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Project Manager Bobbi Gleman

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*Mar 2018 Monthly Status Update*



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April 17, 2018

*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 – March 2018 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 now Jacobs) is submitting the attached Monthly Status Update covering activities conducted in March 2018 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 and 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 – Product Skimmer Recovery Results
  - Table 7 – Analytical Results for Groundwater
  - Surface Water Analytical Laboratory Report
  - 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”**  
**March 2018**

**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 replacement of the culvert under Lewis Road performed by Anderson County Roads and Bridges has been completed and the previously unseen turbidity that was observed in Brown’s Creek is no longer present. 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, 46 surface water sampling events have been performed and samples during each event were analyzed for benzene, ethylbenzene, toluene, xylenes, and naphthalene (see Table 3). Starting in February 2018, methyl tertiary butyl ether (MTBE) was added to the analyte list for the surface water samples.
- During this reporting period, surface water samples were collected on March 9, 2018. Sixteen surface water samples were collected, at locations SW-01, SW-02, SW-03, SW-04, SW-05, SW-07, SW-08, SW-09, SW-10, SW-11, SW-12, SW-13, SW-14, FP-01, FP-02, and FP-03 (location SW-06 in Cupboard Creek was dry).
  - The following constituent was detected above its surface water standard:
    - SW-02 – benzene at 3.19 µg/L (standard = 2.2 µg/L).
    - SW-12 – benzene at 3.24 µg/L (standard = 2.2 µg/L).
    - 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 monthly basis. Four locations (MW-18, RW-04, RW-05, and TW-42) exhibited measurable product thickness of 0.5 foot or greater during the sitewide March gauging event. The greatest product thickness measured from a recovery feature (recovery sumps, trenches, and wells) was 0.78 feet, at RW-04. The greatest product thickness measured from a non-recovery feature (piezometers, monitoring wells, and stream gauges) was 1.05 feet, at MW-18. All locations showing greater than 0.5 feet of product are more than 150 feet away from surface water bodies at the site and have limited influence from the air sparging remediation system. Construction information for recovery and non-recovery features is presented in Table 4. Groundwater elevation and product thickness data for March 2018 are presented in Table 5. Groundwater elevation and product thicknesses for March 2018 are presented on Figure 1.
- The locations with the product skimming canisters (skimmers) and petroleum absorbent socks (socks) and the amount of product recovered from each of these locations are listed in Table 6. Since February 13, 2018, 5.75 gallons of product have been recovered using the skimmers and socks. Of this quantity, 3.88 gallons (67% of the total) were recovered from recovery sump RS-05. Weekly product recovery from skimmers and socks ceased on March 15, 2018 and will change to a monthly schedule.
- Through the end of March 2018, approximately 222,976 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-25, MW-29, MW-39, 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 7.

- During this reporting period, groundwater samples were collected (or attempted) on March 5 through 8, 2018, from 68 monitoring wells (22 sampled monthly and 46 sampled quarterly). Five monitoring wells were not sampled because of insufficient water in the well or the presence of product. Samples were analyzed for benzene, ethylbenzene, toluene, total xylenes, 1,2-dichloroethane, MTBE, and naphthalene.
- The following constituents were detected above their respective groundwater standards:
  - Benzene – in samples from 18 monitoring wells ranging from 6.98 to 8,830 µg/L.
  - Ethylbenzene – in two monitoring wells ranging from 802 to 1,110 µg/L.
  - Toluene – in samples from six monitoring wells ranging from 1,370 to 20,200 µg/L.
  - 1,2-dichloroethane – seven 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 ten monitoring wells ranging from 54.8 to 960 µg/L and one monitoring well has a laboratory reporting/quantitation limit greater than the screening level so it cannot be determined if the analyte was absent or present.
  - Naphthalene – in samples from two monitoring wells ranging from 34.5 to 618 µg/L and 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.
  - Apart from these locations, no dissolved hydrocarbons were detected above their respective groundwater standards in the remaining groundwater samples.

### **Remedial System Operation**

- Continued sparging via vertical well curtains in the Brown's Creek Protection Zone and Cupboard Creek Protection Zone, and sparging via horizontal wells in the Hayfield Zone.
- The air sparging system was down for 7 days (168 hours) from March 19 to March 26, 2018 due to damaged gaskets in the inline coalescing filter housings.
- After restarting the system, flows in the vertical sparging wells were increased to 6 standard cubic feet per minute (scfm) by the end of March 2018. Flows in the 3 horizontal wells in the Hayfield Zone were incrementally increased to approximately 0.55 scfm per foot of screen by the end of March 2018. Flows in the 2 stream aerators in Brown's Creek were incrementally increased to 10 scfm each by the end of March 2018.

### **Regulatory Interaction**

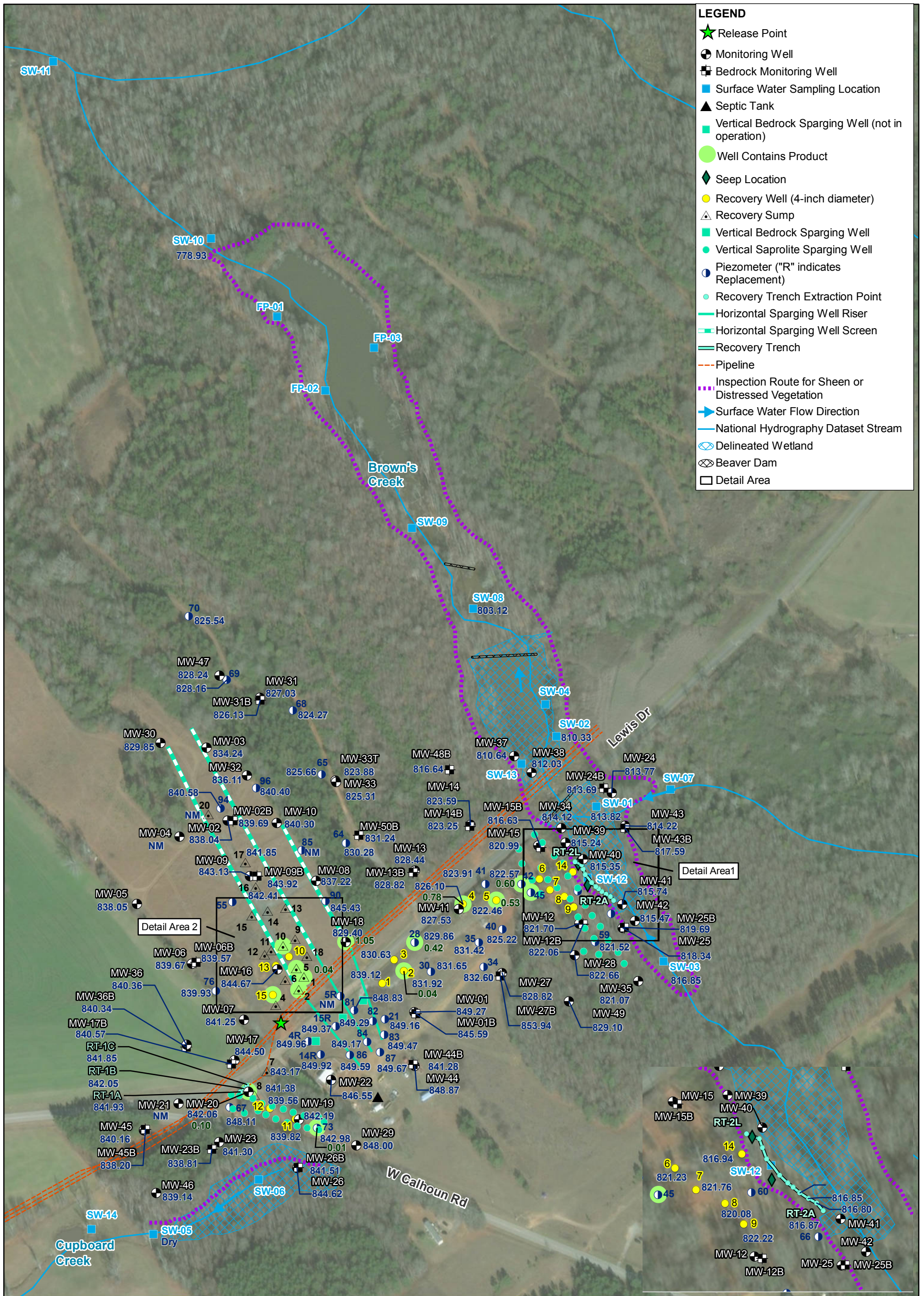
- Submitted *Memorandums from Environmental Standards, Inc.* to South Carolina Department of Health and Environmental Control (SCDHEC) on March 13, 2018.
- Submitted *Product Recovery Skimmer Results* to SCDHEC on March 22, 2018.
- Submitted *Monthly Status Update for February 2018* to SCDHEC on March 23, 2018.
- Submitted *Request for Additional Monitoring Wells and TW Abandonment* to SCDHEC on March 26, 2018.
- Conducted internal stormwater pollution prevention plan (SWPPP) inspection on March 14, 2018.
- The Anderson County Stormwater Department performed a SWPPP inspection on March 27, 2018. 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.
- Expand the Brown's Creek air sparging network southwest toward MW-11 and expand the Cupboard Creek air sparging network northwest beyond MW-17.
- Recover product monthly using skimmers and socks from select product recovery sumps, trenches, and wells. Collect liquids in two on-site 1,550-gallon poly tanks for eventual off-site disposal.
- Gauge recovery sumps/trenches/wells, piezometers, monitoring wells, and stream gauges monthly for depth to groundwater and free product thickness.
- Conduct groundwater monitoring and reporting monthly.
- 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 April 2018.

- Install additional monitoring wells to expand the monitoring network north and west of MW-30 and upgradient of MW-38.
- Abandon 1-inch diameter wells (piezometers) because the existing 2-inch monitoring well network is now sufficient for groundwater elevation and product thickness measurements. The piezometers are now redundant and cannot be used for product removal.
- Continue coordination with landowners and legal counsel on an as-needed basis.





**Figure 1. Groundwater and Surface Water Elevation and Product Thickness Map**  
 Lewis Drive Remediation Site  
 Belton, South Carolina  
 Site ID #18693 "Kinder Morgan Belton Pipeline Release"