



Department of Energy
Savannah River Operations Office
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JUN 13 2019

Ms. Susan B. Fulmer, P. G., Manager
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
Acting Savannah River Site Remedial Project Manager
Superfund Division
U. S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

Dear Ms. Fulmer and Mr. Richards:

SUBJECT: 2018 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 2018 annual sampling summary, *2018 K-Area and P-Area Burning/Rubble Pits Annual Groundwater Data Summary Report*.

The combined groundwater monitoring report (sampling summary) was 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.

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2018 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 (EPA) and South Carolina Department of Health and Environmental Control 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 in 2018. 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 2018, 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 2018 (4Q2018). 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 increased above the MCL for TCE and PCE in 4Q2018 but remained below the established MZCL. Associated degradation products were not detected at any KBRP OU monitoring wells in 2018. During the 2018 sampling event practical quantitation limits (PQLs) were established at values higher than previously used; however, all sample specifications were met, and no laboratory issues were identified. All PQLs remain at or below the established MCL for all analytes. 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 4Q2018. Water table elevations increased slightly from 2017 values by an average of 0.73 feet (ft) (0.22 meters [m]) in the AA aquifer and 0.66 ft (0.22 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 2018 results (Table 1). Sampling results confirm that the approved groundwater mixing zone remedy is performing as intended and is still considered an appropriate action for the KBRP OU. Sampling for 2019 will continue with the optimized sampling schedule as stated above.

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Table 1. KBRP OU PCE and TCE Monitoring Well Data for 2018

Well	Aquifer	Well Type	PCE Trigger Level (µg/L)	PCE (µg/L)	TCE Trigger Level (µg/L)	TCE (µg/L)
			(µg/L)	4Q2018	(µg/L)	4Q2018
KRP 4	AA	Plume	43 ^a	ND	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	ND	61 ^a	ND
KRP 9	AA	Auxiliary Plume	43 ^a	10.0	61 ^a	7.1
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

ND = Not Detected

SS = Suspended Sampling

LAZ = Lower Aquifer Zone

TZ = Transmissive Zone

Bold values exceed the MCL, but not the MZCL

^a = MZCL

^b = MCL

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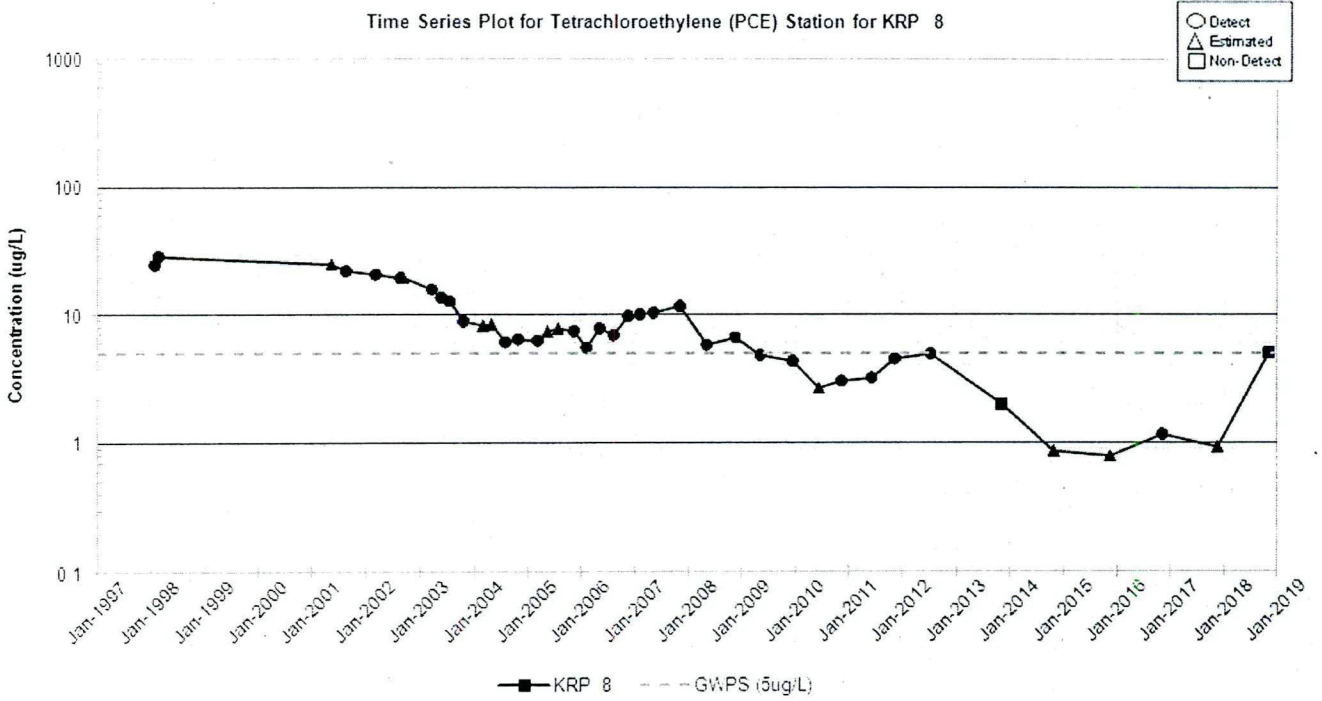
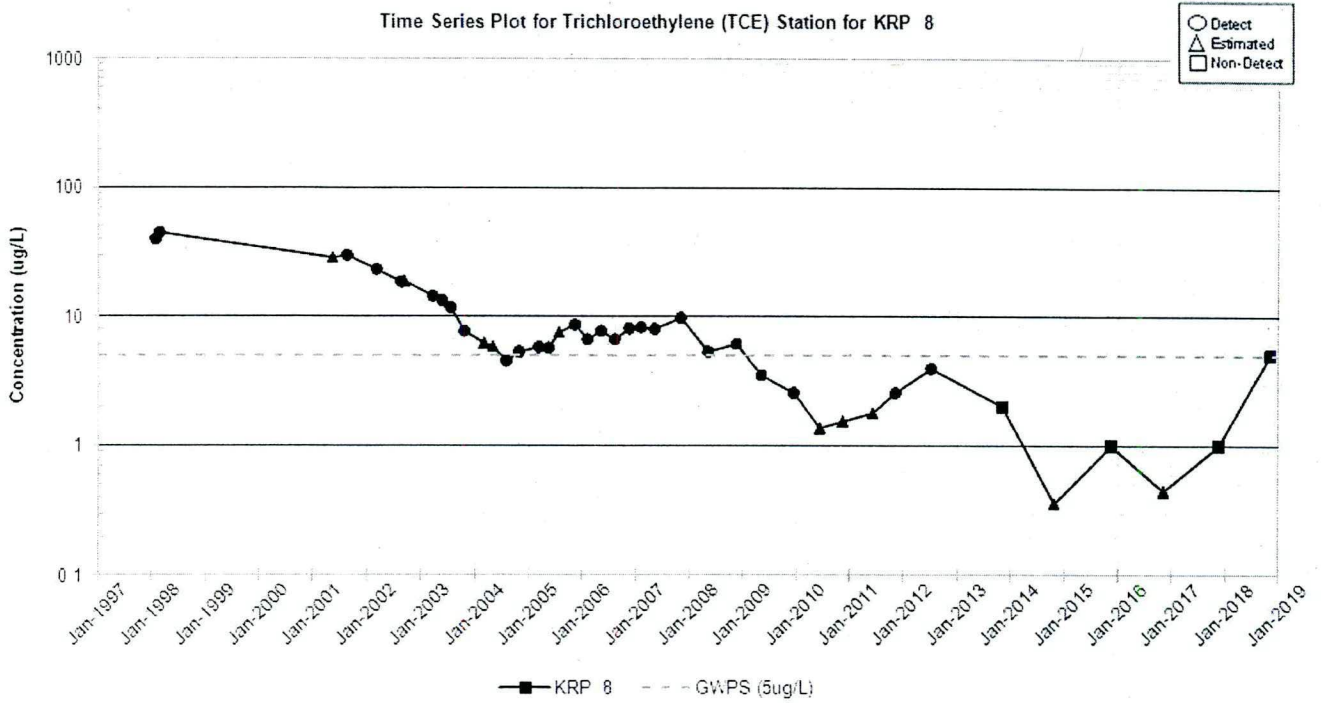


Figure 1. Time-Series Plots of PCE and TCE for KRP 8

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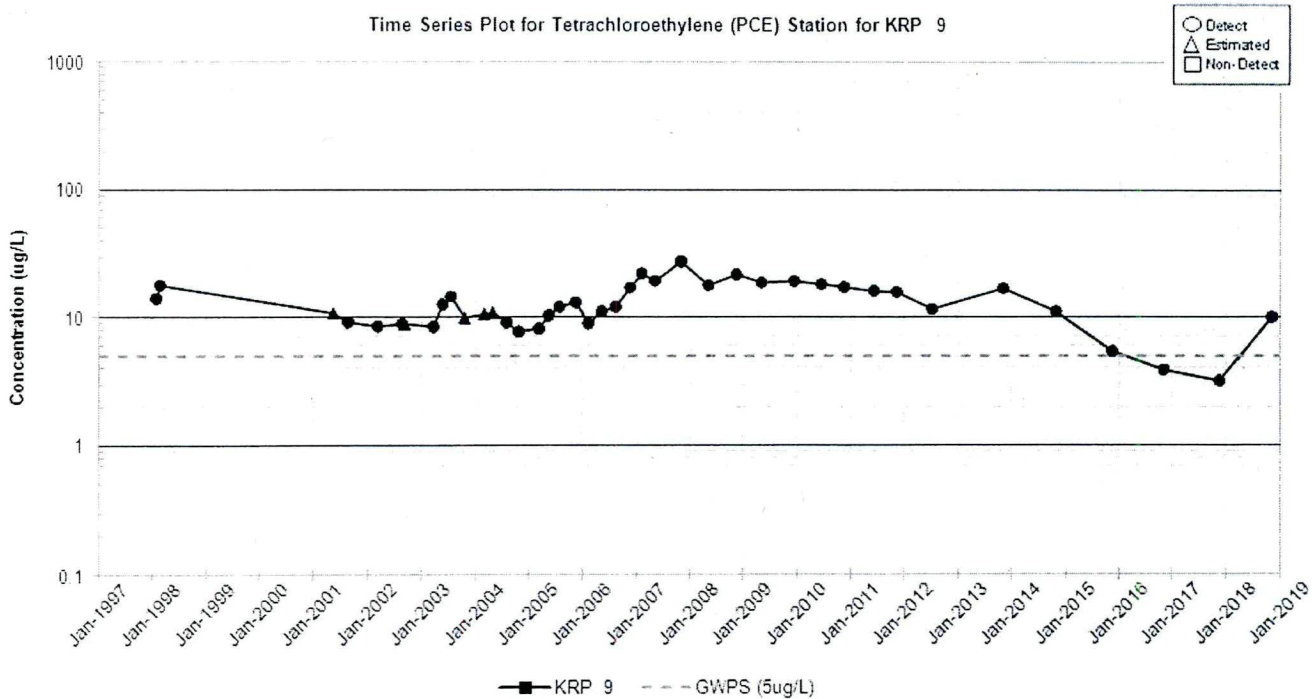
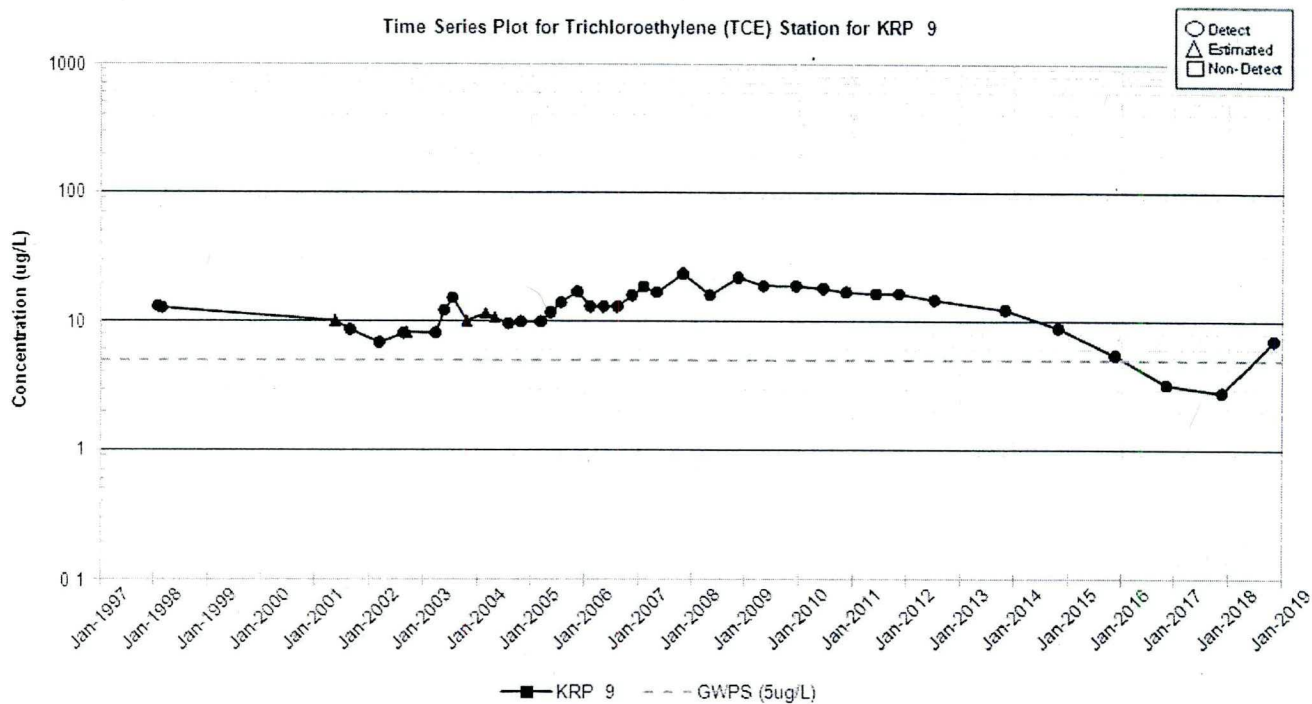


Figure 2. Time-Series Plots of PCE and TCE for KRP 9

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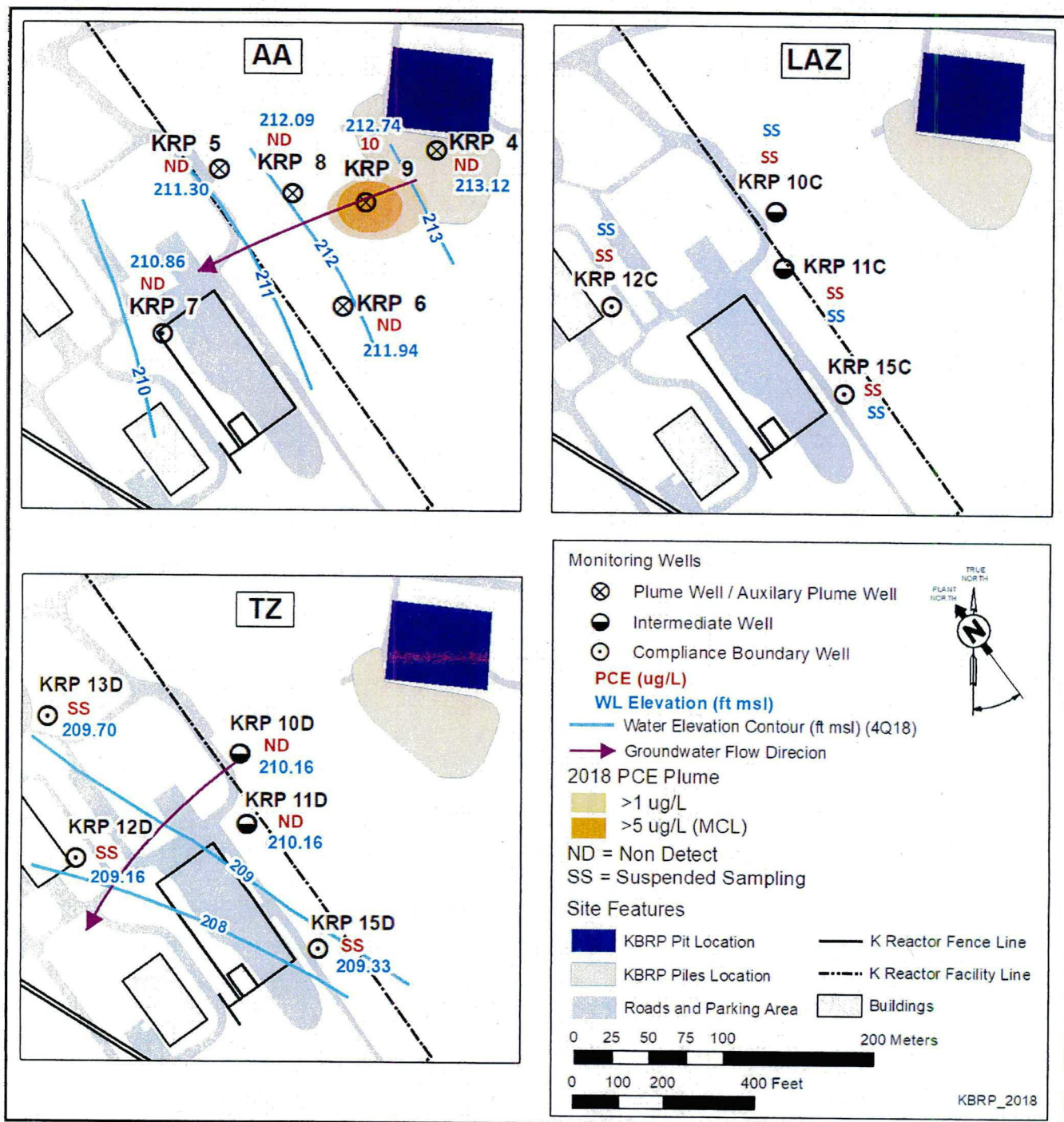


Figure 3. KBRP OU Monitoring Well Network, PCE Concentrations, and Water Elevation Measurements during 4Q2018

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P-Area Burning/Rubble Pit (PBRP) OU

The three PBRP wells (PRP 5, PRP 6, and PRP 7) were sampled during 4Q2018. The 2018 sampling results for wells PRP 5, PRP 6, and PRP 7 are presented in Table 2.

The 4Q2018 sampling event was the third 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 increased from 2017 but remain below the MCL. 1,4-Dioxane was non-detect in all wells during the 2018 sampling event. 1,4-Dioxane does not have an MCL. Therefore the EPA tapwater regional screening level (RSL) has been applied; however, detection limits are unable to accurately meet the RSL. During the 2018 sampling event PQLs were established at values higher than previously used; however, all sample specifications were met, and 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 4Q2018. Water table elevations were relatively the same as the previous year with elevations +/- 0.3 ft (+/- 0.1 m) from 2017 values. Groundwater flow is to the southwest. There are no plumes depicted on Figure 5 because concentrations are less than the applicable MCL.

Savannah River Site 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 action objectives 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 chosen remedy has been demonstrated to be effective. Sampling and reporting of the constituents of concern identified in Table 2 will continue on an annual basis.

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Table 2. PBRP OU Groundwater Data for 2018

Analyte	MCL ($\mu\text{g/L}$)	4Q2018 ($\mu\text{g/L}$)		
		PRP 5	PRP 6	PRP 7
1,1,1-Trichloroethane (1,1,1- TCA)	200	ND	ND	ND
1,1-Dichloroethylene (1,1-DCE)	7	ND	3.2	1.5
Cis-1,2-Dichloroethylene (c-DCE)	70	ND	0.42 J	0.75 J
Tetrachloroethylene (PCE)	5	ND	0.37 J	0.99 J
Trichloroethylene (TCE)	5	ND	0.7 J	1.1
Chloroethene (Vinyl Chloride) (VC)	2	ND	ND	ND
1,4-Dioxane	0.46*	ND	ND	ND

ND = Not Detected

J = Estimated Value

*1,4-Dioxane does not have an MCL. The current value used is the EPA RSL, which is 0.46 $\mu\text{g/L}$; however, detection limits are not able to accurately meet the RSL.

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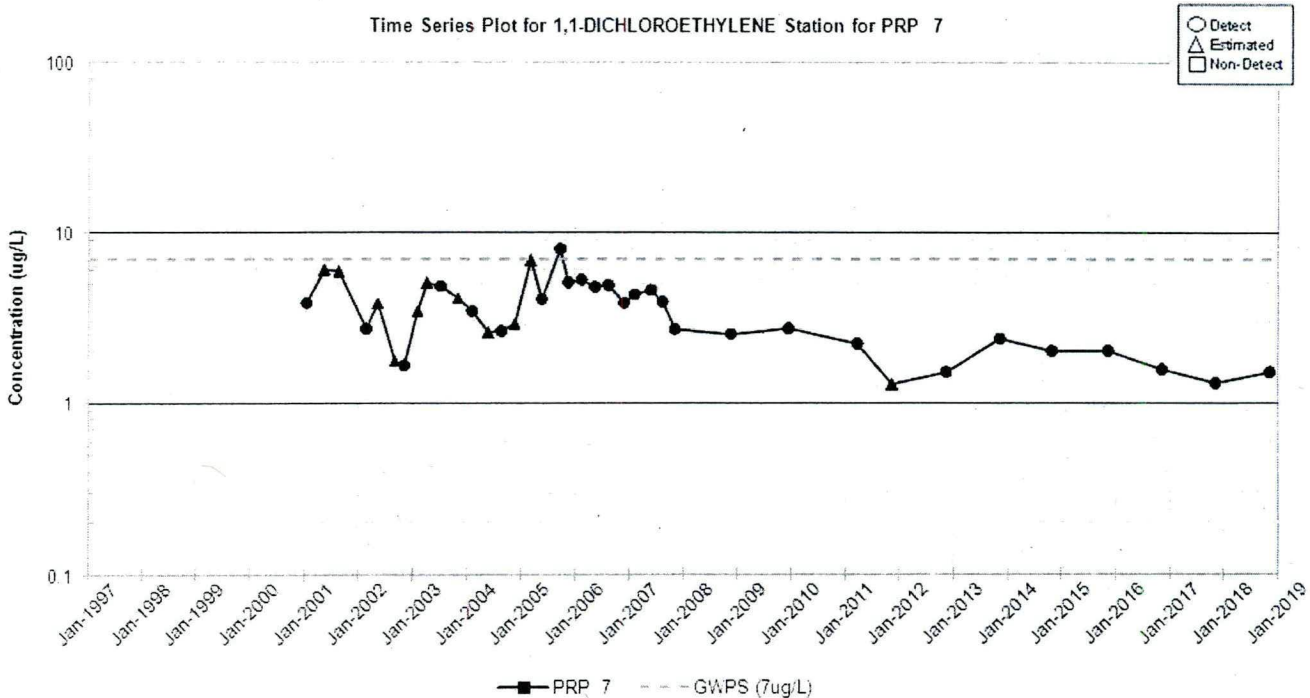
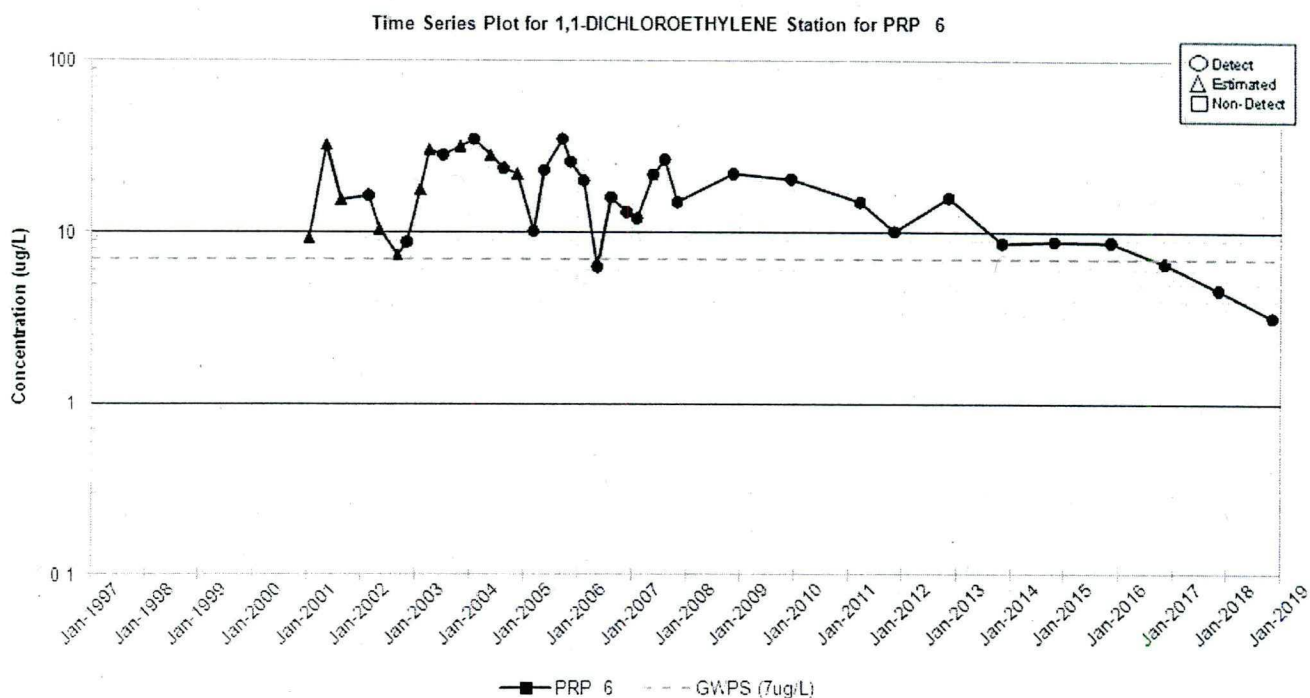


Figure 4. Time-Series Plots of 1,1-DCE at Wells PRP 6 and PRP 7

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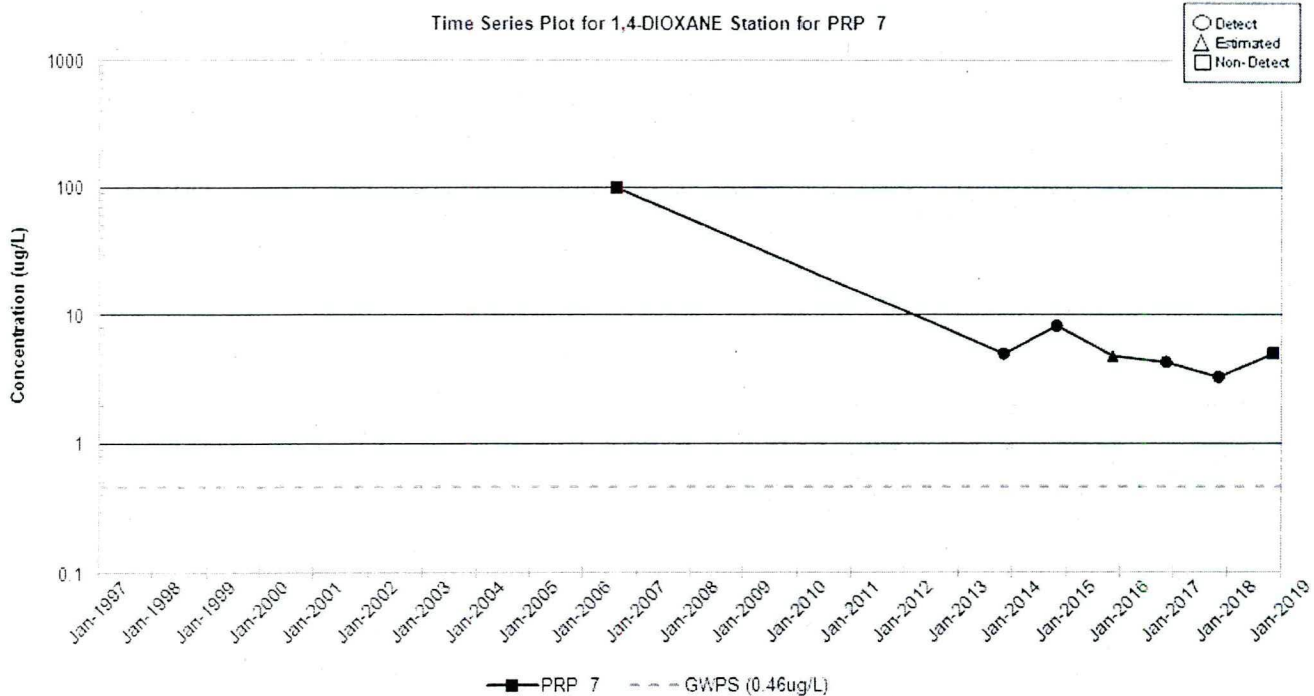
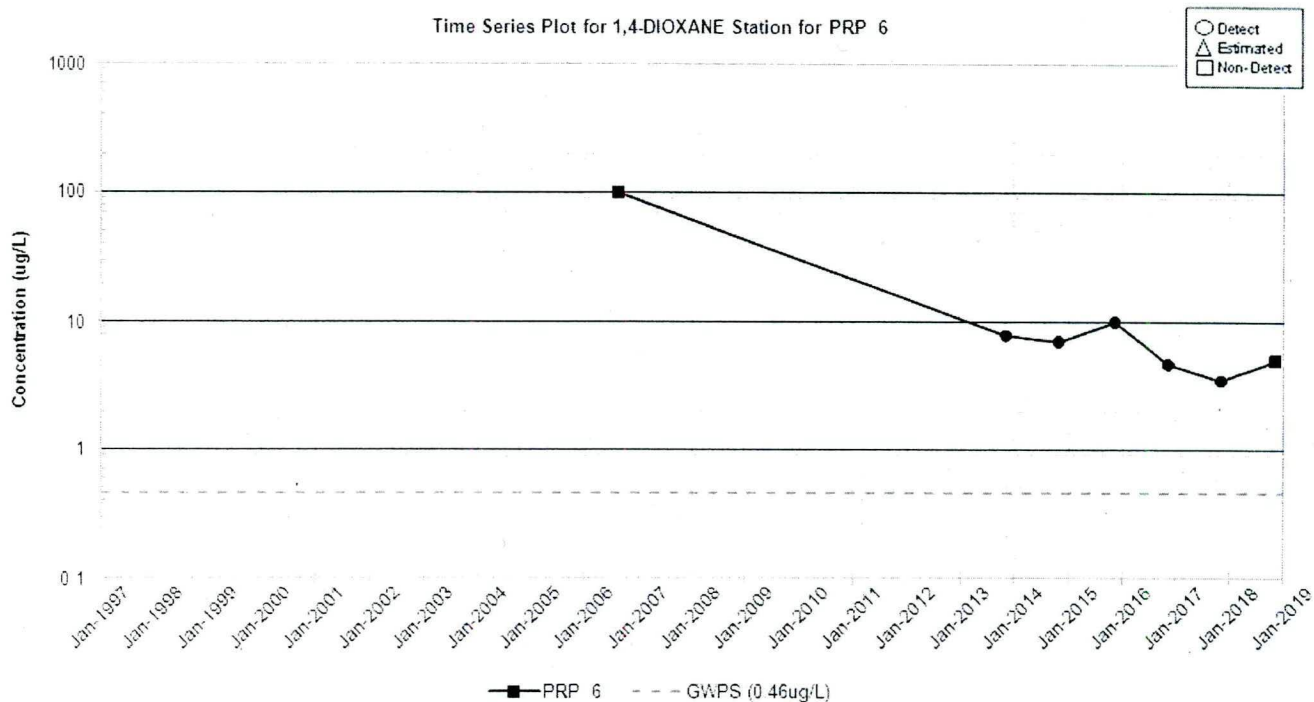


Figure 5. Time-Series Plots of 1,4-Dioxane at Wells PRP 6 and PRP 7

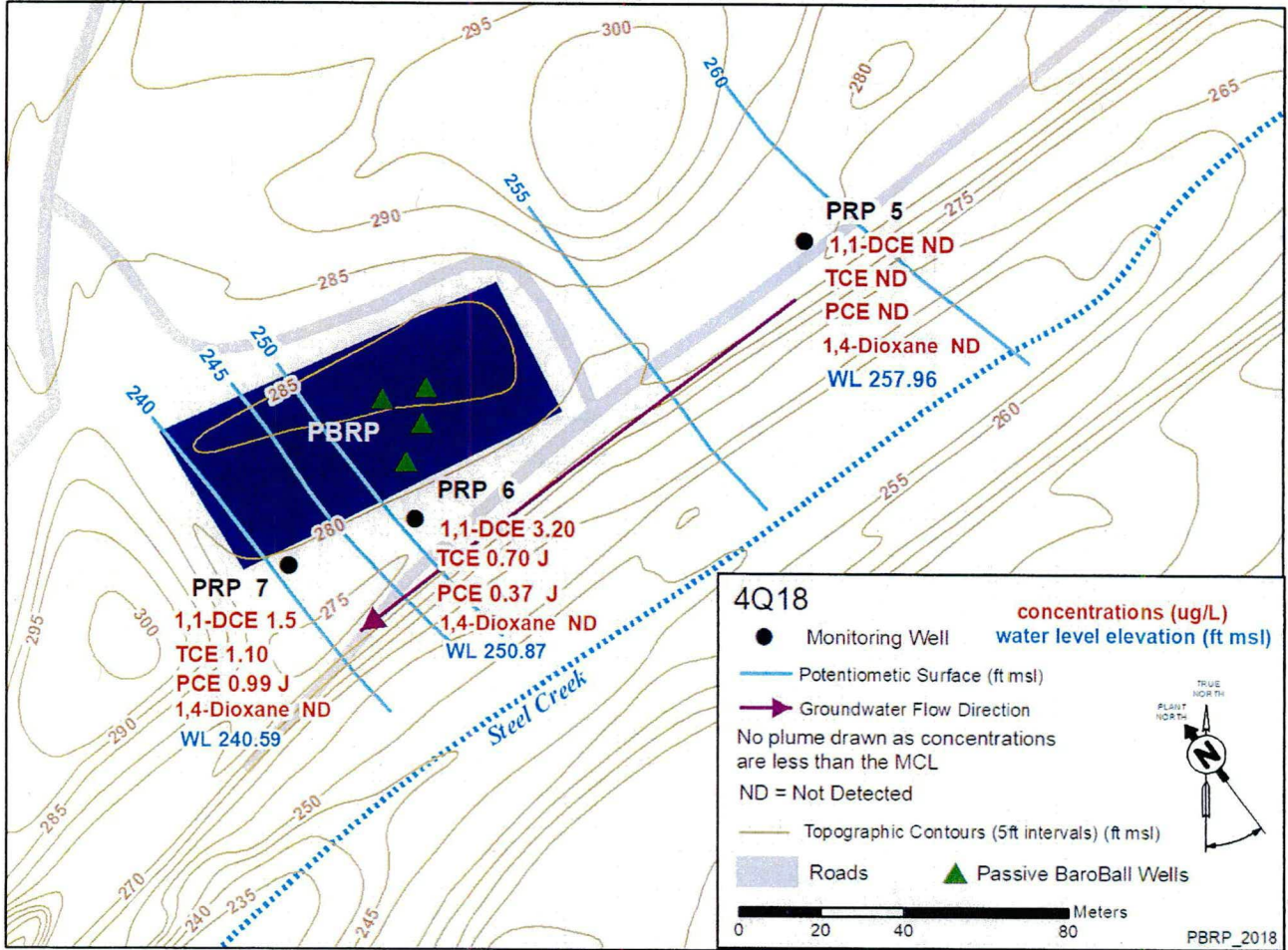


Figure 6. PBRP Monitoring Well Network, 1,1-DCE, TCE, PCE, and 1,4-Dioxane Values, and Water Elevation Measurements During 4Q2018

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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,

A handwritten signature in black ink, appearing to read "Brian", with a long horizontal stroke extending to the right and a vertical line at the end.

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

IACD-19-156

cc:

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