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JUN 10 2020

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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: 2019 K-Area Burning/Rubble Pit and Rubble Pile (131-K and 631-20G) (KBRP) and P-Area Burning/Rubble Pit (131-P) (PBRP) Operable Units Combined Groundwater Monitoring Report (Sampling Summary), SEMS Numbers: 40 and 59

Reference: *Submittal of the Proposal to Standardize Sampling and Reporting Requirements of Groundwater Data for P, L, and K Area Burning/Rubble Pit Operable Units, CERCLIS Numbers 59, 56, 40* (ACP-08-133, dated January 15, 2008)

In accordance with the terms of the Federal Facility Agreement, the U. S. Department of Energy (DOE) is submitting the combined groundwater monitoring report (sampling summary) for your review. Per the referenced letter, combined sampling summaries are submitted annually via letter, with detailed groundwater reports submitted every five (5) years. The combined sampling summary reporting began in June 2008 and the first detailed groundwater report was submitted in June 2012. The next detailed groundwater report will be submitted in June 2022. This letter is transmitting the 2019 annual sampling summary, *2019 K-Area and P-Area Burning/Rubble Pits Annual Groundwater Data Summary Report*.

The combined groundwater monitoring report (sampling summary) formerly included the L-Area Burning/Rubble Pit and Rubble Pile (131-L, 131-3L, and 131-2L) (LBRP) Operable Unit (OU). In October 2017, the South Carolina Department of Health and Environmental Control (SCDHEC) and the U. S. Environmental Protection Agency (EPA) agreed to discontinue groundwater monitoring and reporting for the LBRP OU. Therefore, LBRP OU is not included in this report.

Please review the information and provide any comments that you may have within one hundred twenty (120) days of receipt. The effort and time that the SCDHEC and the EPA have given on the subject operable units are greatly appreciated.

2019 K-AREA AND P-AREA BURNING/RUBBLE PITS ANNUAL GROUNDWATER DATA SUMMARY REPORT

K-Area Burning/Rubble Pit (KBRP) Operable Unit (OU)

Sampling optimizations that were developed and approved by U. S. Environmental Protection Agency (USEPA) and South Carolina Department of Health and Environmental Control (SCDHEC) as presented in the *K-Area Burning/Rubble Pit and Rubble Pile (131-K and 631-20G) (KBRP), L-Area Burning/Rubble Pit and Rubble Pile (131-L, 131-3L, and 131-2L) (LBRP), and P-Area Burning/Rubble Pit (131-P) (PBRP) Operable Units (OUs) Detailed Combined Groundwater Monitoring Report (U)* (SRNS-RP-2012-00200, Revision 1, December 2012) continued at KBRP in 2019. Due to the limited plume distribution, sampling wells in the AA aquifer (portion of the upper aquifer zone) and a subset of wells in the transmissive zone (TZ) on an annual basis is sufficient to monitor the groundwater contaminants at the KBRP OU. In 2019, samples were collected from six AA aquifer wells (i.e., KRP 4 through KRP 9) and two TZ aquifer wells (i.e., KRP 10D and KRP 11D) in accordance with the optimized sampling schedule. Water level measurements were collected from all wells within both the AA and TZ aquifers.

The eight wells at KBRP OU were sampled during the fourth quarter of calendar year 2019 (4Q2019). All eight wells were below their respective trigger levels [mixing zone concentration limit (MZCL) or maximum contaminant level (MCL)] as shown in Table 1. Trichloroethylene (TCE) and tetrachloroethylene (PCE) concentrations at well KRP 9 decreased below the MCL for TCE and PCE in 4Q2019, after an increase in concentrations above the MCL in 4Q2018. Associated degradation products were not detected at any KBRP OU monitoring wells in 2019. Figures 1 and 2 display the time-series plots (TSPs) for PCE and TCE concentrations at plume wells KRP 8 and KRP 9. Wells that are currently not being sampled according to the optimized sampling schedule are noted as SS (Suspended Sampling) in Table 1 and on Figure 3.

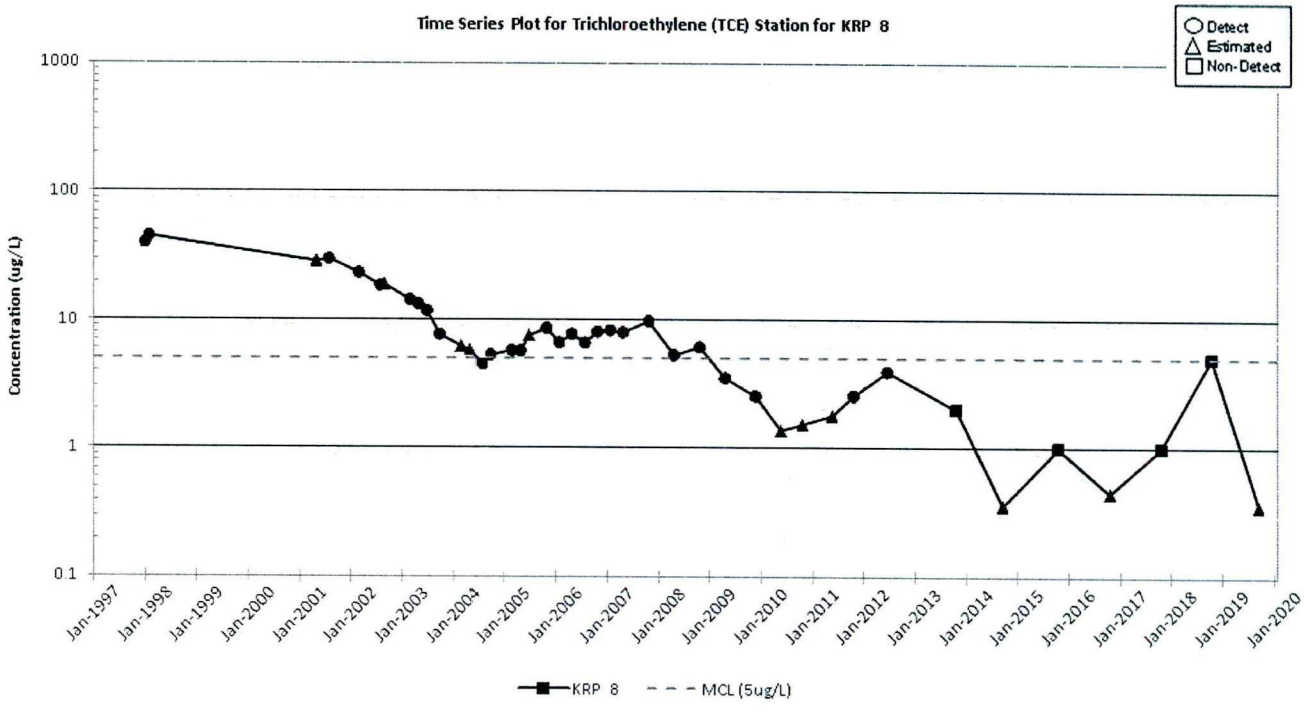
Figure 3 shows the monitoring well network, the PCE concentrations, and water levels measurements for 4Q2019. Water table elevations increased from 2018 values by an average of 0.98 feet (ft) (0.30 meters [m]) in the AA aquifer and 1.01 ft (0.31 m) in the TZ aquifer. All wells yielded adequate sampling volumes. Groundwater flow in all aquifers is to the southwest (Figure 3).

No additional sampling was triggered based on the 2019 results (Table 1). Sampling results confirm that the approved groundwater mixing zone remedy is performing as intended and remains effective for the KBRP unit.

Table 1. KBRP OU PCE and TCE Monitoring Well Data for 2019

Well	Aquifer	Well Type	PCE Trigger Level (µg/L)	PCE (µg/L) 4Q2019	TCE Trigger Level (µg/L)	TCE (µg/L) 4Q2019
KRP 4	AA	Plume	43[a]	0.72 J	61[a]	ND
KRP 5	AA	Plume	43[a]	ND	61[a]	ND
KRP 6	AA	Plume	43[a]	ND	61[a]	ND
KRP 7	AA	Compliance	5[b]	ND	5[b]	ND
KRP 8	AA	Plume	43[a]	0.91 J	61[a]	0.36 J
KRP 9	AA	Auxiliary Plume	43[a]	3.6	61[a]	2.7
KRP 10D	TZ	Intermediate	5[b]	ND	5[b]	ND
KRP 11D	TZ	Intermediate	5[b]	ND	5[b]	ND
KRP 12D	TZ	Compliance	5[b]	SS	5[b]	SS
KRP 13D	TZ	Compliance	5[b]	SS	5[b]	SS
KRP 15D	TZ	Compliance	5[b]	SS	5[b]	SS
KRP 10C	LAZ	Intermediate	5[b]	SS	5[b]	SS
KRP 11C	LAZ	Intermediate	5[b]	SS	5[b]	SS
KRP 12C	LAZ	Compliance	5[b]	SS	5[b]	SS
KRP 15C	LAZ	Compliance	5[b]	SS	5[b]	SS

AA= Portion of Upper Aquifer Zone
J = Estimated Value
ND = Not Detected
SS = Suspended Sampling
LAZ = Lower Aquifer Zone
TZ = Transmissive Zone
[a] = MZCL
[b] = MCL



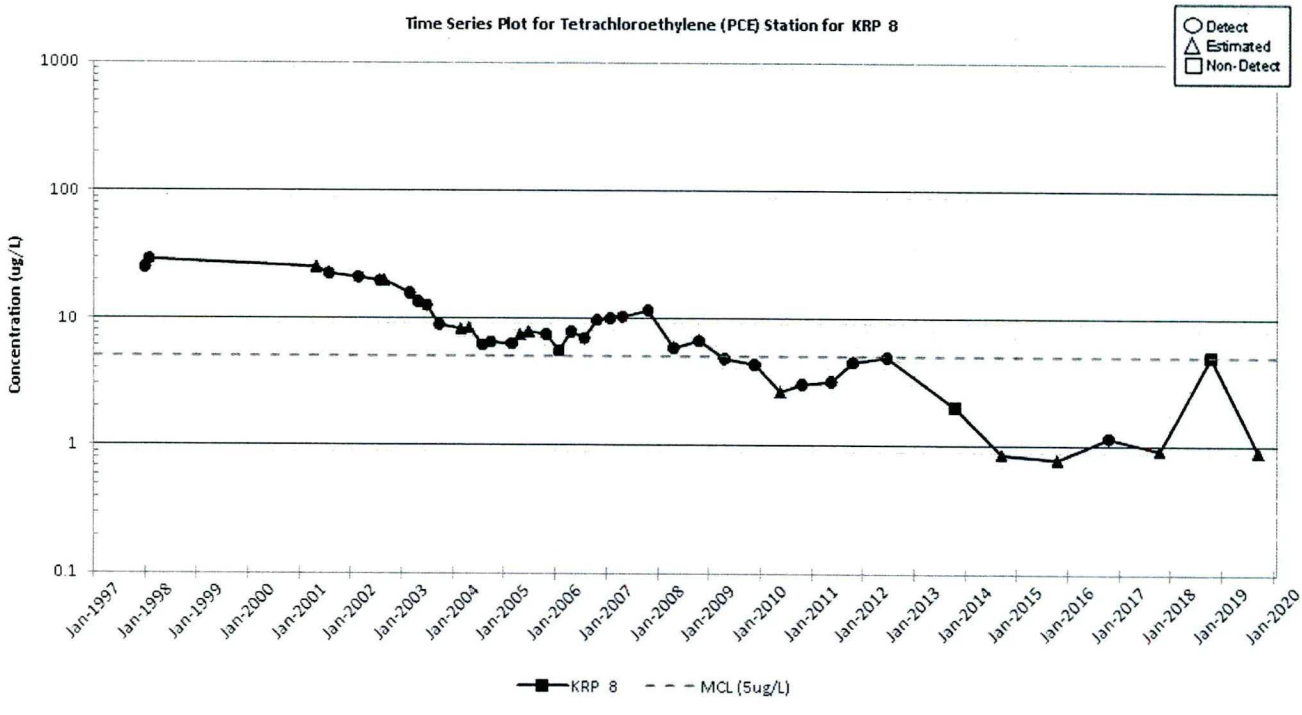
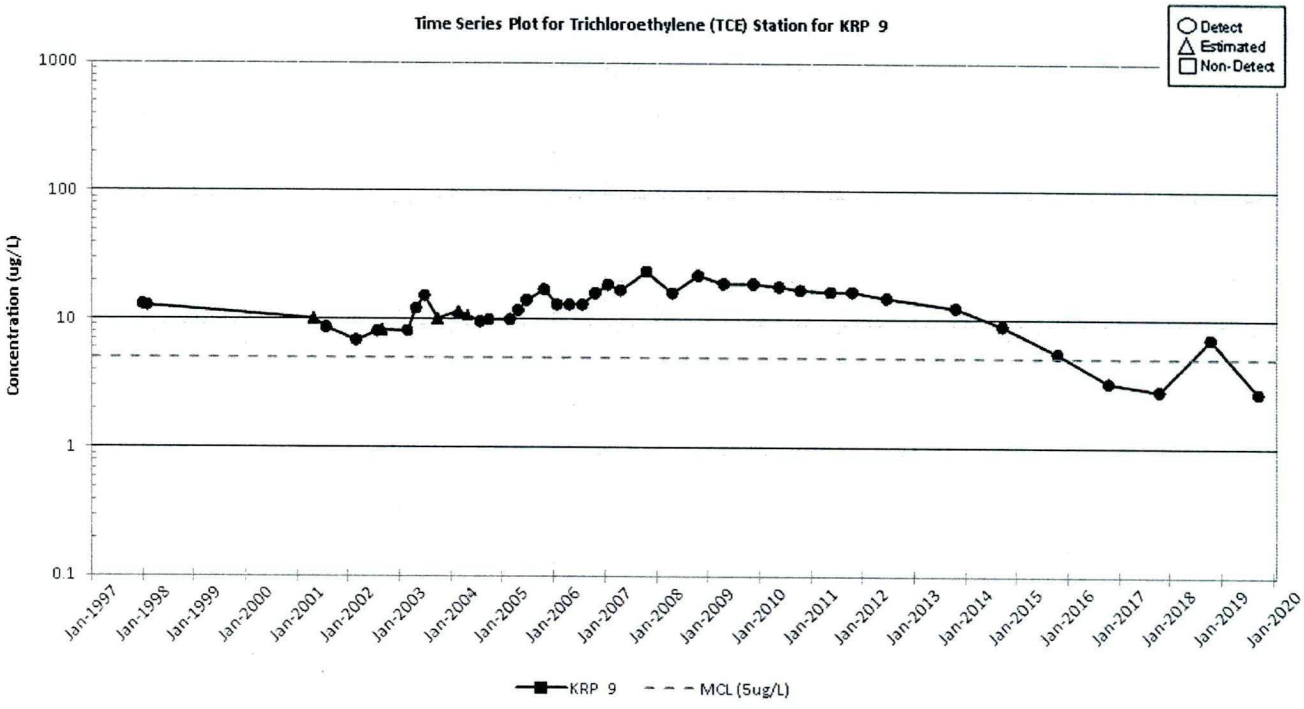


Figure 1. Time-Series Plots of PCE and TCE for KRP 8



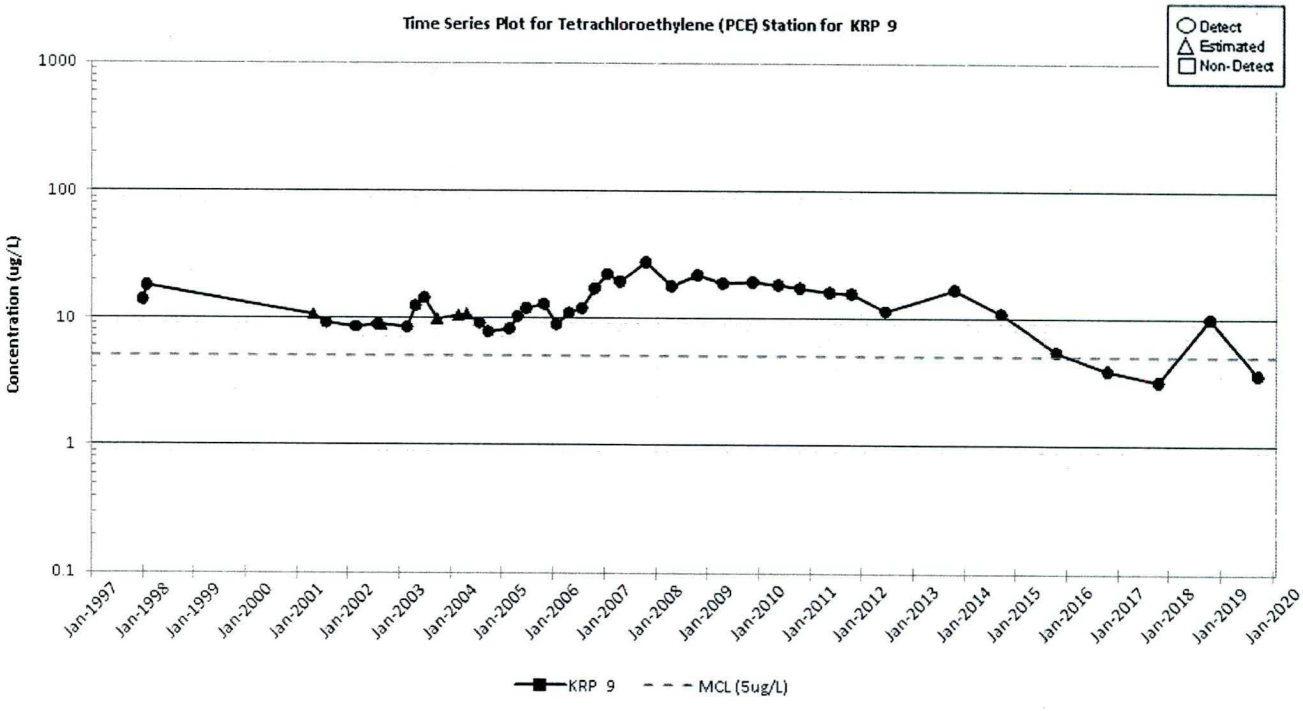


Figure 2. Time-Series Plots of PCE and TCE for KRP 9

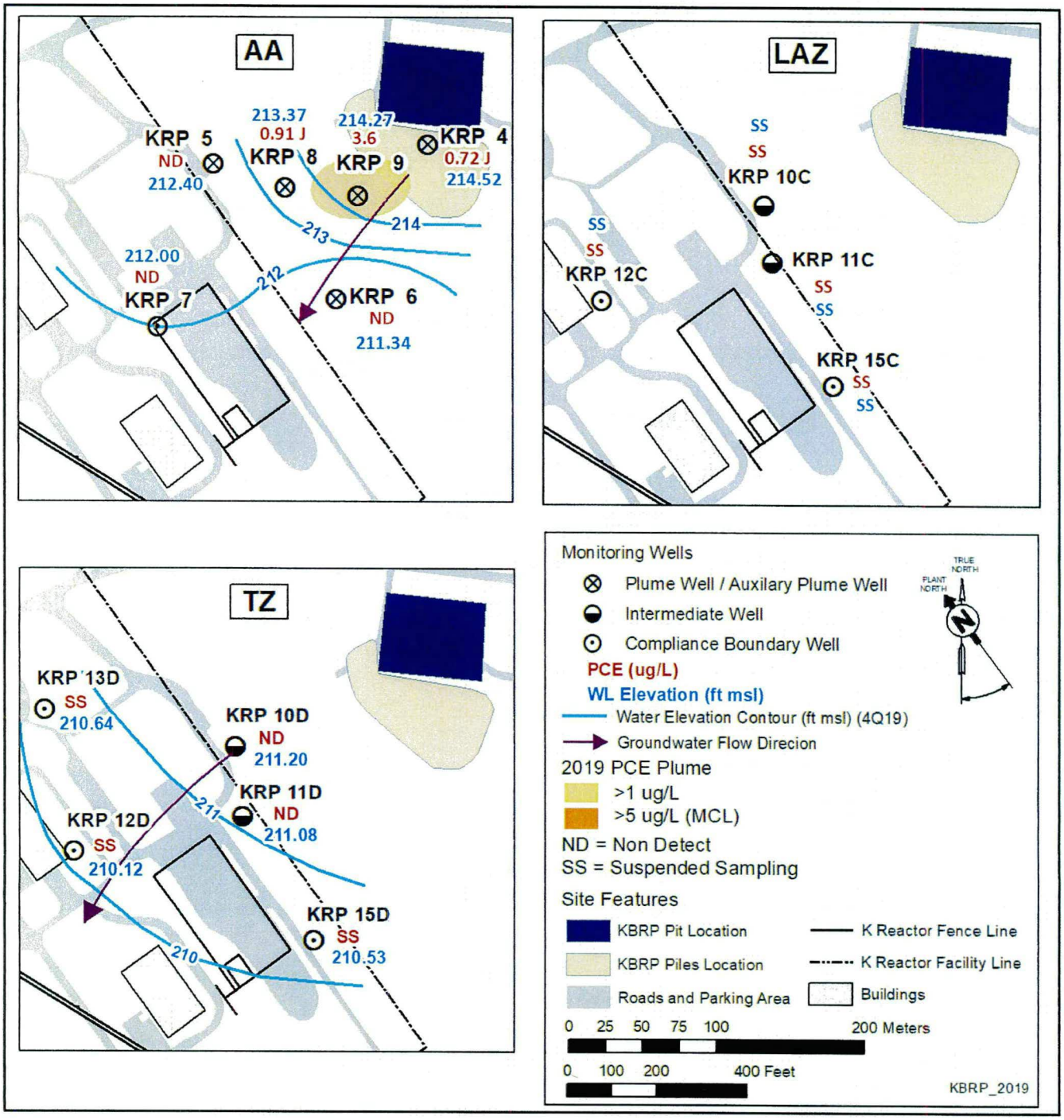


Figure 3. KBRP OU Monitoring Well Network, PCE Concentrations, and Water Elevation Measurements during 4Q2019

P-Area Burning/Rubble Pit (PBRP) OU

Sampling optimizations that were developed and approved by EPA and SCDHEC as presented in the *Standardizing Sampling and Reporting Requirements P, L and K Area Burning Rubble Pits* (ACP-08-133, Revision 0, January 2008) continued at PBRP in 2019. 1,4-dioxane was added to the list of monitored constituents at the PBRP based on a recommendation in the Fourth Five-Year Remedy Review Report for the Savannah River Site (SRS) (SRNS-RP-2012-00011, Revision 1.1, November 2013). On February 11, 2020, the EPA documented that the remedial action is complete (monitoring systems are installed and operational) for the selected Monitored Natural Attenuation remedy at the PBRP and noted the progress of the remedy towards meeting the remedial goals as documented in the *K-Area Burning/Rubble Pit and Rubble Pile (131-K and 631-20G) (KBRP), L-Area Burning/Rubble Pit and Rubble Pile (131-L, 131-3L, and 131-2L) (LBRP), and P-Area Burning/Rubble Pit (131-P) (PBRP) Operable Units(OUs) Detailed Combined Groundwater Monitoring Report (U)* (SRNS-RP-2017-00356, Revision 0, June 2017) (Letter, G. Adams (EPA) to B. Hennessey (DOE), dated February 11, 2020 [SRNS-OS-2020-00105]).

The three PBRP wells (PRP 5, PRP 6, and PRP 7) were sampled during 4Q2019. The 2019 sampling results for wells PRP 5, PRP 6, and PRP 7 are presented in Table 2. The 4Q2019 sampling event was the fourth consecutive sampling event that 1,1-dichloroethylene (1,1-DCE) was detected below the MCL in well PRP 6. In well PRP 7, 1,1-DCE concentrations slightly decreased from 2018 and remain below the MCL. In 2019, TCE contamination increased slightly from 2018 values in the two plume wells, PRP 6 and PRP 7, but remain at levels below the 5.0 µg/L MCL. The last exceedance of TCE in PRP 6 was in 2007 and in 2008 for PRP 7. 1,4-Dioxane was detected in well PRP 6 and PRP 7 during the 2019 sampling event as estimated values of 2.7 µg/L and 3.2 µg/L, respectively. 1,4-Dioxane does not have an MCL; therefore, the EPA tap water regional screening level (RSL) has been applied. However, detection limits are unable to accurately meet the RSL; therefore, MDLs were set at 1.2 µg/L. Practical Quantitation Limits (PQLs) were established at 5 µg/L, which is higher than normal, but no laboratory issues were identified. All PQLs remain at or below the established MCL for all analytes, except 1,4-dioxane. Time series plots of 1,1-DCE and 1,4-dioxane at wells PRP 6 and PRP 7 are provided in Figures 4 and 5 and show an overall steady or decreasing trend. Well PRP 5 remains non-detect for all constituents. All other constituent concentrations continue to be below MCLs for all other wells.

Figure 6 shows the monitoring network, contaminant distribution, and water level measurements for 4Q2019. Water table elevations decreased slightly from the previous year with an average drop in elevation of 0.64 ft (0.2 m). Groundwater flow is to the southwest. There are no plumes depicted on Figure 6 because concentrations are less than the applicable MCL.

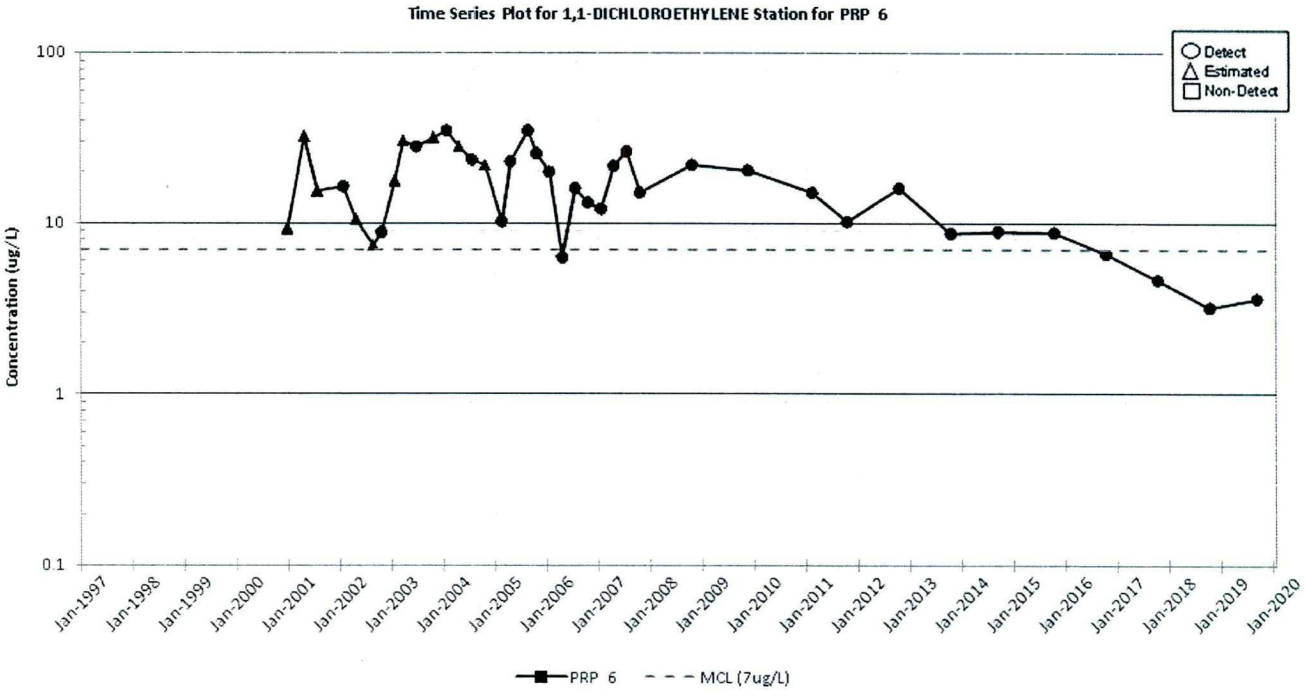
SRS will continue to monitor groundwater at the PBRP OU to ensure that concentrations remain below MCLs. Monitoring will continue until it is agreed that the remedial goals have been met and monitoring is no longer necessary. Concentrations of 1,1-DCE and 1,4-dioxane continue to be stable or declining.

The selected remedy has been demonstrated to be effective and functioning as intended. Sampling and reporting of the constituents of concerns identified in Table 2 will continue on an annual basis.

Table 2. PBRP OU Groundwater Data for 2019

Analyte	MCL (µg/L)	4Q2019 (µg/L)		
		PRP 5	PRP 6	PRP 7
1,1,1-Trichloroethane (1,1,1- TCA)	200	ND	0.32 J	ND
1,1-Dichloroethylene (1,1-DCE)	7	ND	3.6	1.2
Cis-1,2-Dichloroethylene (c-DCE)	70	ND	0.48 J	0.9 J
Tetrachloroethylene (PCE)	5	ND	0.38 J	1.5
Trichloroethylene (TCE)	5	ND	3.3	1.5
Chloroethene (Vinyl Chloride) (VC)	2	ND	ND	ND
1,4-Dioxane	0.46*	ND	2.7 J	3.2 J

ND = Not Detected
J = Estimated Value
*1,4-Dioxane does not have an MCL. The current groundwater protection standard used is the EPA RSL, which is 0.46 µg/L; however, detection limits are not able to accurately meet the RSL.



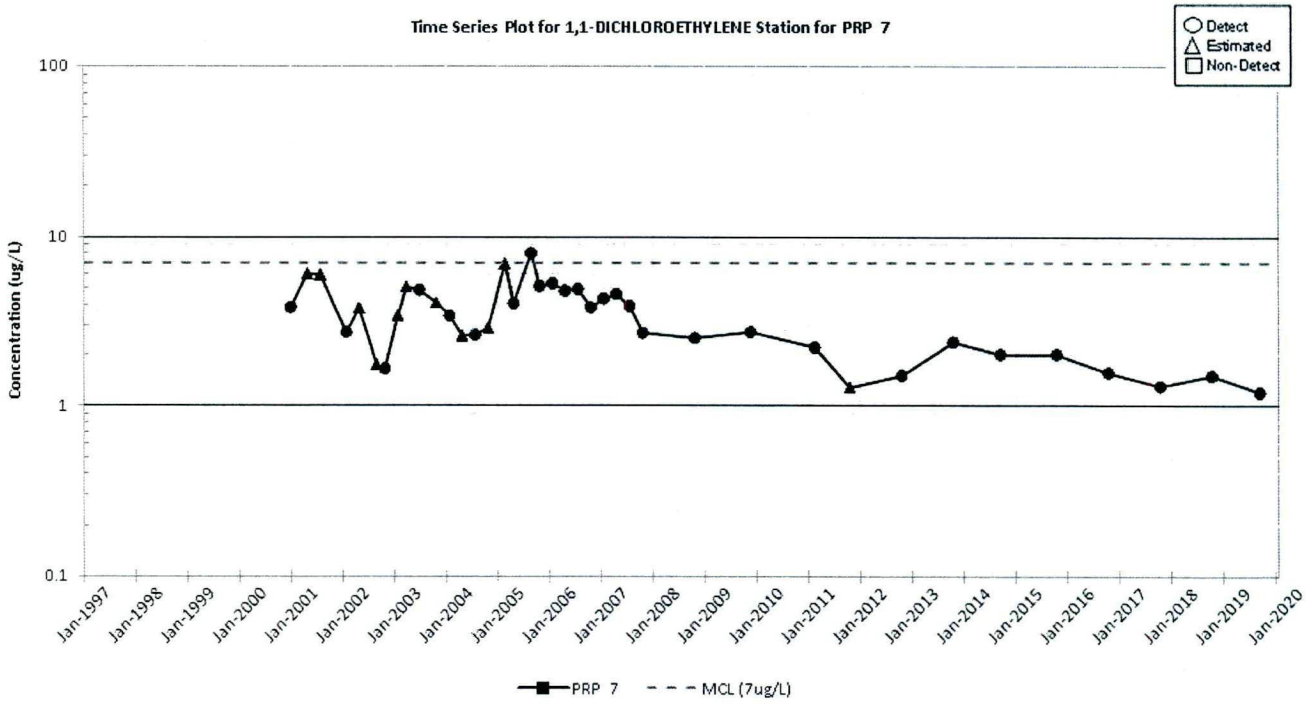
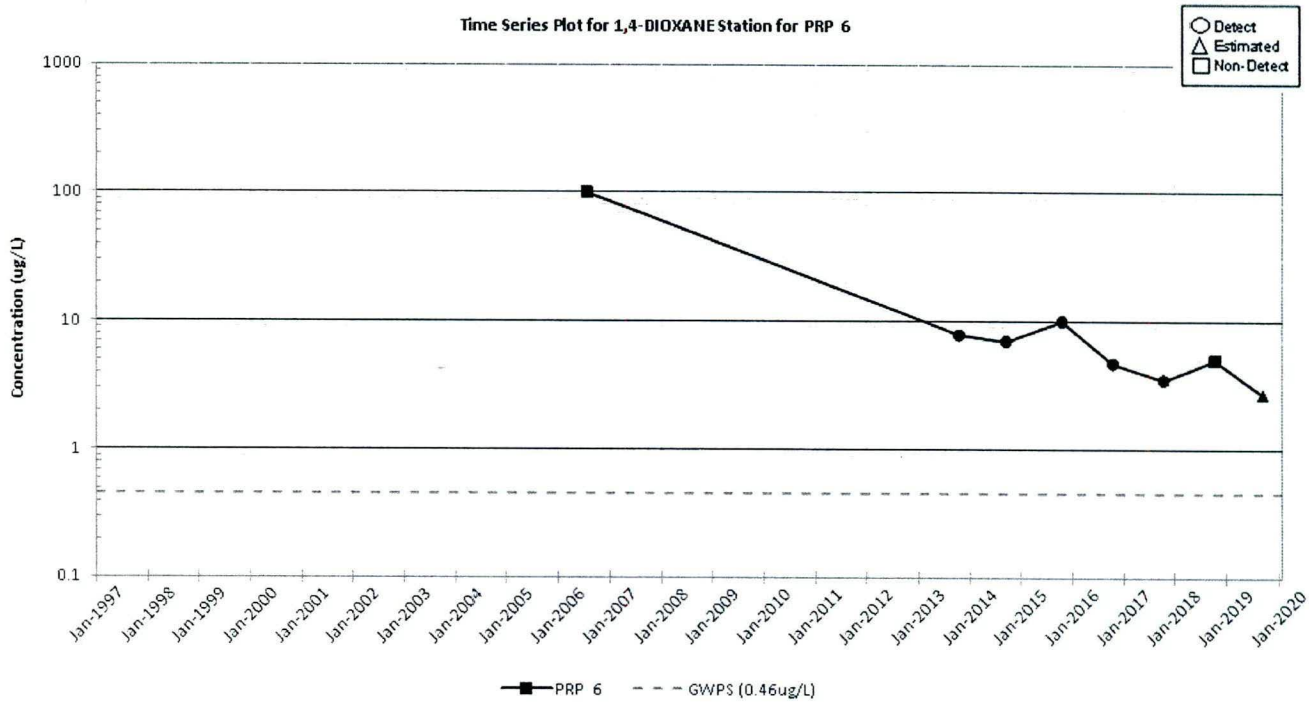


Figure 4. Time-Series Plots of 1,1-DCE at Wells PRP 6 and PRP 7



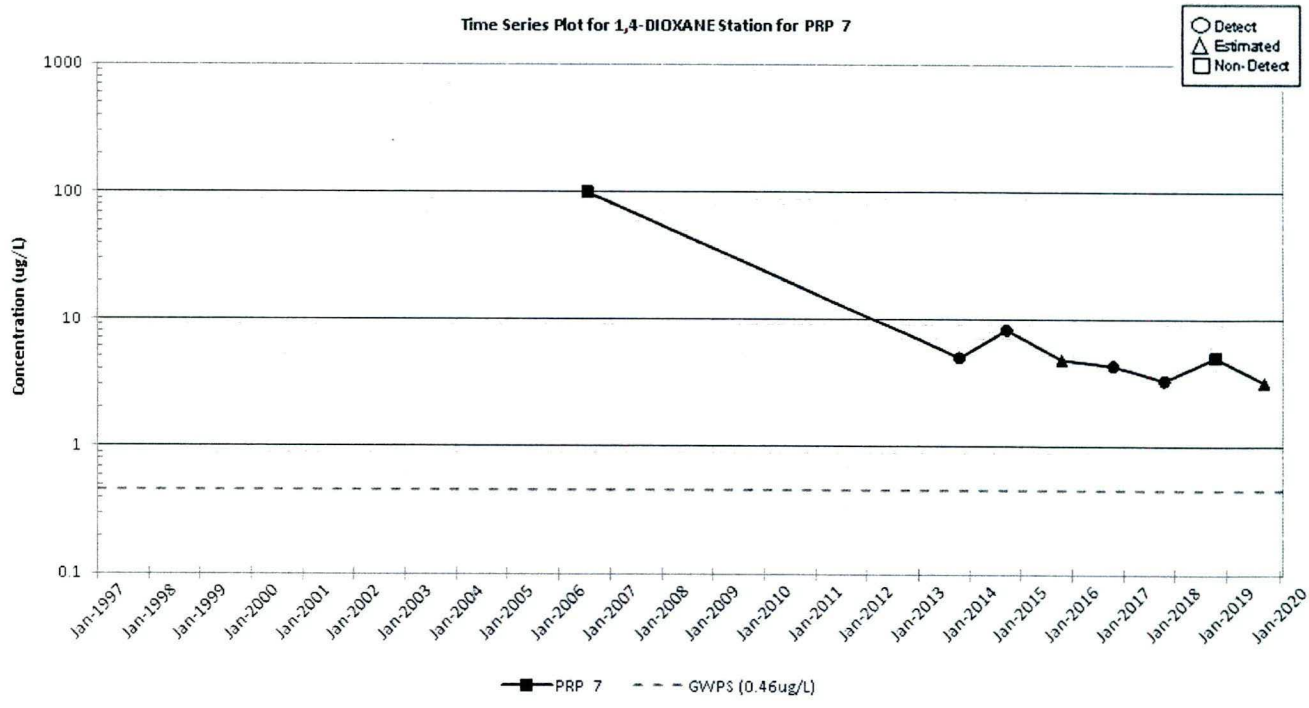


Figure 5. Time-Series Plots of 1,4-Dioxane at Wells PRP 6 and PRP 7

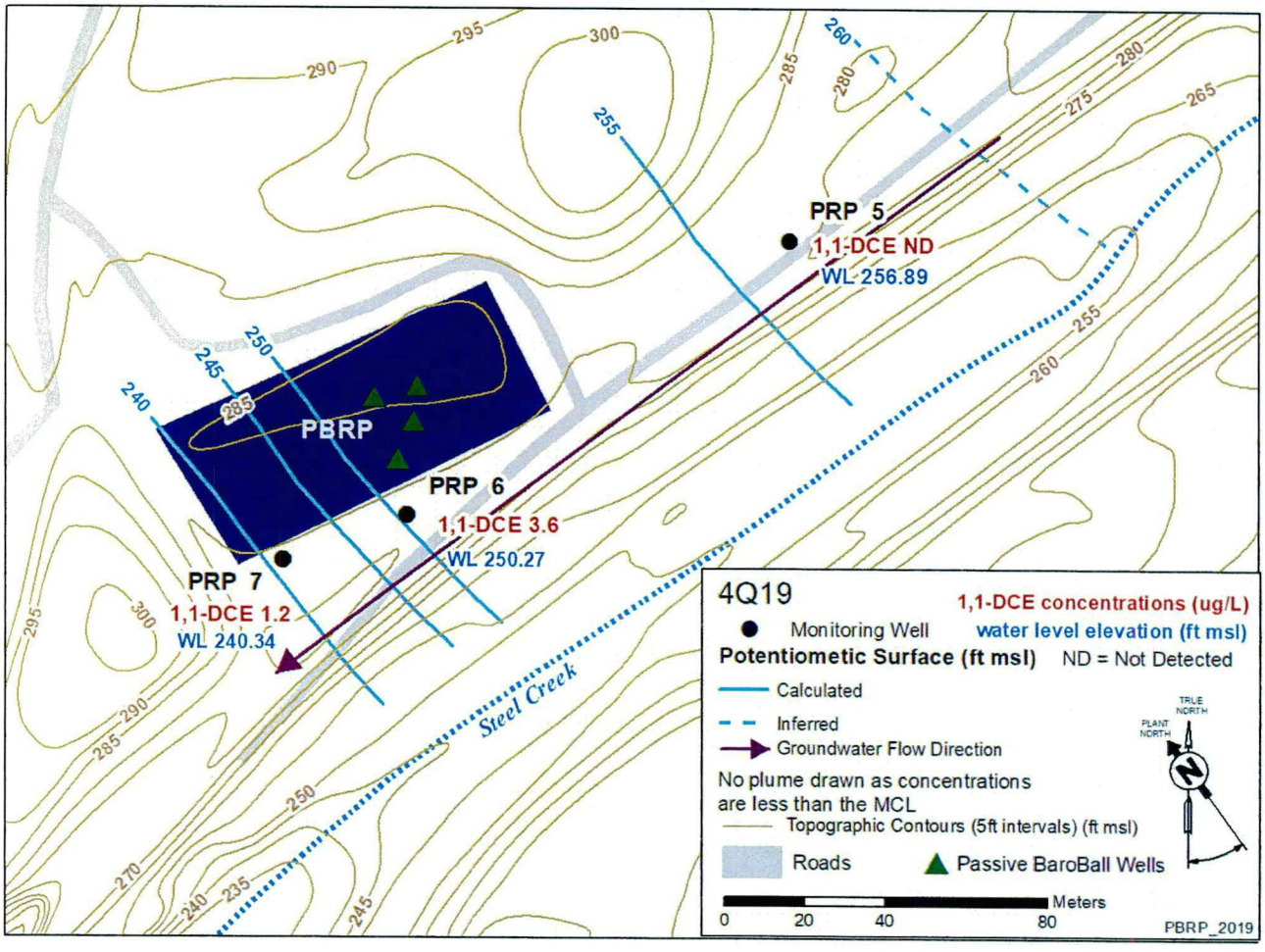


Figure 6. PBRP Monitoring Well Network, 1,1-DCE Values, and Water Elevation Measurements During 4Q2019

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,

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IACD-20-162

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