sections and page numbers that the below comments are found, the 2023 report will capture all revisions obligated by the responses from SRS.

GENERAL COMMENTS:

1. The Annual Report does not discuss the overall increasing trend in trichloroethylene (TCE) and uranium concentrations at monitoring well TNX 28D and what this means regarding potential plume migration and expansion. As noted in Section 6.3, VOC Constituents (i.e., PCE, TCE, Cis-1,2-DCE, VC, Ethylene, and CCl₄), concentrations of TCE were elevated from 2016 to 2018, but review of Appendix E, Time Series Plots, shows that concentrations of TCE have been increasing at this well since the edible oil (EO) injections began and generally since 1999 (see pdf page 323 of 364). Concentrations of uranium also appear to be increasing (see pdf page 352 of 364). In addition, according to Figure A-15, TNX Area Trichloroethylene (TCE) Concentration in Groundwater, 4Q2022 with >500 µg/L TCE Plume from 4Q1996 Superimposed, the TCE plume is migrating downgradient (see pdf page 106 of 196). These trends and potential plume migration should be discussed in the Annual Report. Also, Section 8.0, Summary/Recommendations, should indicate whether additional treatment may be necessary for the groundwater plume at wells TNX 28D and TRW 2 that is detached from the source (e.g., if EO injections should be considered). Additionally, these trends support the need for an additional well between wells TNX 28D and the TNX 72 well cluster. It is noted SRS agrees with installing a new monitoring well to address this data gap. *Please revise the Annual Report to discuss the increasing trends in TCE and uranium concentrations and any applicable recommendations to address further plume migration.*

Response: Clarification

In the 2023 annual report, text in Section 8.1 will be revised to state,

“Monitoring wells that have TCE concentrations exceeding the MCL (i.e., TNX 28D and TRW 2) are located downgradient of the EO treatment area and represent a plume that is detached from the source and migrating to the southwest. TCE concentrations within the detached plume do not currently trigger the criteria established in the 2013 ESD to the ROD for additional EO injection.”

For TCE and uranium at TNX 28D, additional text was added to the 2022 annual report to discuss those trends in more detail. In the 2023 annual report, text will continue to be provided at the appropriate level of discussion based on the 2023 results. No additional change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

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2. The current locations of the five Microblowers™ are not specifically identified on Figure A-9, Location of TNX Area SVE [Soil Vapor Extraction] Monitoring Well System, and the rationale for the placement of the Microblowers™ is unclear. The text in Section 3.2, Soil Vapor Extraction, states that five Microblowers™ are rotated between the SVE wells to optimize volatile organic compound (VOC) vapor removal and references Figure A-9 for the current SVE well network; however, it is unclear if the SVE wells equipped with BaroBalls™ were monitoring for soil vapor to determine how the five current locations were selected. Based on Section 7.1, Soil Vapor Extraction (SVE) Operations, during 2021 and 2022, the Microblowers™ were connected to wells TVM 1V, TVM 3V, TVM 4U, TVX004U, and TVX007U; however, it is unclear if these locations will change in the next year based on BaroBall™ well sample results. Please revise the Annual Report to identify the five current locations of the Microblowers™ on Figure A-9 and to discuss whether the rationale for selecting these locations considers BaroBall™ well soil vapor results.

Response: Agree with Clarification

SRS believes the rational for changing the location of a MicroBlower™ is more appropriate in Section 7.1. Text in Section 7.1 will be revised in the 2023 annual report to state,

“The MicroBlowers™ are rotated between SVE wells based on declining soil vapor VOC concentrations at a given SVE well. As the MicroBlower™ operates and vapor concentrations decline, the MicroBlower™ is rotated to a new SVE well to maximize mass removal. As vapor concentrations have declined at most SVE wells, the time between rotations have increased. Soil vapor samples are not collected from SVE wells connected to a BaroBall™; therefore, only soil vapor results collected from a MicroBlower™ are utilized to determine when MicroBlowers™ are to be rotated.”

The five MicroBlowers™ operated under normal conditions from January through June 2023. In June 2023, the SVE evaluation started and will continue through May 2024. During the evaluation, the MicroBlowers™ will be rotated around all 20 SVE wells for 30 day durations. Activities associated with the evaluation will be summarized in Appendix F of the 2023 annual report.

The purpose of Figure A-9 is to show the location of all wells associated with the SVE well network. The names of the five SVE wells connected to MicroBlowers™ in this report is provided in the text in both Sections 3.2 and 7.1 and can be easily identified on Figure A-9. No change to the current report is proposed.

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SPECIFIC COMMENTS:

1. **Executive Summary, Groundwater Monitoring, Page ES-3 of ES-8:** The text states that the TCE groundwater plume is located downgradient of the TNX Burial Ground source area and provides a figure reference, Figure ES-2, TNX Area Trichloroethylene (TCE) Concentration in Groundwater, 4Q2022 with >500 µg/L TCE Plume from 4Q1996 Superimposed. However, the TNX Burial Ground is not shown in Figure ES-2; it is unclear if this area is synonymous with the “Estimated EO Treatment Area”. Please revise Figure ES-2 and all other applicable figures, to show where the TNX Burial Ground is located.

Response: Agree with Clarification

Figure ES-2 does not include the location of the TNX Burial Ground due to spacing limitations with information more relevant for the figure reference. The sentence will be revised in the 2023 annual report to state, “The trichloroethylene groundwater plume is located downgradient of the TNX Burial Ground source area, which is located similarly to the Estimated EO Treatment Area depicted on (Figure ES-2).” No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

2. **Figure ES-2, TNX Area Trichloroethylene (TCE) Concentration in Groundwater, 4Q2022 with >500 µg/L TCE Plume from 4Q1996 Superimposed, Page ES-6 of ES-8:** The concentration used in the title of Figure ES-2 contradicts the 1996 and 2022 isocontour concentrations in the legend, which show that the plume contours were drawn using 5 µg/L. Additionally, the unit of measure for the 2022 isocontour line is absent from the figure legend. Please revise the figure title to reflect the correct concentration used to draw contour lines, update the title in the Table of Contents, and add the unit of measure to the 2022 isocontour line concentration in the figure legend.

Response: Agree

The figure legend should have the 1996 isocontour concentration as 500 µg/L and the 2022 isocontour unit of measure as 5 µg/L. This error will be corrected appropriately in the 2023 annual report. No change to the current report is proposed.

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3. **Section 3.2, Soil Vapor Extraction, Page 9 of 68:** The second paragraph mentions “V” and “U” screen horizons, but these horizon depths are not defined in the text. Also, several wells on Figure A-9, Location of TNX Area SVE Monitoring Well System, have “L” in the identifications, but the

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definition of L is not provided in the text. *Please revise the text to define all the letters and screen horizons used in the SVE wells nomenclature.*

Response: Clarification

Within the TNX OU SVE well network there are twenty wells that are utilized for SVE operations. The TVM series were originally installed during phase II of the TNX characterization for use as monitoring wells associated with the recirculation well (i.e., TVR 1A). TVM wells have screen intervals designated with “M”, “L”, “V”, and “U.” The “M” and “L” screen intervals were installed within the aquifer and are not used as SVE wells. The “V” and “U” screen intervals were installed in the vadose zone and are used as SVE wells. In the TVM series, the “V” screens are typically installed at shallower depths in the vadose zone and the “U” screens are deeper. The TVX series were installed specifically for SVE activities and were installed within the vadose zone, “U” wells are screened within the upper vadose zone, and “L” wells are screened within the lower vadose zone. Similar text is included in the first paragraph on page 10 of 68 of the 2022 annual report. No change to the current report is proposed.

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4. **Section 3.5, Radiologically Contaminated Groundwater, Page 12 of 68:** The text notes that there are two localized areas in the wetlands where radiological constituents in the groundwater monitoring wells exceed the Federal Maximum Contaminant Levels (MCLs), but only one monitoring well (i.e., TCM 5 for uranium) is identified in the text. According to Section 5.4, Analytical Results, MCL exceedances were noted for uranium at wells TCM 5 and TNX 28D; adjusted gross alpha during fourth quarter 2022 at well TNX 28D; and for combined radium during fourth quarter 2022 at wells TIR 1M, TNX 5D, TNX 28D, and TNX075D. *Please revise the text to clarify the locations within the wetlands where radiological exceedances were detected.*

Response: Clarification

Section 3.5 describes the remedial actions that have occurred, and the general location of the radionuclide contaminated groundwater at TNX Area OU based on previous observations. Monitor well specific results are mentioned in Section 5.4 and are not appropriate in Section 3.5. This section will be revised in the 2023 annual report to state, “The two areas are southwest of the TBG and in the wetlands southwest of the OTSB, near the TNX OD (Figure A-2a). ~~Based on the monitoring data and historical trends, the exceedances are sporadic or one-time occurrences. TCM 5 is the only well with persistent uranium concentrations that exceed the MCL (Appendix E, Page E-12).~~ There are no discernible and consistent groundwater plumes...” No change to the current report is proposed.

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5. **Section 4.1.1, Sampling Issues, Page 18 of 68:** The first bullet point notes that there is a history of well TNX 72S being dry due to the shallow screen depth but does not discuss if a data gap exists from this missing sample and result. *Please revise this section to state whether a data gap exists due to the missing sample result at TNX 72S and if additional actions are necessary.*

Response: Clarification

A detailed description of the three screen intervals at the TNX 72 well cluster and their vertical placement with respect to the water table is provided in Section 4.0, second paragraph on page 17 of 68, of the 2022 annual report. TNX 72D is the only screen interval at this cluster that is consistently sampled. The screen interval at TNX 72D is in a similar horizon as upgradient monitoring wells in the wetlands and provides the most representative groundwater to monitor contaminant plume migration. With the location of the screen interval at TNX 72D, there is no data gap present when the two shallower screen intervals at the TNX 72 well cluster (e.g., TNX 72S and TNX 72M) cannot be sampled during low water elevation conditions. The paragraph in Section 4.0 can be referenced in Section 4.1.1 when any of the TNX 72 screens (e.g., TNX 72S, TNX 72M, or TNX 72D) are not able to be sampled because of low water elevations. No change to the current report is proposed.

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6. **Table 4-1, TNX Sample Stations, Page 21 of 68:** The text in Section 4.1, Sampling Events, notes there are 43 wells in the monitoring well network, but this table lists 44 wells. It appears well TVR 1A is listed twice with two separate screen depth intervals, but the results in Appendix B, Groundwater Monitoring Results [Matrix Tables], only list one result for well TVR 1A. *Please revise this table to clarify why TVR 1A is listed twice and note which screen depth interval was sampled in 2022.*

Response: Agree with Clarification

TVR 1A was originally installed as a recirculation well that is constructed with two screens within the same well. The upper screen (15-40 ft bgs) is installed within the vadose zone and the lower screen (65-75 ft bgs) is installed within the water table. In well TVR 1A, groundwater can only be collected from the lower screen that is within the water table.

For clarity on which screen is being used for groundwater analyses at TVR 1A, Table 4-1 “TNX Monitoring Well Network” will be updated in the 2023 report to add a footnote identifying the shallow screen interval is located in the unsaturated zone and not sampled. No change to the current report is proposed.

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Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

7. **Section 5.4.13, Edible Oil Parameters, Pages 32 and 33 of 68:** Oxidation reduction potential (ORP) is discussed as decreasing after EO injections with sustained low concentrations at three wells (i.e., TBG 4, TBG 5, TNX 3D) through 2022; however, the bullet point for well TBG 4 notes a temporary increase in ORP in 2021 and the bullet point for well TNX 3D states that ORP in this well has steadily increased since 2015. *Please revise the initial statement that describes ORP in these three wells to be consistent with the trends discussed in the bullet points.*

Response: Clarification

Although there have been upticks in ORP concentration during sampling events since the deployment of EO in 2008, 2010, and 2015, the overall ORP trends at TBG 4, TBG 5, and TNX 3D have remained lower than background concentrations.

No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

8. **Table 5-2, Constituents Exceeding USEPA MCLs in T Area Wells and Surface Water During 2022, Page 38 of 68:** The table shows that at least one primary well was above the MCL during 2022 for uranium and combined radium. However, according to Sections 5.4.7, Uranium and 5.4.9, Combined Radium, there were only two auxiliary wells that exceeded the uranium MCL and three auxiliary wells and one secondary well that exceeded the combined radium MCL during 2022. *Please revise the table to remove the primary well indicators for Uranium and Combined Radium.*

Response: Agree

This error in the table will be revised appropriately in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

9. **Section 6.3, VOC Constituents (i.e., PCE, TCE, Cis-1,2-DCE, VC, Ethylene, and CCl₄), Page 41 and 42 of 68:** The trends shown in Appendix E, Time Series Plots, do not support the statements in the text. Section 6.3 states that variable TCE concentrations at well TRW 2 are likely due to treated groundwater flowing from upgradient sources based on the changing EO parameters and references decreasing dissolved oxygen (DO), decreasing ORP, increasing methane, and denitrification. However, the Time Series Plots for Station TRW 2 show variable DO concentrations (pdf page 194

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of 364) and decreasing methane concentrations (Appendix E, pdf page 218 of 364) since 2015. It is also noted in Section 5.4.13, Edible Oil Parameters, that ORP concentrations at well TRW 2 have been variable from 2018 to 2021. *Please revise the discussion of the EO parameters at TRW 2 in Section 6.3 to be consistent with the recent data presented in the Annual Report.*

Response: Agree with Clarification

The text associated with TRW 2 will be revised in the 2023 annual report to more appropriately state, “Treated groundwater flowing toward TRW 2 is also evident by ~~the changing comparing~~ EO parameters between pre-EO and post-EO measurements (i.e., ~~decreasing lower~~ DO, decreasing lower ORP, ~~increasing higher~~ methane, and denitrification).” Although the trends of DO, ORP, and methane have been variable, the comparison to background or pre-EO injection measurements that can be used to observe the effects of EO on the groundwater near TRW 2. For DO, pre-EO injection concentrations were in the 6-9 mg/L range compared to post-EO injection measurements range between 1 and 5 mg/L. ORP measurements were similar decreasing from a range of 100 to 250 mV pre-EO injection to a post-EO injection range of 0 to 150 mV. Methane concentrations ranged between 0.1 and 10 µg/L and increased to a range of 100 to 3,000 µg/L after EO injections. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

10. **Section 6.4, Edible Oil Parameters, Page 44 of 68:** There is conflicting information presented for DO trends. The text states that DO concentrations are increasing at the injection and monitoring wells within the area treated with EO. However, Figure A-31, Comparison of Dissolved Oxygen Concentration in the Treatment Zone in 2007 and 2022, shows a decreasing trend in DO for this area. *Please revise the text to reflect the information provided in Figure A-31.*

Response: Agree with Clarification

Figure A-31 shows a comparison of DO concentrations under pre-EO conditions to post-EO conditions during 2022. The sentence referencing Figure A-31 will be revised in the 2023 annual report to state, “Although DO concentrations have been observed to be increasing, some of the DO concentrations in 2022 are still lower than pre-injection or early injection concentrations ~~In 2022, DO concentrations continue to increase at injection and monitoring wells within the treatment area (Figure A-31)~~”. No change to the current report is proposed.

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11. **Section 6.4, Edible Oil Parameters, Page 44 of 68:** There is conflicting information regarding total organic carbon (TOC) trends. The text states that elevated TOC is evidence of a reductive environment in the treatment area. However, Figure A-32, Comparison of Total Organic Carbon Concentration in the Treatment Zone in 2008 and 2022, shows that TOC has decreased since 2008. *Please revise the text to reflect the information provided in Figure A-32.*

Response: Agree with Clarification

At the top of page 44 of 68, the following statement will be revised in the 2023 annual report, “Evidence of the presence of EO or a reductive environment in the treatment area includes:...” Evidence of a reductive environment is presented with changes in DO, ORP, sulfate, methane, and nitrate (i.e., denitrification). TOC does not provide evidence of a reductive environment, but provides evidence that EO was introduced into the targeted area. The order of these parameters will also be changed to list TOC first, then DO, ORP, sulfate, methane, and nitrate. The supporting paragraphs describing trends of each parameter will also be rearranged in the same order. No change to the current report is proposed.

Multiple wells (i.e., TBG 3, TBG 4, TBG 5, and TNX 3D) were not analyzed for TOC in the fourth quarter 2022 as described in Section 4.1.1, page 19 of 68. As a result, “NS” or not sampled was placed on the map for these wells and TOC was not contoured. Second quarter 2022 TOC results for wells TBG 3 (889,000 ug/L), TBG 4 (104,000 ug/L), TBG 5 (114,000 ug/L), and TNX 3D (8,540 ug/L) represent more accurate concentrations in the treatment zone for the reporting year. In the future, if TOC or other EO parameters are not sampled then contours will still be provided based on the well’s historical concentrations or results from an earlier quarter from the same year.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

12. **Section 6.4, Edible Oil Parameters, Page 45 of 68:** There is conflicting information presented for the ORP results for well TRW 3. The text states, “ORP results at injection wells (i.e., TBG 4, TBG 5, TNX 3D, TRW 3, TRW 4R, and TVM 1M) decreased to values of < -100 mV [millivolts] after each injection of EO;” however, based on the time series plot in Appendix E, injection well TRW 3 (pdf page 258 of 364) did not have ORP values less than -100 mV after each injection of EO. *Please revise Section 6.4 to indicate that well TRW 3 did not reach ORP values less than -100mV after each of the EO injections.*

Response: Agree with Clarification

To clarify, well TRW 3 only received an EO injection during the 2015 treatment event. After the 2015 EO treatment, ORP concentrations at TRW 3 decreased to a low of -91 mV in 2019 and ORP gradually increased into 2022. Although, ORP concentrations at TRW 3 have

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remained lower than background since 2015, concentrations did not quite achieve less than -100 mV as the text suggests.

The second sentence in the second paragraph on page 45 of 68 will be revised in future reports to state, “ORP results at injection wells (i.e., TBG4, TBG 5, TNX 3D, TRW 3, TRW 4R, and TVM 1M) decreased to values of <u>approximately</u> -100 mV after EO was injected during either the 2008, 2010, ~~and or 2015 injection of EO.~~” No change to the current report is proposed.

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13. **Appendix B, Groundwater Monitoring Results (Matrix Tables), Pages B-3 and B-4 of B-4:** There are five results listed for TOC at various wells in each table, but it is unclear why these multiple results are reported. *Please revise these tables to note why five results are listed for TOC at various wells and clarify which result is used in the Annual Report text and figures (e.g., Appendix E, Time Series Plots).*

Response: Clarification

The following paragraph was added to Section 4.0 in the 2022 annual report (page 18 of 68) based on a comment received from the USEPA on the 2021 annual report:

“Five total organic carbon (TOC) results may be provided for each analysis by the contracted laboratory based on their procedures. Each sample is run in quadruplicate and then averaged. The TOC results are reported to SRS and provided in Tables B-1 and B-2. The maximum TOC result is posted on the maps in Appendix A and time series plots in Appendix E.”

No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

14. **Appendix D, Hydrographs, and Appendix E, Time Series Plots:** Some of the graphs show vertical lines marking when the different remedial actions were taken, but the color coding does not always match the colors in the key. For example, in Appendix D the red line in the hydrographs appears to mark the SVE start date of 2002, but this line does not appear red in the key. In Appendix E, the green vertical lines in the time series graphs appear to represent when the EO injection occurred, but the EO injections are also labeled as black lines in the key. *Please revise the graphs in*

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these appendices to show the correct color coding for the lines or provide a key for both appendices to clarify the dates noted on the hydrographs and time series graphs.

Response: Agree with Clarification

The degraded quality of the time series plots in Appendix D and E was the outcome of reducing the original file size so it could be emailed to USEPA and SCDHEC. The original pdf file was reduced from 270 MB to approximately 20 KB. In this reduction, some of the figures became pixelated and the coloration of the legend on the graphs was no longer legible. SRS is still in the process of evaluating a better way to send the electronic file to prevent this from happening in the future.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

MINOR COMMENTS

1. **List of Figures, Page iii of viii:** Figure A-12, TNX Area Well Locations (which is the same figure as Figure ES-1, TNX Area Well Locations), is missing from the List of Figures. *Please revise the List of Figures to include Figure A-12, TNX Area Well Locations found on page A-17.*

Response: Agree

This error will be corrected appropriately in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

2. **List of Abbreviations and Acronyms, Page vi of viii:** The abbreviation for below ground surface (bgs) and United States Geological Survey (USGS) are used in the text but are not included in the List of Abbreviations and Acronyms. Conversely, the abbreviations for centimeter (cm), feet (ft), gallon (gal), inch (in), meter (m), cubic meter (cm³) and gallons per minute (gpm) are not used. *Please revise the List of Abbreviations and Acronyms to add the abbreviations used in the text but not listed and remove those that are not used in the text.*

Response: Agree with Clarification

The List of Abbreviations and Acronyms will be revised to include below ground surface (bgs) and United States Geological Survey (USGS), and the abbreviations for cubic meter (cm³) and gallons per minute (gpm) will be removed in the 2023 annual report. The other abbreviations centimeter (cm), feet (ft), gallon (gal), inch (in), and meter (m) are used throughout the text and will remain in the 2023 annual report. A thorough review of all acronyms will be performed in the 2023 annual report. No change to the current report is proposed.

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Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

3. **Section 1.3, Regulatory and Operational History, Page 3 of 68:** The text states that Figure A-2a shows the location of the TNX well system for the interim remedial action during startup and initial operations. However, it is Figure A-2b, Location of TNX Area Interim Remedial Action/Effectiveness Monitoring Strategy Well System during Startup and Initial Operations, which shows this information. *Please revise the text to replace the Figure A-2a reference with Figure A-2b.*

Response: Agree

This mistake will be revised appropriately in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

4. **Section 3.3, Edible Oil Treatment, Page 11 of 68:** The text references Figures A-27, A-31, and A-38 to depict the reduction of VOC concentrations due to EO treatments. However, Figure A-27 shows the graphical relationship between pH and water elevation at well TBG 3 and Figure A-30 shows the estimate of TCE mass reduction since EO injections began. In addition, Figure A-37 shows the comparison of TCE concentrations in the treatment zone in 2007 and 2022. *Please revise the references listed to depict the reduction of VOC concentrations due to EO treatments to remove Figures A-27 and A-30 and add Figure A-37.*

Response: Agree

The figure reference in Section 3.3 should be Figures A-26, A-30, and A-37. This mistake will be revised appropriately in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

5. **Section 4.0, Monitoring Network, Page 17 of 68:** The text states that Figure A-2a shows the T-Area monitoring well locations that were in place during the start-up and initial operation of the remedial action system. However, it is Figure A-2b, Location of TNX Area Interim Remedial Action/Effectiveness Monitoring Strategy Well System during Startup and Initial Operations, which shows this information. *Please revise the text to replace the Figure A-2a reference with Figure A-2b.*

Response: Agree

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This mistake will be revised appropriately in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

6. **Section 5.4.13, Edible Oil Parameters, Page 30 of 68:** The text states that Figures A-32 through A-41 represent DO, TOC, oxidation/reduction potential ORP, sulfate, methane, nitrate, and volatile fatty acid (VFA) comparison of current and prior to, or during, EO injections. However, these representations are shown in Figure A-31, Comparison of Dissolved Oxygen Concentration in the Treatment Zone in 2007 and 2022, through Figure A-36, Comparison of Dissolved Oxygen Concentration in the Treatment Zone in 2007 and 2022. Additionally, a figure depicting a comparison of VFA in the Treatment Zone is not presented. *Please revise the text to state that Figures A-31 through A-36 represent DO, TOC, ORP, sulfate, methane, and nitrate comparisons and clarify why no VFA figures were prepared for comparison of current and prior to, or during, EO injections.*

Response: Agree

The text in Section 5.4.1.3 will be revised in the 2023 annual report to state:

“These parameters include dissolved oxygen (DO), TOC, oxidation/reduction potential (ORP), sulfate, methane, nitrate, and VFA, ~~and are compared to concentrations A~~ comparison of the EO parameters (i.e., DO, TOC, ORP, sulfate, methane, and nitrate) measured prior to or during the EO injections is provided in (Appendix A, Figures A-~~32~~31 through A-~~41~~36). A figure for VFA is not included in Appendix A because no background VFA results exist. ~~These Trends of all EO~~ parameters are also presented in Appendix E on time series graphs.”

No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

7. **Section 6.0, Evaluation of Field and Analytical Results, Page 39 of 68:** The text states that Figures A-13 through A-24 show two dimensional planar and cross section maps for certain constituents during 4Q2022. However, Figure A-13 is the TNX Area Water Table Elevation 4Q2022 representation and should not be included. Likewise, the text states that Figures A-32 through A-41 provide a comparison of pre-EO injection parameters with 4Q2022 results. However, the figures referenced should be Figures A-31 through A-40. *Please remove Figure A-13 from the first reference and correct the second reference to read “Figures A-31 through A-40”.*

Response: Clarification

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The potentiometric surface and pH are discussed in Sections 6.1 and 6.2, respectively and should be included in the reference. The figure reference will be revised in the 2023 annual report to state “Two dimensional planar and cross section maps displaying 4Q2022 results, for the potentiometric surface, pH, and selected constituents, are shown in Figures A-13 through A-24. Figures A-~~32~~31 through A-~~41~~40 provide a comparison...” No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

8. **Section 6.4, Edible Oil Parameters, Page 43 and 44 of 68:** The text states that Figures A-32 through A-37 illustrate the reductive environment created in the EO treatment area by comparing pre-injection groundwater parameters to post-injection parameters collected during 4Q2020. However, Figure A-31 is the Comparison of Dissolved Oxygen Concentration in the Treatment Zone in 2007 and 2022 and as such, should be included as a reference. Likewise, Figures A-38 through A-40 show the reduction of TCE daughter products between 2007 and 2022 and should be included in the reference. The date through which the EO parameters are shown in the figures is also incorrect. *Please revise the text to state that Figures A-31 through A-40 illustrate the reductive environment created in the EO treatment area by comparing pre-injection groundwater parameters to post-injection parameters collected during 4Q2022.*

Response: Agree with Clarification

The text will be revised in the 2023 annual report to state, “The reductive environment created in the EO treatment area is illustrated in Figures A-~~31~~32 through A-~~36~~37 which compares pre-injection groundwater parameters to post-injection parameters collected during the 4Q~~2020~~2022.” Figures A-37 through A-40 will not be referenced since Section 6.4 is specifically discussing EO parameters. In the 2023 annual report, references to Figures A-37 through A-40 will be added to Section 6.3 as appropriate. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

9. **Section 6.5.1, TBG (Area Under the TAOU Cap), Page 47 of 68:** Appendix E, page E-343 is referenced in the text when discussing the pH history at well TBG 3. However, this graph is found on page E-341 of Appendix E. *Please revise the page referenced for pH history discussions at well TBG 3 in Appendix E to state E-341.*

Response: Agree

This error will be corrected as appropriate in the 2023 annual report. No change to the current report is proposed.

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10. **Section 7.2, Edible Oil Injections, Page 53 of 68:** The text presents conflicting information for the number of wells that define the TCE plume outside of the EO treatment area. The text states that wells TRW 2 and TNX 28D have experienced elevated TCE concentrations. The following sentence states that “These three wells define the TCE groundwater plume that is outside of the EO treatment area” however, the text should state “two wells.” *Please revise the text to state the correct number of wells that define the TCE groundwater plume that is outside of the EO treatment area.*

Response: Agree

This error will be corrected as appropriate in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

11. **Section 9.0, References, Page 64 of 68:** The citations DOE, 2013; SRNS, 2012b; SRNS, 2015c; SRNS, 2021; and WSRC, 2004b are not used in the report. Conversely, a “(WSRC, 1995, Revision 1.5, Attachment 17)” citation is used on page ES-1 of ES-8 but is not listed in the references. *Please remove the DOE, 2013; SRNS, 2012b; SRNS, 2015c; SRNS, 2021; and WSRC, 2004b citations and add the WSRC, 1995 reference.*

Response: Agree with Clarification

The citations DOE, 2013; SRNS, 2012b; SRNS, 2015c; SRNS, 2021; and WSRC, 2004b will be reviewed and removed as appropriate from Section 9.0 in the 2023 annual report. The citation for “(WSRC, 1995, Revision 1.5, Attachment 17)” will be revised to “(WSRC, 1999a, Revision 1.5, Attachment 17)” in the 2023 annual report. This document was already included in Section 9.0. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

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GENERAL COMMENTS:

1. Section 1.3, Regulatory and Operational History, page 3. Figure A-2a is referenced at the bottom of this page for the location of the TNX well system for the interim remedial action at the time of its startup and initial operations. Figure A-2b should be referenced instead.

Response: Agree

This error will be corrected in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

SPECIFIC COMMENTS:

1. Section 1.3, Regulatory and Operational History, page 3. Figure A-2a is referenced at the bottom of this page for the location of the TNX well system for the interim remedial action at the time of its startup and initial operations. Figure A-2b should be referenced instead.

Response: Agree

This error will be corrected in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

2. Section 5.4.7, Uranium, page 28. The first paragraph of this section states that total recoverable uranium was detected in 18 wells and 3 surface water stations during 2Q2022; however, the data in Table B-1 indicates a total of 19 wells had detections of uranium. Additionally, the second paragraph that discusses 4Q2022 uranium sampling results states that total recoverable uranium was detected in 22 wells and Table B-2 indicates uranium detections for 19 wells and 3 surface water stations. Please correct these discrepancies.

Response: Agree

In both 2Q2022 and 4Q2022, there were 22 total uranium detections with 19 monitoring wells and 3 surface water stations. In the 2023 annual report, SRS will be more diligent reporting the number of detections. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

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3. Table 5-2, Constituents Exceeding USEPA MCLs in T Area Wells and Surface Water During 2022, page 38. There is an “X” in the uranium column for an exceedance of an MCL in a primary monitoring well; but neither Tables B-1 nor B-2 indicate any MCL exceedances of a constituent at a primary monitoring well, only at auxiliary wells and surface water stations. Please correct.

Response: Agree

There was no exceedance for uranium in a primary monitoring well. This error in Table 5-2 will be corrected as appropriate in the 2023 annual report. No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov

4. Appendix C, “EPA” Qualifiers – USEPA STORET Codes, page C-9. The language for both K and L qualifiers states: “The actual concentration is known to be less than the reported result.” Should one of these qualifiers state “greater than” instead? If so, please correct.

Response: Agree

The description for the “L” qualifier will be revised in the 2023 annual report to state, “The actual concentration is known to be greater than the reported result.” No change to the current report is proposed.

Responsible Party: Branden Kramer, (803) 952-6378 branden.kramer@srs.gov