

November 28, 2018

Delivered via FedEx Overnight Delivery

Ms. Bobbi Coleman
South Carolina Department of Health and Environmental Control
Assessment Section, UST Management Division
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201



Subject: Request for Well Permit to Install Additional Monitoring Wells, Advance a Soil Boring, and Abandon Select Product Recovery Features

Plantation Pipe Line Company
Lewis Drive Remediation Site
Belton, South Carolina
Site ID #18693, "Kinder Morgan Belton Pipeline Release"

Dear Ms. Coleman,

On behalf of Plantation Pipe Line Company (Plantation), CH2M HILL Engineers, Inc. (CH2M), now a wholly owned subsidiary of Jacobs Engineering Group Inc. (Jacobs), has prepared this correspondence to request a well permit to install two new groundwater monitoring wells (MW-56 and MW-57) screened in the residuum aquifer, advance one soil boring (SB-01), and to request to abandon forty-three (43) product recovery features (including recovery wells, sumps, and trench points) at the Lewis Drive Site in Belton, Anderson County, South Carolina (Site ID #18693).

Monitoring wells MW-56 and MW-57 are proposed so that a perimeter can be established southwest and west of monitoring well MW-46 since dissolved petroleum concentrations have been detected in MW-46 (**Figure 1**). Data collected from the newly installed monitoring wells will be used to further delineate the extent of hydrocarbons in the residuum aquifer at the site. Plantation requests to conduct the work as early as December 2018.

Soil boring SB-01 is proposed so that the top of bedrock can be determined at the east side of Brown's Creek, north of Lewis Drive (**Figure 2**).

The biosparging system has been operating since March 2017 and remediation through air sparging has been highly successful. As presented in the monthly and quarterly reports, quantities of product recovered at the site have continued to decline. During the April through June 2018 reporting period, only 2.98 gallons of product was recovered. Product recovery is currently conducted using passive skimmers or absorbent socks at the few remaining product recovery features with measurable product, in accordance with the *Free-Product Recovery Plan, Version 4* (CH2M, 2018), approved by SCDHEC in correspondence (letter dated May 8, 2018). The product recovery features proposed for abandonment, as shown in **Table 1** and on **Figure 2**, are no longer necessary and should not be retained since the biosparging system is operational and effective, and measurable product in these features has either not been detected or has not exceeded 0.05-foot thickness since March 2018. Historical product thicknesses

are provided in **Table 1**. Wells in italicized and bold text are currently being utilized in the monthly product recovery activities. Unshaded wells are proposed for abandonment. Shaded wells are proposed for retention.

Proposed Scope of Work

The following activities will be conducted:

- Install two groundwater monitoring wells (MW-56 and MW-57) screened in the residuum aquifer, as shown on **Figure 1**. The monitoring well will be constructed in accordance with South Carolina Well Standards R.61-71 and as described below. Once completed, the location and elevation of this monitoring wells will be professionally surveyed by a surveyor licensed in the state of South Carolina.
- Advance one soil boring (SB-01) to the top of bedrock, as shown on **Figure 2**, in accordance with South Carolina Well Standards R.61-71 Once completed, the location and elevation of this boring will be professionally surveyed by a surveyor licensed in the state of South Carolina.
- Abandonment of 43 product recovery features as shown on **Figure 2** and listed in **Table 1**. The wells will be abandoned in accordance with the South Carolina Well Standards of the Official Code of South Carolina Section R.61-71 and as described below.

Well installation tasks are described in more detail in the following sections.

Well Installation and Development

Monitoring Wells

The residuum wells will be installed by a certified well driller registered in the state of South Carolina and will be constructed in accordance SCDHEC Well Standards R.61-71. A Jacobs geologist will perform oversight during the drilling and will log the lithology of each borehole. Construction details for the residuum monitoring well are described below. In addition, details regarding well development are also described.

Residuum monitoring wells MW-56 and MW-57 will be drilled using hollow stem auger (HSA) methods. The well will be constructed using 10 to 15 feet of 2-inch internal diameter (ID) Schedule 40 polyvinyl chloride (PVC) well screen and a variable amount of 2-inch ID Schedule 40 PVC riser. The screen will have a slot size of 0.010-inches, and the screen will be positioned to straddle the water table to allow LNAPL (if present) to enter the well, and to account for seasonal fluctuations of the water table. Sand pack will be placed in the annular space between the borehole and well screen and will be brought to a height 2-feet above the top of the well screen. A 2-foot thick bentonite seal will be placed above the sand pack and will be hydrated. The seal will hydrate for a minimum of 1 hour before placing grout above the seal. A grout seal containing Portland cement mixed with 3 to 5 percent bentonite will be placed above the bentonite seal and will be brought to within 1 foot of ground surface.

Well Surface Completions

The monitoring wells will be finished as either a flush mount completion or aboveground completion depending on well location. Flush mount wells will be installed in areas that are subject to vehicle and/or equipment traffic (roads, lawns), and aboveground completions will be installed in areas not subject to vehicle/equipment traffic (peripheral edge of field), or in areas where a flush mount well would be difficult to find (woods). The flush mount wells will be constructed using a traffic rated watertight 8-inch diameter well vault set in a 2-foot square concrete pad. The aboveground completions will be constructed using a locking well vault set in a 2-foot square concrete pad.

Each well will be capped with a locking well cap. In addition, a name plate that contains the following information will be affixed to the well vault:

- Company name and certification number of the driller who installed the well
- Date the well was completed
- Total depth (feet)
- Casing depth (feet)
- Screen interval (feet)
- Well identification

Well Development

The well will be developed by the well driller using one or more of the following techniques:

- Airlift
- Surge block and well pump

The well will be developed until the water produced is clear and free of sediment.

Soil Boring Advancement

The soil boring SB-01 will be advanced by a certified well driller registered in the state of South Carolina and drilled in accordance SCDHEC Well Standards R.61-71. A Jacobs geologist will perform oversight during the drilling and will log the lithology of the borehole. The boring will be advanced to refusal, at the top of bedrock layer, to further delineate the bedrock topography. After the boring has been completed, the borehole will be abandoned in accordance with South Carolina Well Standards R.61-71 Section H.2.e.

Well Abandonment

The wells will be abandoned by a licensed South Carolina driller and in accordance with Official Code of South Carolina (R.61-71) Section D.1. The abandonment will be completed by a forced injection or pouring of grout (bentonite-cement or 20% high solids sodium bentonite grout) through a tremie pipe starting from the bottom of the well and proceeding to the ground surface per R.61-71 Section H.2.e. The polyvinyl chloride (PVC) surface casing and well monument will be removed and disposed as construction waste.

If you have any further questions or concerns, please call me at (919) 760-1777, or Mr. Jerry Aycock/
Plantation at (770) 751-4165.

Regards,

CH2M HILL Engineers, Inc.



William M. Waldron, P.E.
Program Manager

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Mary Clair Lyons, Esq., Plantation (Digital, Mary_Lyons@kindermorgan.com)
Richard Morton, Esq., Womble Bond Dickinson, LLP (Digital, ric.morton@wbd-us.com)
File

Attachments:

Table 1 Groundwater Elevation and Product Thickness Data
Figure 1 Groundwater Analytical Results in Residuuum Aquifer
Figure 2 Residuuum Groundwater and Surface Water Elevation Map

Table 1. Groundwater Elevation and Product Thickness Data

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
RS-01					849.13		
	8/1/2018	7.87	7.88	0.01		841.25	841.26
	7/11/2018	6.78	6.80	0.02		842.33	842.34
	6/7/2018	-	NM	-		-	-
	5/2/2018	7.60	7.62	0.02		841.51	841.52
	4/5/2018	-	8.92	-		840.21	-
	3/5/2018	7.38	7.42	0.04		841.71	841.74
	2/21/2018	8.45	8.52	0.07		840.61	840.66
	2/13/2018	8.05	8.11	0.06		841.02	841.06
	2/9/2018	8.93	9.01	0.08		840.12	840.18
	2/2/2018	-	NM	-		-	-
RS-02					849.52		
	8/1/2018	-	6.71	-		842.81	-
	7/11/2018	-	5.68	-		843.84	-
	6/7/2018	-	4.65	-		844.87	-
	5/2/2018	-	6.18	-		843.34	-
	4/5/2018	-	8.01	-		841.51	-
	3/5/2018	5.90	5.91	0.01		843.61	843.62
	2/21/2018	-	NM	-		-	-
	2/13/2018	6.78	6.80	0.02		842.72	842.73
2/3/2018	9.94	9.96	0.02		839.56	839.57	
RS-04					851.47		
	8/1/2018	-	8.72	-		842.75	-
	7/11/2018	-	7.95	-		843.52	-
	6/4/2018	-	5.98	-		845.49	-
	5/2/2018	-	8.67	-		842.80	-
	4/5/2018	-	9.74	-		841.73	-
	3/5/2018	-	7.58	-		843.89	-
	2/21/2018	-	9.68	-		841.79	-
2/3/2018	-	9.75	-		841.72	-	
RS-05					848.31		
	8/1/2018	8.51	8.56	0.05		839.75	839.79
	7/11/2018	6.57	6.58	0.01		841.73	841.74
	6/7/2018	-	6.64	-		841.67	-
	5/2/2018	8.00	8.50	0.50		839.81	840.18
	4/5/2018	-	NM	-		-	-
	3/5/2018	7.32	7.47	0.15		840.84	840.95
	2/21/2018	-	NM	-		-	-
	2/13/2018	19.80	20.23	0.44		828.08	828.40
	2/9/2018	8.09	8.29	0.20		840.02	840.17
	2/2/2018	-	NM	-		-	-
RS-06					849.47		
	8/1/2018	-	7.88	-		841.59	-
	7/11/2018	-	6.70	-		842.77	-
	6/4/2018	-	7.12	-		842.35	-
	5/2/2018	-	8.44	-		841.03	-
	4/5/2018	-	9.43	-		840.04	-
	3/5/2018	-	8.17	-		841.30	-
	2/21/2018	-	8.65	-		840.82	-
2/3/2018	-	10.87	-		838.60	-	
RS-07					855.08		
	8/1/2018	-	10.87	-		844.21	-
	7/11/2018	-	10.21	-		844.87	-
	6/4/2018	-	9.16	-		845.92	-
	5/2/2018	-	10.40	-		844.68	-
4/5/2018	-	10.40	-		844.68	-	

Table 1. Groundwater Elevation and Product Thickness Data

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Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
	3/5/2018	-	11.91	-		843.17	-
	2/21/2018	-	12.66	-		842.42	-
	2/3/2018	13.74	13.75	0.01		841.33	841.34
	1/26/2018	-	14.07	-		841.01	-
	1/20/2018	-	14.07	-		841.01	-
	1/10/2018	14.32	14.33	0.01		840.75	840.76
	1/5/2018	14.15	14.16	0.01		840.92	840.93
RS-08					854.00		
	8/1/2018	-	11.24	-		842.76	-
	7/11/2018	-	10.50	-		843.50	-
	6/7/2018	-	10.19	-		843.81	-
	5/2/2018	-	10.53	-		843.47	-
	4/5/2018	-	10.90	-		843.10	-
	3/5/2018	-	12.62	-		841.38	-
	2/21/2018	-	13.40	-		840.60	-
	2/13/2018	13.79	13.80	0.01		840.20	840.21
	2/3/2018	14.62	14.63	0.01		839.37	839.38
	1/26/2018	14.89	14.97	0.08		839.03	839.09
	1/20/2018	14.72	14.78	0.06		839.22	839.26
	1/10/2018	14.68	14.75	0.07		839.25	839.30
	1/5/2018	14.87	14.94	0.07		839.06	839.11
RS-09					847.60		
	8/1/2018	-	6.90	-		840.70	-
	7/11/2018	-	6.23	-		841.37	-
	6/4/2018	-	6.34	-		841.26	-
	5/2/2018	-	6.23	-		841.37	-
	4/5/2018	-	9.73	-		837.87	-
	3/5/2018	-	5.96	-		841.64	-
	2/21/2018	-	6.45	-		841.15	-
	2/3/2018	-	8.10	-		839.50	-
RS-10					847.42		
	8/1/2018	-	6.16	-		841.26	-
	7/11/2018	5.38	5.40	0.02		842.02	842.03
	6/7/2018	-	5.69	-		841.73	-
	5/2/2018	6.96	6.98	0.02		840.44	840.45
	4/5/2018	7.76	7.77	0.01		839.65	839.66
	3/5/2018	5.84	5.89	0.05		841.53	841.57
	2/21/2018	-	NM	-		-	-
	2/13/2018	5.82	5.92	0.10		841.50	841.57
	2/3/2018	6.91	6.92	0.01		840.50	840.51
RS-11					847.44		
	8/1/2018	-	5.89	-		841.55	-
	7/11/2018	-	5.35	-		842.09	-
	6/4/2018	-	6.25	-		841.19	-
	5/2/2018	-	7.36	-		840.08	-
	4/5/2018	-	7.68	-		839.76	-
	3/5/2018	-	6.84	-		840.60	-
	2/21/2018	-	6.42	-		841.02	-
	2/3/2018	-	7.57	-		839.87	-
RS-12					847.74		
	8/1/2018	-	6.21	-		841.53	-
	7/11/2018	-	5.70	-		842.04	-
	6/4/2018	-	6.59	-		841.15	-
	5/2/2018	-	7.67	-		840.07	-
	4/5/2018	-	8.03	-		839.71	-
	3/5/2018	-	7.21	-		840.53	-

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	2/21/2018	-	6.78	-		840.96	-
	2/3/2018	-	7.92	-		839.82	-
RS-13					845.98		
	8/1/2018	-	5.58	-		840.40	-
	7/11/2018	-	4.66	-		841.32	-
	6/4/2018	-	3.14	-		842.84	-
	5/2/2018	-	4.75	-		841.23	-
	4/5/2018	-	7.96	-		838.02	-
	3/5/2018	-	2.95	-		843.03	-
	2/21/2018	-	2.84	-		843.14	-
	2/3/2018	-	3.75	-		842.23	-
RS-14					845.97		
	8/1/2018	3.84	3.85	0.01		842.12	842.13
	7/11/2018	3.85	3.86	0.01		842.11	842.12
	6/7/2018	-	3.85	-		842.12	-
	5/2/2018	4.25	4.27	0.02		841.70	841.71
	4/5/2018	6.24	6.26	0.02		839.71	839.72
	3/5/2018	-	3.29	-		842.68	-
	2/21/2018	-	NM	-		-	-
	2/13/2018	2.53	2.58	0.05		843.39	843.43
	2/3/2018	-	4.82	-		841.15	-
RS-15					846.41		
	8/1/2018	-	4.28	-		842.13	-
	7/11/2018	-	4.15	-		842.26	-
	6/4/2018	-	2.91	-		843.50	-
	5/2/2018	-	4.47	-		841.94	-
	4/5/2018	-	6.29	-		840.12	-
	3/5/2018	-	3.58	-		842.83	-
	2/21/2018	-	3.94	-		842.47	-
	2/3/2018	-	5.10	-		841.31	-
RS-16					845.44		
	8/1/2018	-	4.85	-		840.59	-
	7/11/2018	-	3.63	-		841.81	-
	6/4/2018	-	3.18	-		842.26	-
	5/2/2018	-	3.64	-		841.80	-
	4/5/2018	-	5.49	-		839.95	-
	3/5/2018	-	3.03	-		842.41	-
	2/21/2018	-	2.78	-		842.66	-
	2/3/2018	-	3.83	-		841.61	-
RS-17					844.22		
	8/1/2018	-	3.28	-		840.94	-
	7/11/2018	-	3.52	-		840.70	-
	6/7/2018	-	3.02	-		841.20	-
	5/2/2018	-	3.24	-		840.98	-
	4/5/2018	-	5.40	-		838.82	-
	3/5/2018	-	2.37	-		841.85	-
	2/21/2018	-	NM	-		-	-
	2/13/2018	1.70	1.73	0.03		842.49	842.51
	2/3/2018	-	3.05	-		841.17	-
RS-18					847.89		
	8/1/2018	-	7.33	-		840.56	-
	7/11/2018	-	6.50	-		841.39	-
	6/4/2018	-	6.36	-		841.53	-
	5/2/2018	-	6.31	-		841.58	-
	4/5/2018	-	8.90	-		838.99	-
	3/5/2018	-	5.05	-		842.84	-

Table 1. Groundwater Elevation and Product Thickness Data

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Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
	2/21/2018	-	6.59	-	850.40	841.30	-
	2/3/2018	-	8.27	-		839.62	-
RS-19					850.40		
	8/1/2018	-	NM	-		-	-
	7/11/2018	-	NM	-		-	-
	6/4/2018	-	NM	-		-	-
	5/2/2018	-	NM	-		-	-
	4/5/2018	-	NM	-		-	-
	3/5/2018	-	NM	-		-	-
RS-20					842.69		
	8/1/2018	-	5.22	-		837.47	-
	7/11/2018	-	4.95	-		837.74	-
	6/4/2018	-	3.80	-		838.89	-
	5/2/2018	-	4.30	-		838.39	-
	4/5/2018	-	5.71	-		836.98	-
	3/5/2018	-	NM	-		-	-
	2/21/2018	-	3.02	-		839.67	-
	2/3/2018	-	3.40	-		839.29	-
RT-1A					854.06		
	8/1/2018	-	10.80	-		843.26	-
	7/11/2018	-	10.75	-		843.31	-
	6/7/2018	-	9.91	-		844.15	-
	5/2/2018	-	11.06	-		843.00	-
	4/5/2018	-	11.31	-		842.75	-
	3/5/2018	-	12.13	-		841.93	-
	2/21/2018	-	13.25	-		840.81	-
	2/13/2018	13.25	13.26	0.01		840.80	840.81
	2/9/2018	-	13.71	-		840.35	-
	2/2/2018	14.23	14.25	0.02		839.81	839.82
	1/26/2018	14.64	14.68	0.04		839.38	839.41
	1/20/2018	14.52	14.57	0.05		839.49	839.53
	1/10/2018	14.70	14.74	0.04		839.32	839.35
	1/5/2018	14.66	14.73	0.07		839.33	839.38
RT-1B					854.15		
	8/1/2018	-	10.78	-		843.37	-
	7/11/2018	-	10.22	-		843.93	-
	6/7/2018	-	9.91	-		844.24	-
	5/2/2018	-	10.48	-		843.67	-
	4/5/2018	-	10.92	-		843.23	-
	3/5/2018	-	12.10	-		842.05	-
	2/21/2018	-	13.23	-		840.92	-
	2/13/2018	-	13.28	-		840.87	-
	2/9/2018	-	13.68	-		840.47	-
	2/2/2018	14.19	14.21	0.02		839.94	839.95
	1/26/2018	14.60	14.64	0.04		839.51	839.54
	1/20/2018	14.48	14.53	0.05		839.62	839.66
	1/10/2018	14.66	14.71	0.05		839.44	839.48
	1/5/2018	14.62	14.69	0.07		839.46	839.51
RT-1C					854.55		
	8/1/2018	-	11.39	-		843.16	-
	7/11/2018	-	10.24	-		844.31	-
	6/7/2018	-	10.50	-		844.05	-
	5/2/2018	-	10.50	-		844.05	-
	4/5/2018	-	10.74	-		843.81	-
	3/5/2018	-	12.70	-		841.85	-
	2/21/2018	-	13.82	-		840.73	-

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	2/13/2018	-	13.88	-		840.67	-
	2/9/2018	-	14.29	-		840.26	-
	2/2/2018	15.81	15.83	0.02		838.72	838.73
	1/26/2018	15.19	15.23	0.04		839.32	839.35
	1/20/2018	15.06	15.11	0.05		839.44	839.48
	1/10/2018	15.24	15.29	0.05		839.26	839.30
	1/5/2018	15.23	15.29	0.06		839.26	839.30
RT-2A					817.48		
	8/1/2018	-	0.60	-		816.88	-
	7/11/2018	-	0.50	-		816.98	-
	6/4/2018	-	NM	-		-	-
	5/2/2018	-	0.50	-		816.98	-
	4/5/2018	-	0.70	-		816.78	-
	3/5/2018	-	0.61	-		816.87	-
	2/21/2018	-	NM	-		-	-
	2/9/2018	-	0.54	-		816.94	-
	2/2/2018	-	0.85	-		816.63	-
	1/26/2018	-	0.96	-		816.52	-
	1/20/2018	-	0.95	-		816.53	-
	1/10/2018	-	1.07	-		816.41	-
	1/5/2018	-	1.25	-		816.23	-
RT-2B					817.61		
	8/1/2018	-	0.80	-		816.81	-
	7/11/2018	-	0.08	-		817.53	-
	6/4/2018	-	0.68	-		816.93	-
	5/2/2018	-	0.74	-		816.87	-
	4/5/2018	-	1.23	-		816.38	-
	3/5/2018	-	0.81	-		816.80	-
	2/21/2018	-	0.75	-		816.86	-
	2/9/2018	-	0.68	-		816.93	-
	2/2/2018	-	0.95	-		816.66	-
	1/26/2018	-	1.12	-		816.49	-
	1/20/2018	-	1.07	-		816.54	-
	1/10/2018	-	1.27	-		816.34	-
	1/5/2018	-	1.42	-		816.19	-
RT-2C					818.06		
	8/1/2018	-	1.24	-		816.82	-
	7/11/2018	-	1.20	-		816.86	-
	6/4/2018	-	0.95	-		817.11	-
	5/2/2018	-	1.20	-		816.86	-
	4/5/2018	-	1.33	-		816.73	-
	3/5/2018	-	1.21	-		816.85	-
	2/21/2018	-	1.21	-		816.85	-
	2/9/2018	-	1.14	-		816.92	-
	2/2/2018	-	1.38	-		816.68	-
	1/26/2018	-	1.58	-		816.48	-
	1/20/2018	-	NM	-		-	-
	1/10/2018	-	1.72	-		816.34	-
	1/5/2018	-	1.87	-		816.19	-
RT-2D					818.12		
	8/1/2018	-	1.30	-		816.82	-
	7/11/2018	-	1.33	-		816.79	-
	6/4/2018	-	1.20	-		816.92	-
	5/2/2018	-	1.30	-		816.82	-
	4/5/2018	-	1.43	-		816.69	-
	3/5/2018	-	1.34	-		816.78	-

Table 1. Groundwater Elevation and Product Thickness Data

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
	2/21/2018	-	1.32	-		816.80	-
	2/9/2018	-	1.25	-		816.87	-
	2/2/2018	-	1.46	-		816.66	-
	1/26/2018	-	1.67	-		816.45	-
	1/20/2018	-	1.62	-		816.50	-
	1/10/2018	-	1.80	-		816.32	-
	1/5/2018	-	1.92	-		816.20	-
RT-2E					818.25		
	8/1/2018	-	1.42	-		816.83	-
	7/11/2018	-	1.42	-		816.83	-
	6/4/2018	-	1.34	-		816.91	-
	5/2/2018	-	1.42	-		816.83	-
	4/5/2018	-	1.71	-		816.54	-
	3/5/2018	-	1.44	-		816.81	-
	2/21/2018	-	1.41	-		816.84	-
	2/9/2018	-	1.33	-		816.92	-
	2/2/2018	1.57	1.58	0.01		816.67	816.68
	1/26/2018	-	1.78	-		816.47	-
	1/20/2018	-	NM	-		-	-
	1/10/2018	-	1.89	-		816.36	-
	1/5/2018	-	NM	-		-	-
RT-2F					818.57		
	8/1/2018	-	1.76	-		816.81	-
	7/11/2018	-	1.80	-		816.77	-
	6/4/2018	-	1.66	-		816.91	-
	5/2/2018	-	1.72	-		816.85	-
	4/5/2018	-	1.03	-		817.54	-
	3/5/2018	-	1.77	-		816.80	-
	2/21/2018	-	1.75	-		816.82	-
	2/9/2018	-	1.67	-		816.90	-
	2/2/2018	1.87	1.88	0.01		816.69	816.70
	1/26/2018	-	2.11	-		816.46	-
	1/20/2018	-	NM	-		-	-
	1/10/2018	-	2.22	-		816.35	-
	1/5/2018	-	NM	-		-	-
RT-2G					820.07		
	8/1/2018	-	2.99	-		817.08	-
	7/11/2018	-	2.10	-		817.97	-
	6/4/2018	-	1.08	-		818.99	-
	5/2/2018	-	0.95	-		819.12	-
	4/5/2018	-	1.04	-		819.03	-
	3/5/2018	-	2.99	-		817.08	-
	2/21/2018	-	0.96	-		819.11	-
	2/9/2018	-	0.98	-		819.09	-
	2/2/2018	-	0.95	-		819.12	-
	1/26/2018	-	0.92	-		819.15	-
	1/20/2018	-	NM	-		-	-
	1/10/2018	-	4.44	-		815.63	-
	1/5/2018	-	NM	-		-	-
RT-2H					822.17		
	8/1/2018	-	NM	-		-	-
	7/11/2018	-	NM	-		-	-
	6/4/2018	-	NM	-		-	-
	5/2/2018	-	NM	-		-	-
	4/5/2018	-	NM	-		-	-
	3/5/2018	-	NM	-		-	-

Table 1. Groundwater Elevation and Product Thickness Data

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
RT-2I					819.51		
	8/1/2018	-	2.63	-		816.88	-
	7/11/2018	-	2.25	-		817.26	-
	6/4/2018	-	1.02	-		818.49	-
	5/2/2018	-	1.04	-		818.47	-
	4/5/2018	-	1.04	-		818.47	-
	3/5/2018	-	2.00	-		817.51	-
	2/21/2018	-	0.35	-		819.16	-
	2/9/2018	-	0.23	-		819.28	-
	2/2/2018	-	0.64	-		818.87	-
	1/26/2018	-	1.03	-		818.48	-
	1/20/2018	-	2.79	-		816.72	-
	1/10/2018	-	3.17	-		816.34	-
1/5/2018	-	NM	-		-	-	
RT-2J					817.63		
	8/1/2018	-	1.98	-		815.65	-
	7/11/2018	-	0.80	-		816.83	-
	6/4/2018	-	-	-		817.63	-
	5/2/2018	-	0.04	-		817.59	-
	4/5/2018	-	0.03	-		817.60	-
	3/5/2018	-	0.49	-		817.14	-
	2/21/2018	-	-	-		817.63	-
	2/9/2018	-	NM	-		-	-
	2/2/2018	-	NM	-		-	-
	1/26/2018	-	0.04	-		817.59	-
	1/20/2018	-	1.08	-		816.55	-
	1/10/2018	-	1.62	-		816.01	-
1/5/2018	-	1.89	-		815.74	-	
RT-2K					817.40		
	8/1/2018	-	0.78	-		816.62	-
	7/11/2018	-	0.95	-		816.45	-
	6/7/2018	-	1.20	-		816.20	-
	5/2/2018	-	0.82	-		816.58	-
	4/5/2018	-	0.60	-		816.80	-
	3/5/2018	-	0.73	-		816.67	-
	2/21/2018	-	0.65	-		816.75	-
	2/13/2018	-	0.08	-		817.32	-
	2/9/2018	-	NM	-		-	-
	2/2/2018	-	NM	-		-	-
	1/20/2018	1.35	1.36	0.01		816.04	816.05
	1/10/2018	-	NM	-		-	-
1/5/2018	-	NM	-		-	-	
RT-2L					819.54		
	8/1/2018	-	1.52	-		818.02	-
	7/11/2018	-	1.40	-		818.14	-
	6/4/2018	-	1.03	-		818.51	-
	5/2/2018	-	1.16	-		818.38	-
	4/5/2018	-	1.23	-		818.31	-
	3/5/2018	-	1.19	-		818.35	-
	2/21/2018	-	1.55	-		817.99	-
	2/9/2018	-	1.34	-		818.20	-
	2/2/2018	-	1.95	-		817.59	-
	1/26/2018	2.48	2.49	0.01		817.05	817.06
	1/20/2018	2.30	2.31	0.01		817.23	817.24
	1/10/2018	2.52	2.54	0.02		817.00	817.01
1/5/2018	-	2.67	-		816.87	-	

Table 1. Groundwater Elevation and Product Thickness Data

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation* (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
RW-01					851.92		
	8/1/2018	-	14.01	-		837.91	-
	7/11/2018	-	13.97	-		837.95	-
	6/4/2018	-	11.05	-		840.87	-
	5/2/2018	-	12.18	-		839.74	-
	4/5/2018	-	12.84	-		839.08	-
	3/5/2018	-	12.80	-		839.12	-
	2/21/2018	-	12.77	-		839.15	-
2/3/2018	-	13.20	-		838.72	-	
RW-02					852.69		
	8/1/2018	-	21.69	-		831.00	-
	7/11/2018	20.86	20.87	0.01		831.82	831.83
	6/7/2018	-	20.17	-		832.52	-
	5/2/2018	20.98	20.99	0.01		831.70	831.71
	4/5/2018	-	21.69	-		831.00	-
	3/5/2018	20.76	20.80	0.04		831.89	831.92
	2/21/2018	-	NM	-		-	-
	2/13/2018	21.56	21.57	0.01		831.12	831.13
	2/9/2018	21.75	21.81	0.06		830.88	830.92
2/2/2018	22.68	22.85	0.17		829.84	829.96	
RW-03					852.34		
	8/1/2018	-	22.71	-		829.63	-
	7/11/2018	-	21.72	-		830.62	-
	6/7/2018	-	21.30	-		831.04	-
	5/2/2018	-	22.00	-		830.34	-
	4/5/2018	-	23.00	-		829.34	-
	3/5/2018	-	21.71	-		830.63	-
	2/21/2018	-	NM	-		-	-
2/13/2018	-	22.43	-		829.91	-	
2/3/2018	23.60	23.61	0.01		828.73	828.74	
RW-04					853.93		
	8/1/2018	27.39	27.63	0.24		826.30	826.48
	7/11/2018	26.70	26.81	0.11		827.12	827.20
	6/7/2018	-	26.12	-		827.81	-
	5/2/2018	26.84	27.04	0.20		826.89	827.04
	4/5/2018	27.95	28.53	0.58		825.40	825.83
	3/5/2018	27.62	28.40	0.78		825.53	826.10
	2/21/2018	-	NM	-		-	-
	2/13/2018	28.52	29.17	0.65		824.76	825.24
	2/9/2018	28.93	29.39	0.46		824.54	824.88
	2/2/2018	29.54	29.74	0.20		824.19	824.34
	1/26/2018	29.99	30.04	0.05		823.89	823.93
	1/20/2018	30.23	30.54	0.31		823.39	823.62
1/10/2018	30.57	30.65	0.08		823.28	823.34	
1/5/2018	30.11	30.26	0.15		823.67	823.78	
RW-05					853.53		
	8/1/2018	31.61	31.71	0.10		821.82	821.90
	7/11/2018	31.25	31.32	0.07		822.21	822.26
	6/7/2018	-	29.99	-		823.54	-
	5/2/2018	31.14	31.19	0.05		822.34	822.38
	4/5/2018	31.70	31.78	0.08		821.75	821.81
	3/5/2018	30.93	31.46	0.53		822.07	822.46
	2/21/2018	-	NM	-		-	-
	2/9/2018	32.33	33.13	0.80		820.40	820.99
	2/2/2018	32.92	33.68	0.76		819.85	820.41
1/26/2018	33.39	33.73	0.34		819.80	820.05	

Table 1. Groundwater Elevation and Product Thickness Data

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
	1/20/2018	32.96	34.05	1.09		819.48	820.28
	1/10/2018	33.13	33.53	0.40		820.00	820.30
	1/5/2018	33.35	33.99	0.64		819.54	820.01
RW-06					846.21		
	8/1/2018	-	24.40	-		821.81	-
	7/11/2018	-	24.31	-		821.90	-
	6/4/2018	-	23.38	-		822.83	-
	5/2/2018	-	24.16	-		822.05	-
	4/5/2018	-	24.71	-		821.50	-
	3/5/2018	-	24.98	-		821.23	-
	2/21/2018	-	25.61	-		820.60	-
	2/9/2018	-	26.15	-		820.06	-
	2/2/2018	26.82	26.83	0.01		819.38	819.39
	1/26/2018	27.16	27.18	0.02		819.03	819.04
	1/20/2018	-	26.47	-		819.74	-
	1/10/2018	-	26.55	-		819.66	-
	1/5/2018	-	27.41	-		818.80	-
RW-07					843.19		
	8/1/2018	-	21.49	-		821.70	-
	7/11/2018	-	21.03	-		822.16	-
	6/7/2018	-	20.40	-		822.79	-
	5/2/2018	-	20.65	-		822.54	-
	4/5/2018	-	21.26	-		821.93	-
	3/5/2018	-	21.43	-		821.76	-
	2/21/2018	-	NM	-		-	-
	2/13/2018	21.40	21.42	0.02		821.77	821.79
	2/9/2018	-	22.09	-		821.10	-
	2/2/2018	22.94	22.95	0.01		820.24	820.25
	1/26/2018	23.38	23.40	0.02		819.79	819.81
	1/20/2018	23.97	23.99	0.02		819.20	819.22
	1/10/2018	23.02	23.04	0.02		820.15	820.17
	1/5/2018	-	24.03	-		819.16	-
RW-08					835.48		
	8/1/2018	-	14.70	-		820.78	-
	7/11/2018	-	14.66	-		820.82	-
	6/7/2018	-	NM	-		-	-
	5/2/2018	-	13.34	-		822.14	-
	4/5/2018	-	13.41	-		822.07	-
	3/5/2018	-	15.40	-		820.08	-
	2/21/2018	-	NM	-		-	-
	2/13/2018	-	13.62	-		821.86	-
	2/3/2018	-	15.75	-		819.73	-
	1/26/2018	16.22	16.23	0.01		819.25	819.26
	1/20/2018	16.03	16.04	0.01		819.44	819.45
	1/10/2018	16.11	16.12	0.01		819.36	819.37
	1/5/2018	-	17.29	-		818.19	-
RW-09					835.12		
	8/1/2018	-	12.11	-		823.01	-
	7/11/2018	-	12.44	-		822.68	-
	6/4/2018	-	8.95	-		826.17	-
	5/2/2018	-	10.78	-		824.34	-
	4/5/2018	-	9.89	-		825.23	-
	3/5/2018	-	12.90	-		822.22	-
	2/21/2018	-	12.08	-		823.04	-
	2/9/2018	-	12.12	-		823.00	-
	2/2/2018	-	12.98	-		822.14	-

Table 1. Groundwater Elevation and Product Thickness Data

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
	1/26/2018	-	13.44	-		821.68	-
	1/20/2018	-	13.84	-		821.28	-
	1/10/2018	-	13.78	-		821.34	-
	1/5/2018	-	14.57	-		820.55	-
RW-10					848.53		
	8/1/2018	-	10.40	-		838.13	-
	7/11/2018	9.24	9.29	0.05		839.24	839.28
	6/4/2018	-	8.95	-		839.58	-
	5/2/2018	10.83	10.84	0.01		837.69	837.70
	4/5/2018	-	9.56	-		838.97	-
	3/5/2018	-	9.00	-		839.53	-
	2/21/2018	-	9.75	-		838.78	-
	2/3/2018	-	7.00	-		841.53	-
RW-11					852.97		
	8/1/2018	8.90	8.91	0.01		844.06	844.06
	7/11/2018	-	9.71	-		843.26	-
	6/4/2018	-	11.55	-		841.42	-
	5/2/2018	-	10.45	-		842.52	-
	4/5/2018	-	11.80	-		841.17	-
	3/5/2018	-	13.15	-		839.82	-
	2/21/2018	-	13.01	-		839.96	-
	2/9/2018	-	NM	-		-	-
	2/2/2018	-	13.11	-		839.86	-
	1/26/2018	-	13.98	-		838.99	-
	1/20/2018	-	14.92	-		838.05	-
	1/10/2018	-	13.59	-		839.38	-
	1/5/2018	-	14.88	-		838.09	-
RW-12					854.49		
	8/1/2018	12.53	12.54	0.01		841.95	841.95
	7/11/2018	-	10.70	-		843.79	-
	6/4/2018	-	11.95	-		842.54	-
	5/2/2018	-	NM	-		-	-
	4/5/2018	-	13.47	-		841.02	-
	3/5/2018	-	14.93	-		839.56	-
	2/21/2018	-	15.14	-		839.35	-
	2/9/2018	-	NM	-		-	-
	2/2/2018	-	15.93	-		838.56	-
	1/26/2018	-	15.95	-		838.54	-
	1/20/2018	-	15.79	-		838.70	-
	1/10/2018	-	15.29	-		839.20	-
	1/5/2018	-	15.94	-		838.55	-
RW-13					847.97		
	8/1/2018	-	NM	-		-	-
	7/11/2018	-	NM	-		-	-
	6/4/2018	-	NM	-		-	-
	5/2/2018	-	NM	-		-	-
	4/5/2018	-	NM	-		-	-
	3/5/2018	-	NM	-		-	-
	2/21/2018	-	NM	-		-	-
	2/3/2018	-	NM	-		-	-
RW-14					827.54		
	8/1/2018	-	1.70	-		825.84	-
	7/11/2018	-	10.02	-		817.52	-
	6/4/2018	-	9.97	-		817.57	-
	5/2/2018	-	10.05	-		817.49	-
	4/5/2018	-	6.72	-		820.82	-

Table 1. Groundwater Elevation and Product Thickness Data

Plantation Pipe Line Company

Lewis Drive Remediation Site, Belton, South Carolina

Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Location ID	Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Top of Casing Elevation ^a (ft amsl)	Groundwater Elevation (ft amsl)	Corrected ^b Groundwater Elevation (ft amsl)
	3/5/2018	-	10.60	-		816.94	-
	2/21/2018	-	12.61	-		814.93	-
	2/9/2018	-	13.24	-		814.30	-
	2/3/2018	-	13.76	-		813.78	-
	1/26/2018	-	7.66	-		819.88	-
	1/20/2018	14.83	14.84	0.01		812.70	812.71
	1/10/2018	-	14.04	-		813.50	-
	1/5/2018	-	NM	-		-	-
RW-15					851.64		
	8/1/2018	-	11.39	-		840.25	-
	7/11/2018	10.21	10.22	0.01		841.42	841.42
	6/7/2018	-	10.34	-		841.30	-
	5/2/2018	-	11.98	-		839.66	-
	4/5/2018	-	12.91	-		838.73	-
	3/5/2018	11.94	12.04	0.10		839.60	839.67
	2/21/2018	-	NM	-		-	-
	2/13/2018	12.90	12.93	0.03		838.71	838.73
	2/2/2018	-	13.88	-		837.76	-

Notes:

Unshaded product recovery features are proposed for abandonment.

Italicized and bold product recovery features are included in the current product recovery activities and contain either a passive skimmer or petroleum absorbent sock.

Shaded product recovery features are not proposed for abandonment.

^a "RS-" and "RT-" features were trimmed to less than 12 inches above ground surface on 3/14/2017.

Only the resurveyed top of casing elevation after trimming is displayed. Groundwater elevation calculations are based on the true top of casing elevation at the time of gauging.

^b Calculated based on an oil:water density ratio of 0.73.

- = not applicable

amsl = above mean sea level

BTOC = below top of casing

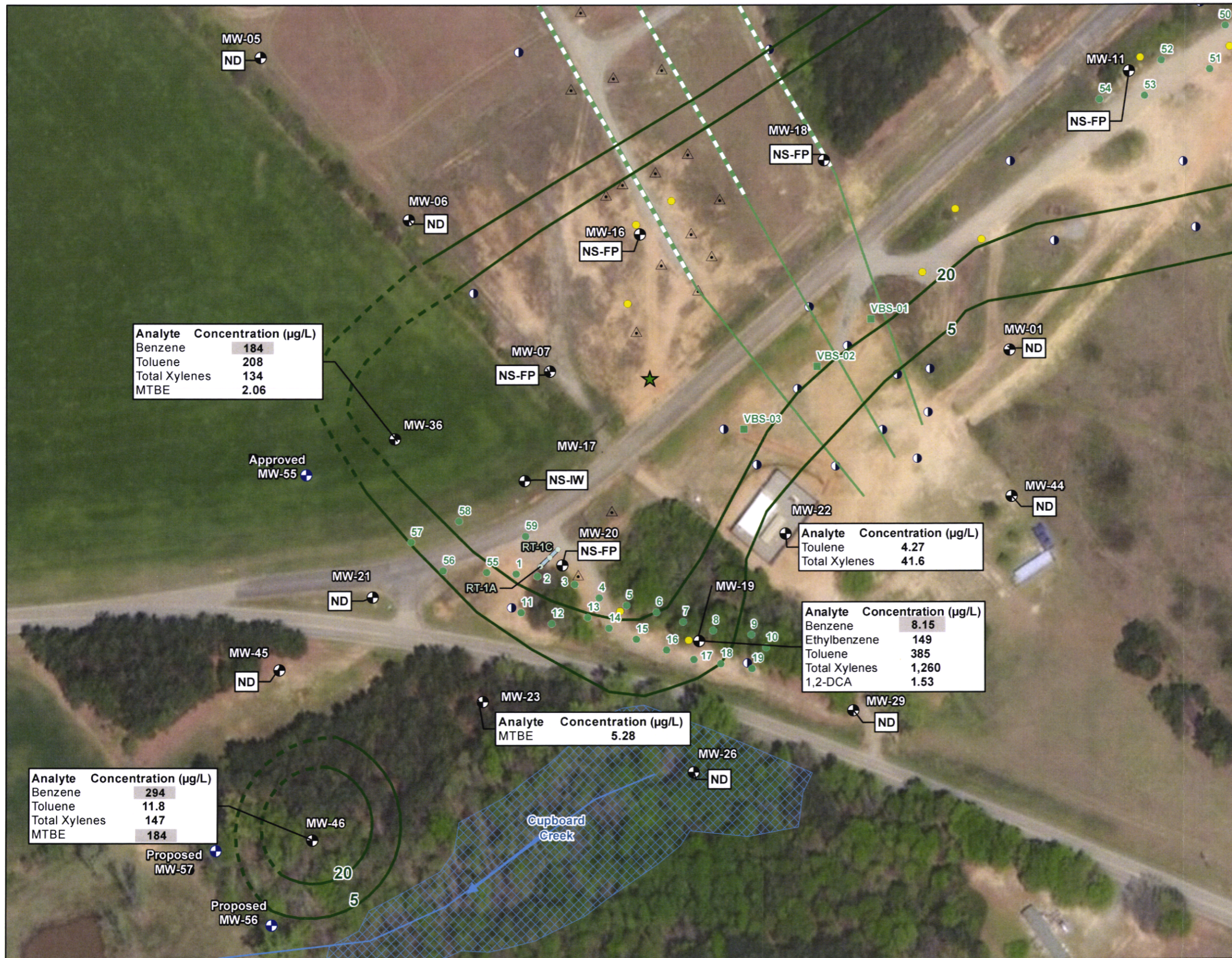
ft = feet

ID = identification

NM = not measured

The following features are no longer reliable for calculating groundwater elevation:

- RW-13 was no longer accessible due to health and safety concerns and was abandoned on August 31, 2018.
- RS-19 was damaged and was abandoned on September 13, 2017.



Analyte	Concentration (µg/L)
Benzene	184
Toluene	208
Total Xylenes	134
MTBE	2.06

Analyte	Concentration (µg/L)
Toluene	4.27
Total Xylenes	41.6

Analyte	Concentration (µg/L)
Benzene	8.15
Ethylbenzene	149
Toluene	385
Total Xylenes	1,260
1,2-DCA	1.53

Analyte	Concentration (µg/L)
MTBE	5.28

Analyte	Concentration (µg/L)
Benzene	294
Toluene	11.8
Total Xylenes	147
MTBE	184

LEGEND

- ★ Release Point
- ⊙ Residuom Monitoring Well
- ⊕ Proposed Monitoring Well
- ⊙ Piezometer
- Vertical Bedrock Sparging Well
- Vertical Saprolite Sparging Well
- Recovery Well (4" diameter)
- △ Recovery Sump
- Recovery Trench Point
- Recovery Trench
- Surface Water Flow Direction
- Horizontal Sparging Well Riser
- Horizontal Sparging Well Screen
- Dissolved Benzene Plume Extent (µg/L) (Dashed where inferred)
- National Hydrography Dataset Stream
- ▨ Delineated Wetland

- NOTES:**
- Total Xylenes is the sum of m&p xylenes and o-xylene.
 - MTBE = Methyl Tertiary Butyl Ether
 - 1,2-DCA = 1,2-dichloroethane
 - µg/L = microgram(s) per liter
 - Only detected analytes are shown on map.
 - ND = Groundwater was collected and analyzed, but no analytes were detected above the reported sample quantitation limit.
 - NS = Not scheduled to be sampled for this event
 - NS-FP = Sample not collected due to the presence of free product in the well
 - NS-IW = Sample not collected due to insufficient volume of water in well

Gray shading indicates the analyte exceeded risk-based screening levels (RBSLs) identified in South Carolina Underground Storage Tank Management Division Programmatic Quality Assurance Program Plan Revision 3.1, Table D1 "RBSLs for Groundwater", February 2016.

Base Map Sources:
 *Environmental Systems Research Institute (ESRI) ArcMap World Imagery, 2017. Basemap features are approximate.
 *United States Geological Survey (USGS) National Hydrography Dataset (NHD)

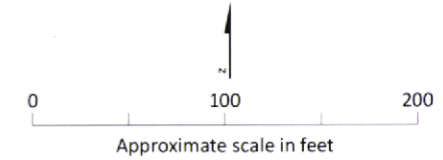
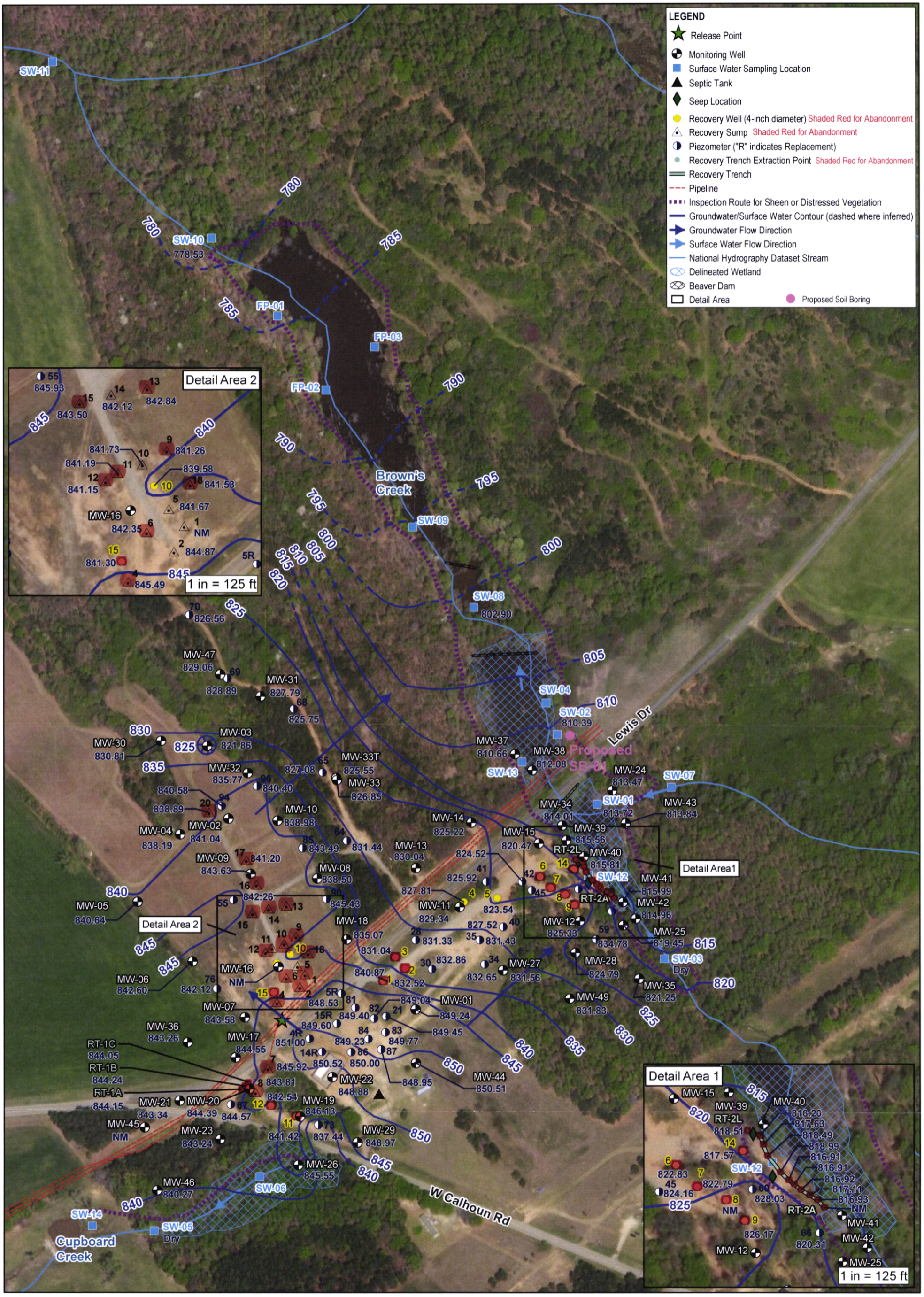


FIGURE 1. Groundwater Analytical Results in Residuom Aquifer, June 2018
 Lewis Drive Remediation Site
 Belton, South Carolina
 Site ID #18693 "Kinder Morgan Belton Pipeline Release"





821.25 Corrected Groundwater Elevation as of 6/4/2018 in feet above mean sea level
NM Not Measured

Base Map Sources:
 *Environmental Systems Research Institute (ESRI)
 ArcMap World Imagery, 2017. Basemap features are approximate.
 *United States Geological Survey (USGS)
 National Hydrography Dataset (NHD)

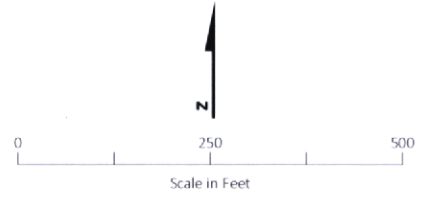


Figure 2. Residuum Groundwater and Surface Water Elevation Map
 Lewis Drive Remediation Site
 Belton, South Carolina
 Site ID #18693 "Kinder Morgan Belton Pipeline Release"