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APR 22 2021

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Federal Facility Agreement 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 5-Year Monitoring Report (Data Summary Letter) for the K-Area Groundwater Operable Unit, 2016 through 2020 (IACD-20-182, dated September 29, 2020), SEMS Number: 99

In accordance with the terms of the Federal Facility Agreement, the U.S. Department of Energy (DOE) is submitting the subject comment responses for your review and approval. The U.S. Environmental Protection Agency (EPA) provided comments and the South Carolina Department of Health and Environmental Control (SCDHEC) approved the report on January 27, 2021. This monitoring report will not be revised; however, all comment responses will be included in the next scheduled report, as applicable. Please review these responses and provide your approval within 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) 952-8365, or DOE Program Manager, Mr. Philip Prater, at (803) 952-9333.

Sincerely,

Brian T. Hennessey

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Hennessey
Date: 2021.04.20 16:07:07 -04'00'

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

IACD-21-131

APR 22 2021

Ms. Susan Fulmer
Mr. Jon Richards

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Enclosure:

SRS Responses to the U. S. Environmental Protection Agency's Comments on the 5-Year Monitoring Report (Data Summary Letter) for the K-Area Groundwater Operable Unit, 2016 through 2020 (IACD-20-182, Dated September 29, 2020), SEMS Number: 99

cc w/o encl:

J. Blalock, SCDHEC-Columbia
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R. H. Pope, EPA-Atlanta

cc w/encl:

M. McRae, TechLaw, Inc.

EPA TECHNICAL REVIEW COMMENTS

1. The boundary area of the K-Area Groundwater (KAGW) Operable Unit (OU) is not clearly identified in the 5-Year Monitoring Report (Data Summary Letter) for the K-Area Groundwater Operable Unit, 2016 through 2020, SEMS Number 99, ARF-022913, September 29, 2020 (Letter Report). For example, in Figure 1: 1Q2020 Tritium Plume and Concentrations at KAGW OU, the inset figure depicts a red box around the KAGW monitoring wells and surface water stations. However, neither the text nor the figure state the red box delineates the boundary of the KAGW OU. *Please revise the Letter Report to clearly identify the boundary area of the KAGW OU.*

Response: Clarification

There is no approved boundary for KAGW, although Figure 1 depicts the area of groundwater that K-Area directly influences. The red box in the insert map is provided to show the extent of the larger map for reference and scale. In future letters and maps, the red box will be labeled “extent of large map”. No changes are proposed for the 2020 5-Year Monitoring Report.

Contact: Ashley Shull (ashley.shull@srs.gov) (803)-952-7090

2. Several deficiencies were noted in the Letter Report that impact the analysis of the monitoring data. For example, well construction information (e.g., total depth, screened interval depth), groundwater flow direction (i.e., potentiometric surface maps), surface water flow direction, sampling methodologies (e.g., bailer, low flow, etc.) and the laboratory analysis methods were not presented for groundwater and surface water samples. *Please revise the Letter Report to address these noted deficiencies.*

Response: Clarification

Consistent with Core Team decisions made at the April 22, 2015 Core Team scoping meeting and documented in the USDOE letter to the USEPA and SCDHEC, *Pre-Workplan Characterization Data Reporting for the K-Area Groundwater Operable Unit (OU) (including K-Area Tritium Anomaly)(NBN)*, CERCLIS Number: 99, dated May 14, 2015, the Core Team agreed that the data summary letter report for KAGW OU would include the following for select wells and surface water stations: annual VOC data and discussion, annual tritium data and discussion, tritium flux calculations, and general plume maps (as necessary).

For clarity, the information provided below will be included in the next 5-year letter report. No changes are proposed for the 2020 5-Year Monitoring Report.

SRS Responses to U.S. Environmental Protection Agency Comments on the 5-Year Monitoring Report (Data Summary Letter) for the K-Area Groundwater Operable Unit, 2016 through 2020, SEMS Number: 99, (IACD-20-182, Dated September 29, 2020), Savannah River Site, Aiken, South Carolina

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Comments Received: January 27, 2021

Station_ID	Total Depth (ft bgs)	Screen Top (ft bgs)	Screen Bottom (ft bgs)
KRB 19D	94.9	73	93
KDB 1	88.3	65	86
KDB 2	91	67.1	88.1
KDB 3	89.2	65.1	86.3
KDB 4	90	61.8	81.8
KDB 5	90	59.9	79.9

- **Only six monitoring wells are visited as part of the KAGW OU pre-work plan characterization monitoring, with most of them located near the 105-K Reactor Building facility. This does not provide adequate data for the generation of potentiometric surface maps. However, based on previous local and regional interpretations, groundwater flows to the west/southwest towards Indian Grave Branch.**
- **Surface water in Indian Grave Branch flows south towards Pen Branch, then Pen Branch continues to the southwest towards the Savannah River. Stream flow direction arrows will be included on the plume map figure in future reports.**
- **Sampling methodologies are generally not included in SRS groundwater data reports. However, all six monitoring wells use either a bladder pump or single speed pump for sampling and all surface water stations are collected by grab sampling. In future reports this information will be added to the data table.**
- **The laboratory analysis method for VOCs was EPA8260B and for tritium was L3.21-10015 during 2016 and 2017 and RADA-002 during 2018, 2019, and 2020. Future reports will identify which methods were used in the results discussion sections of the text.**

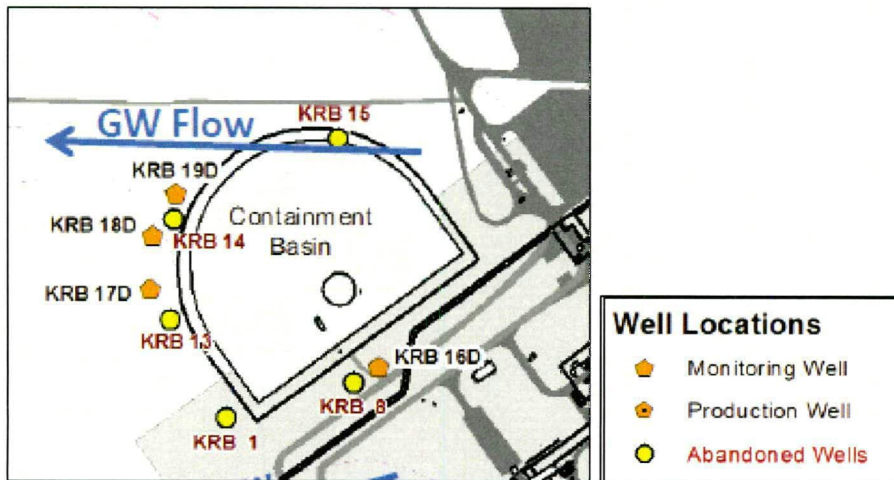
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3. Based on the tritium results in well KRB 19D, it appears the vertical extent of contamination is not defined in groundwater directly downgradient of the K-Area Containment Basin (904-88G). For example, under the subheading KAGW OU Tritium Results, Monitoring Well Results, page 4, the text states tritium trends are steadily decreasing in KRB 19D where the highest concentrations of tritium are detected in KAGW OU at a concentration of 2,090 picocuries per milliliter (pCi/mL) in 2020 which is above the maximum contaminant level (MCL) of 20 pCi/mL. Additionally, according to the sample event water elevation data presented in Attachment 1. KAGW 5-Year Data Table 2016 through 2020, well KRB 19D appears to be the deepest well of the six KAGW OU upper water bearing zone (UWBZ) wells currently being monitored. Thus, it appears the vertical extent of tritium groundwater contamination is currently not defined at KRB 19D with concentrations of tritium at a magnitude of 10X above the MCL for tritium within the well furthest downgradient of potential tritium sources and within the deepest water column of the wells within the monitoring well network. While it is currently understood the six KAGW OU monitoring wells only represents annual sampling of a subset of wells currently available, it is not known whether additional wells

are available to be sampled to address the data gap in the vertical extent of tritium contamination. *Please revise the Letter Report to discuss addressing the data gap in the vertical extent of tritium contamination as pre-work plan characterization data in advance of the remedial investigation.*

Response: Clarification

There are no deeper wells in the vicinity of or downgradient of the K-Area Containment Basin (904-88G). Two monitoring wells, KRB 18D and KRB 17D (see image below), are located to the southwest but are screened similarly to KRB 19D with screen zones of 75-95 ft bgs. As discussed and agreed to during the 2015 Core Team meeting, the intent of the KAGW annual monitoring is to provide pre-work plan characterization data and long-term trends since the characterization field start is not until 2042. The current monitoring is looking for near source release data and changes over time until the KAGW characterization begins. These data will be used for planning further characterization efforts during the actual Workplan Characterization. No changes are proposed to the monitoring network or 2020 5-Year Monitoring Report.



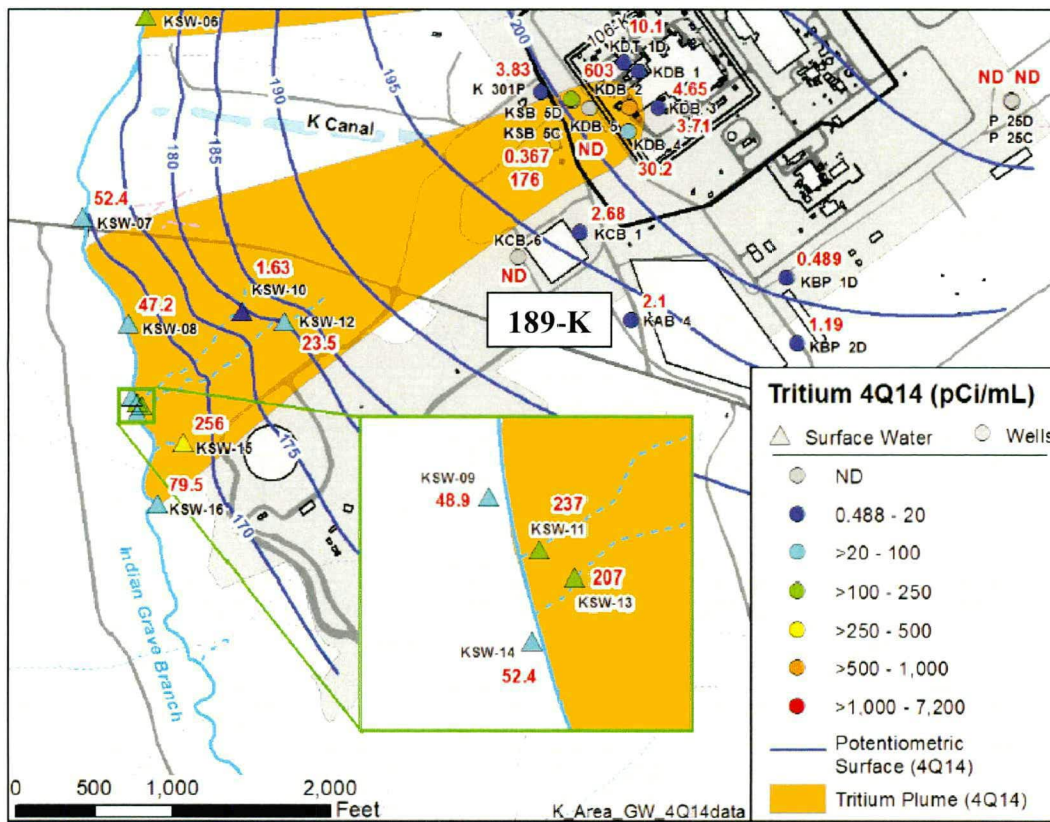
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- Based on the tritium results at surface water sampling station KSW-16, the extent of surface water contamination downstream of the K-Area Reactor Complex tritium plume is not clearly defined. For example, the 2020 tritium concentration in KSW-16 was measured at 51.4 pCi/mL and exceeding than MCL of 20 pCi/mL. It is noted the bounding downstream tritium surface water sample location is KSW-17 which measured tritium at 8.29 pCi/mL. However, KSW-17 is located past the confluence of Indian Grave Branch and Pen Branch and located outside of the KAGW OU. As such, there appears to be a data gap in the downstream extent of tritium contamination within the KAGW OU and in Indian Grave Branch prior to its confluence with Pen Branch. *Please revise the Letter Report to discuss addressing the data gap in the downgradient extent of tritium*

contamination in Indian Grave Branch within the KAGW OU and prior to the confluence as pre-work plan characterization data in advance of the remedial investigation.

Response: Agree/Clarification

K-Area is the only tritium source to the Indian Grave/Pen Branch stream system, so the influence of Pen Branch prior to its confluence with Indian Grave Branch is not a concern with respect to the tritium source. There are currently no surface water stations between KSW-16 and KSW-17. Practical access to Indian Grave Branch south of KSW-16 is exceptionally difficult since there is no permanent road access and the area is heavily wooded/undeveloped until reaching KSW-17 along highway SC 125, with wetland features increasing further downstream. Based on the significantly higher flow measured at KSW-17 as compared to KSW-06, it is conservatively expected that tritium concentrations in Indian Grave Branch will remain above the MCL until the confluence with Pen Branch. Additionally, the 2014 sampling with additional wells in K-Area showed there was not an impact further to the south at the old 189-K Coal Storage Run-off Containment Basin and also that the tributaries within the plume footprint were providing the most contamination to Indian Grave Branch (see image below). No changes to the 2020 5-Year Monitoring Report or monitoring network are proposed.



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