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*Delivered via FedEx Overnight Delivery*

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

Subject: **Lewis Drive – December 2017 Monthly Status Update**  
Plantation Pipe Line Company  
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) is submitting the attached Monthly Status Update covering activities conducted in December 2017 at the Lewis Drive site. If you have any questions or concerns, please call me at 919-760-1777, Mr. Scott Powell/CH2M at 678-530-4457, or Mr. Jerry Aycock/Plantation at 770-751-4165.

Regards,  
CH2M HILL Engineers, Inc.

William M. Waldron, P.E.  
Program Manager

Attachments:

- Monthly Status Update including:
  - Figure 1 – Groundwater and Surface Water Elevation Map
  - Figure 2 – Product Thickness Map
  - Table 1 – Field Observations
  - Table 2 – Stream Gauge Construction Information
  - Table 3 – Analytical Results for Surface Water
  - Table 4 – Well Construction Information
  - Table 5 – Groundwater Elevation and Product Thickness Data
  - Table 6 – Analytical Results for Groundwater
  - Surface Water Analytical Laboratory Reports

- o Groundwater Analytical Laboratory Reports

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File

**Monthly Status Update**  
**Plantation Pipe Line Company**  
**Lewis Drive Remediation**  
**Site ID #18693 “Kinder Morgan Belton Pipeline Release”**  
**December 2017**

**Surface Water**

- Routinely inspected Brown’s Creek and the wetland area south of West Calhoun Road adjacent to Cupboard Creek for hydrocarbon sheen, odor, or distressed vegetation. No new signs of distressed vegetation, hydrocarbon sheen, or odor were noted at Brown’s Creek or the wetland area south of West Calhoun Road adjacent to Cupboard Creek. The route of inspection is indicated on Figure 1. A summary of the field observations is provided in Table 1.
- Stream elevations from staff gauges are tabulated in Table 2 and are shown along with groundwater elevations on Figure 1.
- To date, 41 surface water sampling events have been performed and samples during each event were analyzed for benzene, toluene, ethylbenzene, xylenes, and naphthalene (see Table 3).
- During this reporting period, surface water samples were collected on December 5 and 14, 2017. Hydrocarbons were detected at SW-02 from the December 5, 2017, sampling event, therefore the team was instructed to collect additional samples on December 14, 2017, to confirm the detections. Fifteen surface water samples were collected on December 5, 2017, at locations SW-01, SW-02, SW-03, SW-04, SW-07, SW-08, SW-09, SW-10, SW-11, SW-12, SW-13, SW-14, FP-01, FP-02, and FP-03 (locations SW-05 and SW-06 in Cupboard Creek were dry). Fourteen surface water samples were collected on December 14, 2017, at the same locations listed above except for SW-14 which was not resampled because the location is not near the anomalous detections at SW-02.
  - The following constituent was detected above its surface water standard on December 5, 2017:
    - 26.6 µg/L benzene at SW-02
    - 16.6 µg/L benzene at SW-12
    - Apart from these locations, no dissolved hydrocarbons were detected above their respective surface water standards in the remaining surface water samples. Analytical lab reports are attached.
  - The following constituent was detected above its surface water standard on December 14, 2017:
    - 4.52 µg/L benzene at SW-01
    - 21.1 µg/L benzene at SW-02
    - 9.19 µg/L benzene at SW-12
    - Apart from these locations, no dissolved hydrocarbons were detected above their respective surface water standards in the remaining surface water samples. Analytical lab reports are attached.

**Product Recovery**

- Gauged depth to product and depth to water in recovery sumps/trenches/wells, piezometers, monitoring wells, and stream gauges on a routine basis. A site-wide gauging event was performed on December 21 and 27, 2017. Six locations displayed measurable product thicknesses of 0.5 foot or greater. The greatest product thickness measured from a recovery feature (recovery sumps, trenches, and wells) was 1.34 feet, at RW-05. The greatest product thickness measured from a non-recovery feature (piezometers, monitoring wells, and stream gauges) was 0.60 feet, at TW-28. All locations showing greater than 0.5 feet of product are away from surface water bodies at the site and have limited influence from the air sparging remediation system. Construction information for recovery features, piezometers, and monitoring wells is presented in Table 4. Groundwater elevation and product thickness data for December 2017 are presented in Table 5. Groundwater elevation and product thicknesses for December 2017 are presented on Figures 1 and 2, respectively.
- Less product was recovered in December 2017 than could be measured accurately by gauging the 1,500-gallon holding tanks. See Table 5 for the specific dates and times certain wells and sumps were used for product recovery.
- Through the end of December 2017, approximately 222,974 gallons (5,309 barrels) of product have been collected.

**Groundwater**

- Operated and recorded data from six continuous water level data loggers (In Situ Rugged Troll 100) in MW-02, MW-12, MW-15, MW-20, MW-25, and MW-40, and two barometric pressure loggers in MW-01 and MW-10 during the month.

- Collected monthly groundwater samples in accordance with the Corrective Action Plan and Addendum. The analytical lab reports are attached and results are summarized in Table 6.
  - During this reporting period, groundwater samples were collected from December 5 through 7, 2017, from 68 monitoring wells. There were 13 monitoring wells that were not sampled because of insufficient water in the well or the presence of product. Samples were analyzed for benzene, ethylbenzene, toluene, xylenes, 1,2-dichloroethane, methyl tert-butyl ether (MTBE), and naphthalene.
  - The following constituents were detected above their respective groundwater standards:
    - Benzene – in samples from 18 monitoring wells ranging from 6.48 to 14,300 µg/L
    - Ethylbenzene – in one monitoring well at the concentration of 1,060 µg/L and another monitoring well where the laboratory reporting/quantitation limit was greater than the screening level so it could not be determined if the analyte was absent or present
    - Toluene – in samples from four monitoring wells ranging from 1,050 to 22,300 µg/L
    - Xylenes – in a sample from one monitoring well at the concentration of 10,100 µg/L
    - 1,2-dichloroethane – six monitoring wells have a laboratory reporting/quantitation limit greater than the screening level so it cannot be determined if the analyte was absent or present
    - MTBE – in samples from nine monitoring wells ranging from 70.9 to 1,140 µg/L and another monitoring well where the laboratory reporting/quantitation limit was greater than the screening level so it cannot be determined if the analyte was absent or present
    - Naphthalene – in samples from three monitoring wells ranging from 35.4 to 178 µg/L and samples from another four monitoring wells have a laboratory reporting/quantitation limit greater than the screening level so it cannot be determined if the analyte was absent or present
  - Apart from these locations, no dissolved hydrocarbons were detected above their respective groundwater standards in the remaining groundwater samples.

### **Remedial System Operation**

- Continued biosparging via vertical well curtains in the Brown's Creek Protection Zone and Cupboard Creek Protection Zone, and biosparging via horizontal wells in the Hayfield Zone.
- Flows in the vertical sparging wells were maintained at approximately 10 standard cubic feet per minute (scfm) each during this period.
- Flows in the 3 horizontal wells in the Hayfield Zone were incrementally increased to approximately 0.58 scfm per foot of screen during this period, except HAS-02 which is operating at approximately 0.2 scfm per foot of screen because it lost power to the control valve on December 22, and took a few days to repair.
- Increased flows in the two stream aerators in Brown's Creek to a rate of 12 scfm each.

### **Regulatory Interaction**

- Submitted *Third Quarter 2017 Monitoring Report (July 1 – September 30)* to SCDHEC on December 6, 2017.
- Received Comments on CAP, QAPP, monthly & quarterly reports from SCDHEC on December 14, 2017.
- Submitted *Monthly Status Update for November 2017* to SCDHEC on December 22, 2017.
- Submitted the Forensic Analysis of Chandler-AG Groundwater Sample to SCDHEC on December 26, 2017.
- Conducted internal stormwater pollution prevention plan (SWPPP) inspection on December 13, 2017.
- The Anderson County Stormwater Department performed a SWPPP inspection on December 21, 2017. No findings were noted.

### **Future Activities**

- In accordance with the *Sparging Operating Limits* letter to SCDHEC dated July 26, 2017:
  - Increase flow in the stream aerators to up to a maximum of 15 scfm each.
  - Increase flow in the vertical sparging wells up to a maximum of 15 scfm each.
  - Increase flow in the horizontal sparging wells up to a maximum of 0.75 scfm per foot of screen.
- Conduct groundwater monitoring and reporting monthly.
- Gauge select recovery sumps, trenches, and wells once weekly located near Brown's Creek and Cupboard Creek for depth to groundwater and free product thickness.
- Evacuate product from select product recovery sumps, trenches, and wells once weekly located near Brown's Creek and Cupboard Creek. Collect liquids in two on-site 1,550-gallon poly tanks for eventual off-site disposal.
- Gauge monitoring wells and piezometers monthly for depth to groundwater and free product thickness.
- Continue routine visual inspections of Brown's Creek and Cupboard Creek.

- Conduct monthly surface water sampling at 17 established locations along Brown's Creek and Cupboard Creek in January 2017.
- Continue coordination with landowners and legal counsel on an as-needed basis.

**Cumulative Product Shipped from the Site**

Date	Destination	Total Product (gal)	Date	Destination	Total Product (gal)
12/9/2014	PPL Greensboro	4,289	6/3/2015	Allied Energies	4,214
12/9/2014	PPL Greensboro	3,100	8/10/2015	Allied Energies	6,000
12/12/2014	PPL Greensboro	1,189	11/2/2015	Allied Energies	5,800
12/30/2014	Crystal Clean (FCC)	5,057	11/13/2015	Crystal Clean (FCC)	2,900
12/31/2014	Crystal Clean (FCC)	5,333	12/1/2015	Allied Energies	6,690
1/4/2015	Crystal Clean (FCC)	5,000	12/1/2015	Allied Energies	6,700
1/4/2015	Crystal Clean (FCC)	2,872	12/7/2015	Crystal Clean (FCC)	500
1/5/2015	Crystal Clean (FCC)	5,013	9/28/2016	Shamrock	495
1/6/2015	Crystal Clean (FCC)	4,800	10/17/2016	Shamrock	110
1/7/2015	Allied Energies	6,532	10/24/2016	Shamrock	85
1/7/2015	Allied Energies	6,425	10/31/2016	Shamrock	70
1/7/2015	Allied Energies	8,200	11/10/2016	Shamrock	168
1/9/2015	Allied Energies	6,482	1/18/2017	A&D Archdale, NC	3,758
1/9/2015	Allied Energies	7,825	3/3/2017	A&D Archdale, NC	460
1/12/2015	Allied Energies	6,540	3/8/2017	A&D Archdale, NC	500
1/12/2015	Allied Energies	6,467	3/15/2017	A&D Archdale, NC	4,189
1/13/2015	Allied Energies	6,732	4/3/2017	A&D Archdale, NC	458
1/13/2015	Allied Energies	6,595	4/19/2017	A&D Archdale, NC	927
1/15/2015	Allied Energies	6,500	4/19/2017	A&D Archdale, NC	747
1/22/2015	Allied Energies	5,791	5/22/2017	A&D Archdale, NC	50
1/23/2015	Allied Energies	5,450	6/7/2017	A&D Archdale, NC	658
1/27/2015	Allied Energies	5,791	6/29/2017	A&D Archdale, NC	695
1/27/2015	Allied Energies	5,557	8/25/2017	A&D Archdale, NC	566
1/27/2015	Allied Energies	6,043	9/8/2017	A&D Archdale, NC	99
1/28/2015	Allied Energies	4,411	12/31/2017	Remaining in poly tanks on site	6
2/5/2015	Allied Energies	5,513			
2/11/2015	Allied Energies	5,732			
2/11/2015	Allied Energies	5,606			
2/25/2015	Allied Energies	5,583			
3/4/2015	Allied Energies	4,000			
3/16/2015	Allied Energies	5,200			
6/3/2015	Allied Energies	6,500			
				<b>Total (gallons)</b>	<b>222,974</b>
				<b>Total (barrels)</b>	<b>5,309</b>

Notes:

- Gasoline and water are field-segregated using two 1,550-gallon poly tanks prior to off-site disposal.