BUNNELL-LAMMONS ENGINEERING, INC.
GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS

REPORT OF SUBSEQUENT SOIL AND GROUNDWATER ASSESSMENT NOVEMBER 2015 METHANOL RELEASE

CTI of North Carolina, Inc.
1002 South Front Street
Wilmington, North Carolina

Prepared for

CTI of North Carolina, Inc.
1002 South Front Street
Wilmington, North Carolina 28401

Prepared by

Bunnell-Lammons Engineering, Inc.
6004 Ponders Court
Greenville, South Carolina 29615

June 24, 2016

BLE Project Number: J15-9119-04

BUNNELL-LAMMONS ENGINEERING, INC.
GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS

June 24, 2016

Mr. Tom Dolan
CTI of North Carolina, Inc.
1002 South Front Street
Wilmington, North Carolina 28401

Subject: **Report of Subsequent Soil and Groundwater Assessment**
November 2015 Methanol Release
CTI of North Carolina, Inc.
1002 South Front Street
Wilmington, North Carolina
BLE Project Number J15-9119-04

Dear Mr. Dolan:

Bunnell-Lammons Engineering, Inc. (BLE) is pleased to submit this Report of Subsequent Soil and Groundwater Assessment related to a November 2015 methanol release at the CTI of North Carolina Inc. terminal in Wilmington, North Carolina. The purpose of this scope of work is to evaluate current environmental conditions across the extent of the methanol release and compare those results with environmental conditions detailed in the March 2016 *Methanol Release - Limited Soil and Groundwater Assessment Report* prepared by BLE. Included herein is a summary of the release, sampling activities, laboratory analytical results and our conclusions and recommendations.

We appreciate the opportunity to continue to work with CTI of North Carolina, Inc. Please call us if you have any questions or if we may be of further service.

Sincerely,

BUNNELL-LAMMONS ENGINEERING, INC.

Daniel P. Osbourne, P.G., RSM
Senior Hydrogeologist
Registered, North Carolina No. 2071

Thomas L. Lammons, P.G., CHMM
Principal Hydrogeologist
Registered, North Carolina No. 1264

6004 PONDERS COURT
GREENVILLE, SOUTH CAROLINA 29615

PHONE (864) 288-1265
FAX (864) 288-4430

1.0 RELEASE INFORMATION

On November 29, 2015, a methanol release occurred at the CTI of North Carolina, Inc. (CTI-NC) Wilmington terminal (Figure 1). Approximately 148,000-gallons of methanol were released from Tank 212 into the surrounding tank field containment area. The estimated surficial extent of the impacted area is approximately 17,000-square feet (Figure 2). CTI-NC responded quickly to the release by pumping as much of the product as possible into neighboring Tank 114.

In January 2016, a limited soil and groundwater assessment was performed by BLE to evaluate the initial impact of the methanol release on soil and groundwater at the site. The results of the assessment indicated that methanol had impacted soils in the immediate area of the release, migrated through the vadose zone and into the shallow groundwater table. The dissolved-phase plume has traveled from the release area to the west, in the direction of groundwater flow.

1.1 Methanol Physical Properties

Methanol is a clear, colorless, simple alcohol that has a wide industrial use. With a high water solubility and low vapor pressure, methanol typically occurs in a liquid phase and dissolved-phase methanol in groundwater essentially does not volatilize. The soil-water partitioning coefficient for methanol is also very low, indicating that methanol will not be readily adsorbed to soils. Due to these physical characteristics, methanol released into the environment would be expected to quickly dissolve into groundwater and disperse at a rate approximately equal to the groundwater seepage velocity.

2.0 ASSESSMENT ACTIVITIES

From April 25-27, 2016, BLE personnel assessed soil and groundwater in the area of the methanol release. The goal was to evaluate the methanol reductions since the January 2016 assessment to evaluate biodegradation effectiveness on the methanol contamination.

The assessment included the following:

1. Advancing 12 soil borings, converting each boring to a temporary monitoring well and

collecting one analytical soil sample and one analytical groundwater sample from each location. Six of the 12 borings were located in areas sampled during the January 2016 assessment and the remaining six borings were located in areas downgradient of the release.

2. Installing two new groundwater monitoring wells (C-MW-23 and C-MW-24) and collecting groundwater samples. One permanent monitoring well (C-MW-23) was located hydraulically upgradient from the release, while the other monitoring well (C-MW-24) was located in the area expected to have the highest dissolved methanol concentrations.
3. Collecting groundwater samples from seven existing monitoring wells at the site (C-MW-1, C-MW-3, C-MW-6, C-MW-9, C-MW-14, C-MW-17, and C-MW-21).

2.1 Soil Sampling

On April 26, 2016, BLE personnel and Mid-Atlantic Drilling (Jeff Steward – NCWD #2540-A) installed 12 soil borings using a track mounted Geoprobe™ direct push drill rig. BLE personnel utilized a Garmin GPS eTrex H Navigator (GPS) to identify the approximate location of six borings sampled during the January 2016 assessment (SB-01 through SB-03 and SB-05 through SB-07) and advance a boring in those six locations. The remaining six borings were advanced in areas downgradient of the release. In addition, soil samples were collected during the installation of the two permanent monitoring wells. The location of the 12 borings and the two new monitoring wells are shown on Figure 3.

Soil cores were collected continuously from each boring until groundwater was encountered at approximately four-feet below ground surface. Soils encountered were primarily light brown, fine to medium grained sands with some silt.

Soils from each sampling location were screened in the field for the presence of volatile organic compounds (VOC) using a photo-ionization detector (PID). One analytical soil sample was collected from each boring based on the PID screening results and other field observations (soil staining, odor, etc.). All 14 soil samples were submitted to Shealy Environmental Services Inc. (Shealy) to be analyzed for methanol by EPA Method 8015C.

2.2 Groundwater Sampling

A total of 21 groundwater samples were collected during this assessment. Prior to the direct push drilling, on April 25, 2016, seven groundwater samples were collected from existing monitoring wells on the site. The analytical samples were collected from monitoring wells C-MW-1, C-MW-3, C-MW-6, C-MW-9, C-MW-14, C-MW-17, and C-MW-21 (Figure 3).

On April 26, 2016, 12 groundwater samples were collected from the direct push drill borings (e.g. temporary monitoring wells). The temporary wells were advanced using a track mounted Geoprobe™ and groundwater was collected through a screen point sampler utilizing a peristaltic pump. The temporary wells were identified as TMW-01 through TMW-03, TMW-04 through TMW-07 and TMW-11 through TMW-16 (Figure 3). Once representative groundwater samples were collected, the temporary wells were properly abandoned.

On April 27, 2016, two groundwater samples were collected from the newly installed permanent monitoring wells C-MW-23 and C-MW-24. The permanent monitoring wells were installed by Mid-Atlantic Drilling using a Diedrich D25 drill rig equipped with hollow stem augers. The monitoring wells construction records and boring logs are included in Appendix A.

All 21 groundwater samples were submitted to Shealy Environmental Services Inc. and for methanol analysis by EPA Method 8015C.

3.0 RESULTS SUMMARY

Laboratory analytical results identified methanol concentrations above minimum detection limits in 11 of the 14 soil samples. None of the detected methanol concentrations exceeded the North Carolina Industrial Preliminary Health Based Soil Remediation Goal (PSRG) for methanol of 100,000 milligrams per kilogram (mg/kg). However, each of the detected methanol concentrations was above the Protection of Groundwater PSRG of 16 mg/kg. The laboratory analytical results for soils are summarized in Table 1 and the laboratory data sheets are included in Appendix B.

Methanol was identified in two of the nine groundwater samples collected from permanent

monitoring wells and from five of the 12 groundwater samples collected from temporary monitoring wells across the site. In each sample where methanol was detected, its concentration exceeded its Title 15A North Carolina Administrative Code NCAC 2L Groundwater Standard (2L Standard) of 4.0 milligrams per liter (mg/L). The laboratory analytical results for groundwater are summarized in Table 2 and the complete analytical results are included in Appendix B.

In general, when compared with the January 2016 analytical results, the current methanol concentrations in soil and groundwater across the site have significantly decreased. Specifically, methanol concentrations in soil boring SB-01 decreased from 8,400 mg/kg to 280 mg/kg and concentrations in soil boring SB-06 decreased from 8,100 mg/kg to 32 mg/kg. Similarly, groundwater concentrations decreased to non-detect levels (<2.0 mg/L) in three monitoring wells (C-MW-1, C-MW-3 and C-MW-17) where methanol was previously identified.

4.0 CONCLUSIONS AND RECOMMENDATIONS

According to a study by Malcolm Pirnie (1999)[1], the dominant mechanisms of methanol concentration reductions in subsurface soils and groundwater are biodegradation and advection. Dissolved-phase methanol may be degraded aerobically or anaerobically by indigenous heterotrophic bacteria. However, in areas of extremely high concentrations (>100,000 mg/L) methanol, like most alcohols, can be antiseptic, capable of destroying indigenous microbes and drastically reducing biodegradation effectiveness.

Based on the results of this assessment, the expected biodegradation of methanol by indigenous bacteria appears to be effectively reducing methanol concentrations in soil and groundwater. Currently, methanol concentrations in soil and groundwater at the subject site are present above regulatory standards but are well below concentrations expected to limit biodegradation rates. Therefore, methanol biodegradation rates by indigenous bacteria would be expected to remain high and, given time, result in the remediation of methanol in soil and groundwater at the site to below regulatory standards.

[1] Malcolm Pirnie, Inc., 1999. *Evaluation of the Fate and Transport of Methanol into the Environment.* Prepared for the American Methanol Institute, Washington D.C.

BLE recommends performing a subsequent soil and groundwater assessment in approximately 6-months to evaluate biodegradation effectiveness on the methanol release.

5.0 QUALIFICATIONS OF REPORT

The activities and evaluative approaches used in this assessment are consistent with those normally employed in environmental assessments of this type. Our evaluation of site conditions has been based on our understanding of the site and project information and the data obtained in our exploration.

This report has been prepared on behalf of and exclusively for the use of CTI of North Carolina, Inc. This report and the findings contained herein shall not, in whole or in part, be used or relied upon by any other party without BLE's prior written consent. Any unauthorized use or distribution of BLE's work shall be at third parties risk and without liability to BLE.

TABLES

Table 1

Soil Analytical Data
CTI of North Carolina, Inc.
Wilmington, New Hanover County, North Carolina
BLE Project Number J15-9119-04

Boring ID	Sample Date	PID Screening Result (ppm)	Methanol	
			Industrial PSRG (mg/kg)	Protection of Groundwater Standard (mg/kg)
NC Soil Remediation Goals		NA	100,000	16.0
SB-01	01/11/16	1.6	**8,400**	
	04/26/16	0.4	**280**	
SB-02	01/11/16	0.7	**670**	
	04/26/16	0.2	**270**	
SB-03	01/11/16	0.0	**4.3**	
	04/26/16	0.0	**30**	
SB-04	01/11/16	0.0	**4.7**	
SB-05	01/11/16	3.3	**5,600**	
	04/26/16	1.2	**2,100**	
SB-06	01/11/16	0.0	**8,100**	
	04/26/16	0.1	**32**	
SB-07	01/11/16	0.0	<10.0	
	04/26/16	0.0	**140**	
SB-08	01/11/16	12.4	**42,000**	
SB-09	01/11/16	0.0	**4.2**	
SB-10	01/11/16	0.0	<11.0	
SB-11	04/26/16	0.0	<2.2	
SB-12	04/26/16	2.3	**6,400**	
SB-13	04/26/16	0.5	**27**	
SB-14	04/26/16	0.0	<2.1	
SB-15	04/26/16	0.0	**19**	
SB-16	04/26/16	0.1	**22**	
C-MW-23	04/26/16	0.0	<2.2	
C-MW-24	04/26/16	0.1	**36**	

Notes:
PSRG - Preliminary Health Based Soil Remediation Goal (September 2015)
NA - Not Applicable
NS- Not Sampled
ppm - parts per million
(mg/kg) - micrograms per kilogram
Shaded values indicate concentrations above the Protection of Groundwater Standard

Prepared By: IAI
Checked By: DPO

Table 2

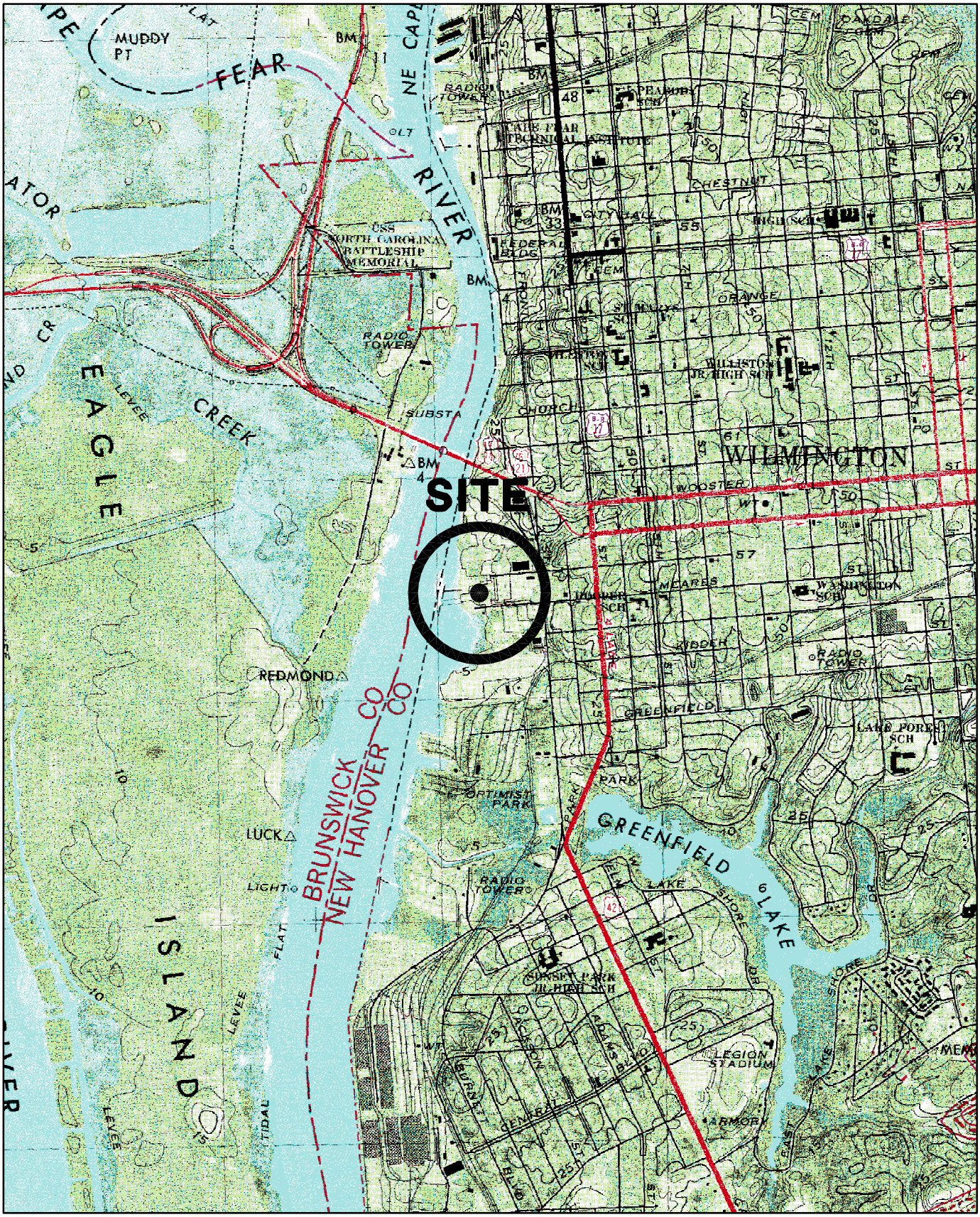
Groundwater Analytical Data
CTI of North Carolina, Inc.
Wilmington, New Hanover County, North Carolina
BLE Project Number J15-9119-04

Sample ID	Sample Date	Methanol
NC 2L Groundwater Standard		4.0 mg/l
C-MW-1	01/12/16	**120**
	04/25/16	<2.0
C-MW-3	01/12/16	**16,000**
	04/25/16	<2.0
C-MW-6	04/25/16	<2.0
C-MW-9	01/12/16	<2.0
	04/25/16	<2.0
C-MW-14	01/12/16	**1,100**
	04/25/16	**3,600**
C-MW-17	01/12/16	**300**
	04/25/16	<2.0
C-MW-21	01/12/16	<2.0
	04/25/16	<2.0
C-MW-23	04/27/16	<2.0
C-MW-24	04/27/16	**83,000**
TMW-01	01/12/16	**3,400**
	04/26/16	**1,200**
TMW-02	01/12/16	**4.5**
	04/26/16	<2.0
TMW-03	01/12/16	<2.0
	04/26/16	<2.0
TMW-04	01/12/16	**6.4**
TMW-05	01/12/16	**2,300**
	04/26/16	**6.6**
TMW-06	04/26/16	<2.0
TMW-07	04/26/16	**3,400**
TWM-11	04/26/16	<2.0
TMW-12	04/26/16	**7,500**
TMW-13	04/26/16	<2.0
TMW-14	04/26/16	**51**
TMW-15	04/26/16	<2.0
TMW-16	04/26/16	<2.0

Notes:
NC 2L Standards obtained from North Carolina Administrative Code Title 15A
Department of Environment and Natural Resources Division of Water Quality
Subchapter 2L Section .0100, .0200, .0300
mg/l = milligrams per liter
J = J-flagged (approximate value) analytical result. Concentration was detected between the laboratory method detection limit and the reporting limit.
Shaded values indicate concentrations above the 2L Standard

Prepared By: IAI
Checked By: DPO

FIGURES

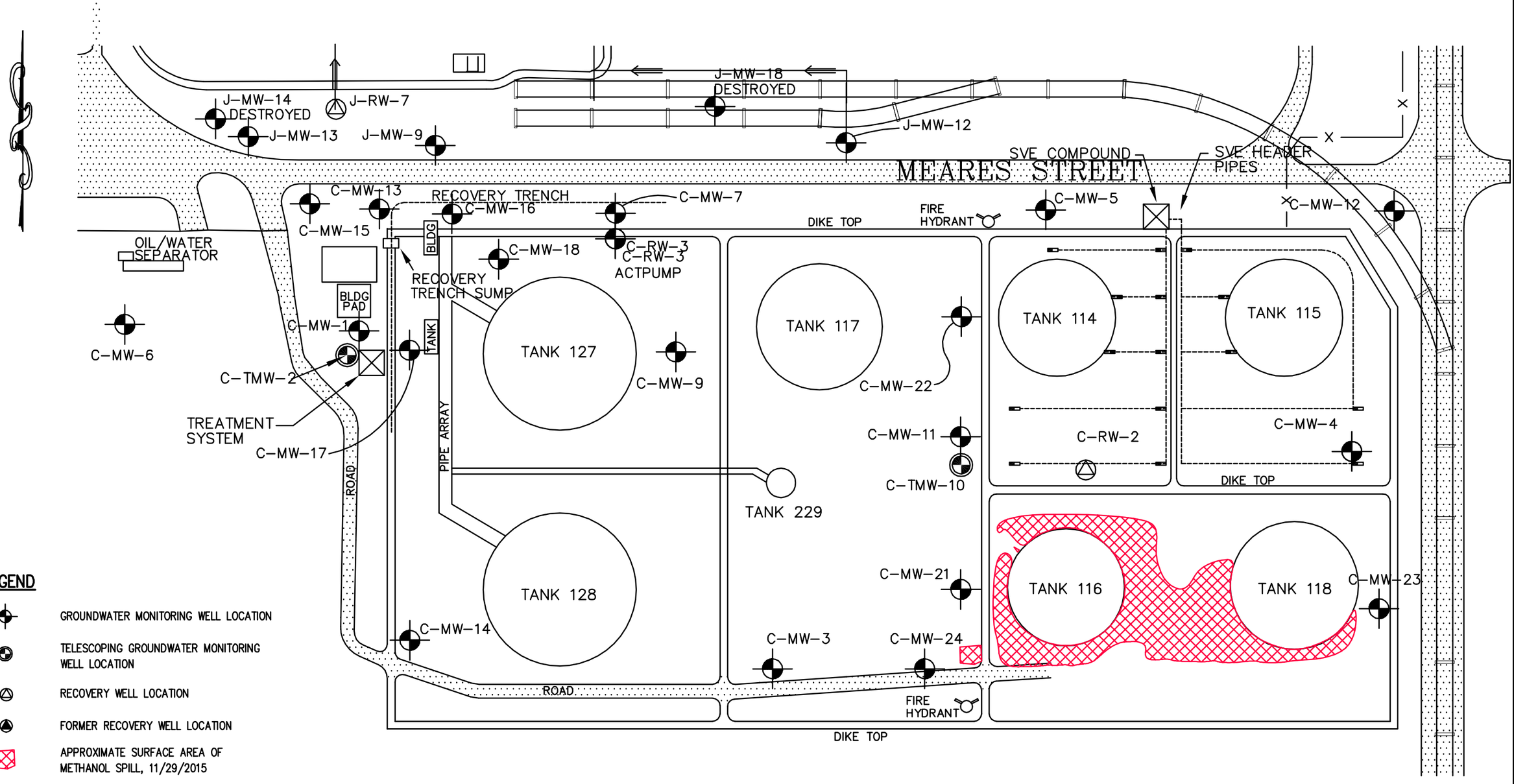


2000 1000 0 2000 4000

APPROXIMATE SCALE IN FEET

REFERENCE:
USGS TOPOGRAPHIC MAP, 7.5 MINUTE SERIES, WILMINGTON, N.C. QUADRANGLE, 1979.

DRAWN: ACE	DATE: 05-25-16	BLE INC. BUNNELL-LAMMONS ENGINEERING, INC. 6004 PONDERS COURT GREENVILLE, SOUTH CAROLINA 29615 PHONE: (864)288-1265 FAX: (864)288-4430	SITE LOCATION MAP CTI OF NORTH CAROLINA, INC. WILMINGTON, NORTH CAROLINA
CHECKED: DPO	CAD: COLWILM91196-SLM		FIGURE 1
APPROVED:	JOB NO: J16-9119-06		



LEGEND

- GROUNDWATER MONITORING WELL LOCATION
- TELESCOPING GROUNDWATER MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- FORMER RECOVERY WELL LOCATION
- APPROXIMATE SURFACE AREA OF METHANOL SPILL, 11/29/2015

80 40 0 80 160

APPROXIMATE SCALE IN FEET

NOTES:

1. BASE MAP FOR FORMER JLM/UNOCAL TERMINAL PROVIDED BY JLM. DISCHARGE TO CAPE FEAR RIVER FROM FORMER JLM/ UNOCAL SITE DISCONTINUED 6-17-99.
2. SITE PLAN FOR COLONIAL TERMINAL SITE ADAPTED FROM HANDEX OF THE CAROLINAS, INC. REPORT DATED 10-2-2001.

REFERENCE:
DRAWING TITLED "POTENTIOMETRIC SURFACE MAP" BY ECS DATED 1-6-14.

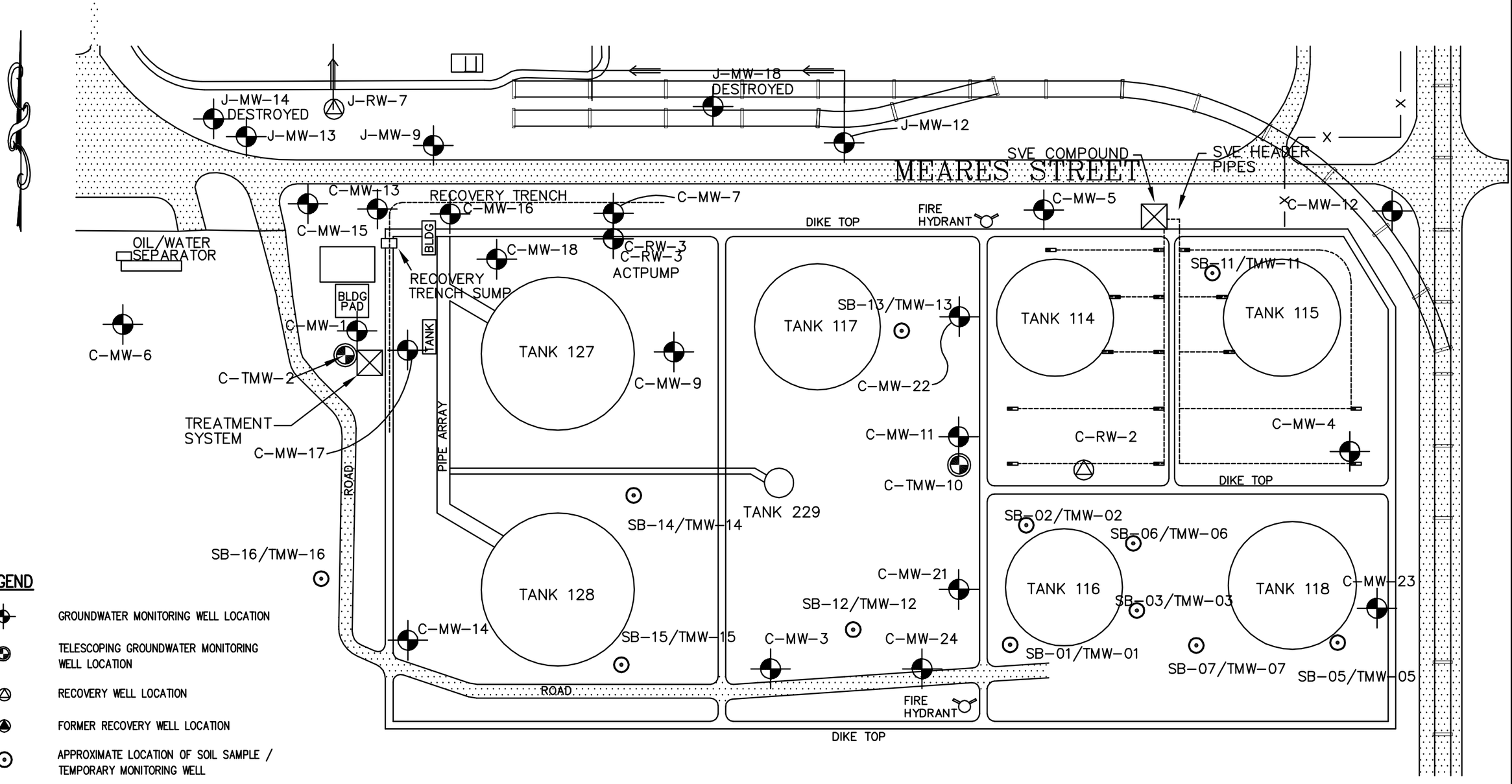
DRAWN BY:	ACE	DATE:	05-25-16
CHECKED BY:	DPO	FILE:	COLWILM91194-EOR
APPROVED BY:		JOB NO:	J15-9119-04

REVISIONS		
No.	DESCRIPTION	BY

BLE INC.
BUNNELL-LAMMONS ENGINEERING, INC.
6004 PONDERS COURT
GREENVILLE, SOUTH CAROLINA 29615
PHONE: (864)288-1265 FAX: (864)288-4430

APPROXIMATE SURFACE EXTENT OF 2015 METHANOL RELEASE
COLONIAL WILMINGTON TERMINAL
WILMINGTON, NORTH CAROLINA

FIGURE
2



LEGEND

- GROUNDWATER MONITORING WELL LOCATION
- TELESCOPING GROUNDWATER MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- FORMER RECOVERY WELL LOCATION
- APPROXIMATE LOCATION OF SOIL SAMPLE / TEMPORARY MONITORING WELL

80 40 0 80 160

APPROXIMATE SCALE IN FEET

NOTES:

1. BASE MAP FOR FORMER JLM/UNOCAL TERMINAL PROVIDED BY JLM. DISCHARGE TO CAPE FEAR RIVER FROM FORMER JLM/ UNOCAL SITE DISCONTINUED 6-17-99.
2. SITE PLAN FOR COLONIAL TERMINAL SITE ADAPTED FROM HANDEX OF THE CAROLINAS, INC. REPORT DATED 10-2-2001.

REFERENCE:
DRAWING TITLED "POTENTIOMETRIC SURFACE MAP" BY ECS DATED 1-6-14.

DRAWN BY:	ACE	DATE:	05-25-16
CHECKED BY:	DPO	FILE:	COLWILM91194-SBM
APPROVED BY:		JOB NO:	J15-9119-04

REVISIONS		
No.	DESCRIPTION	BY

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GREENVILLE, SOUTH CAROLINA 29615
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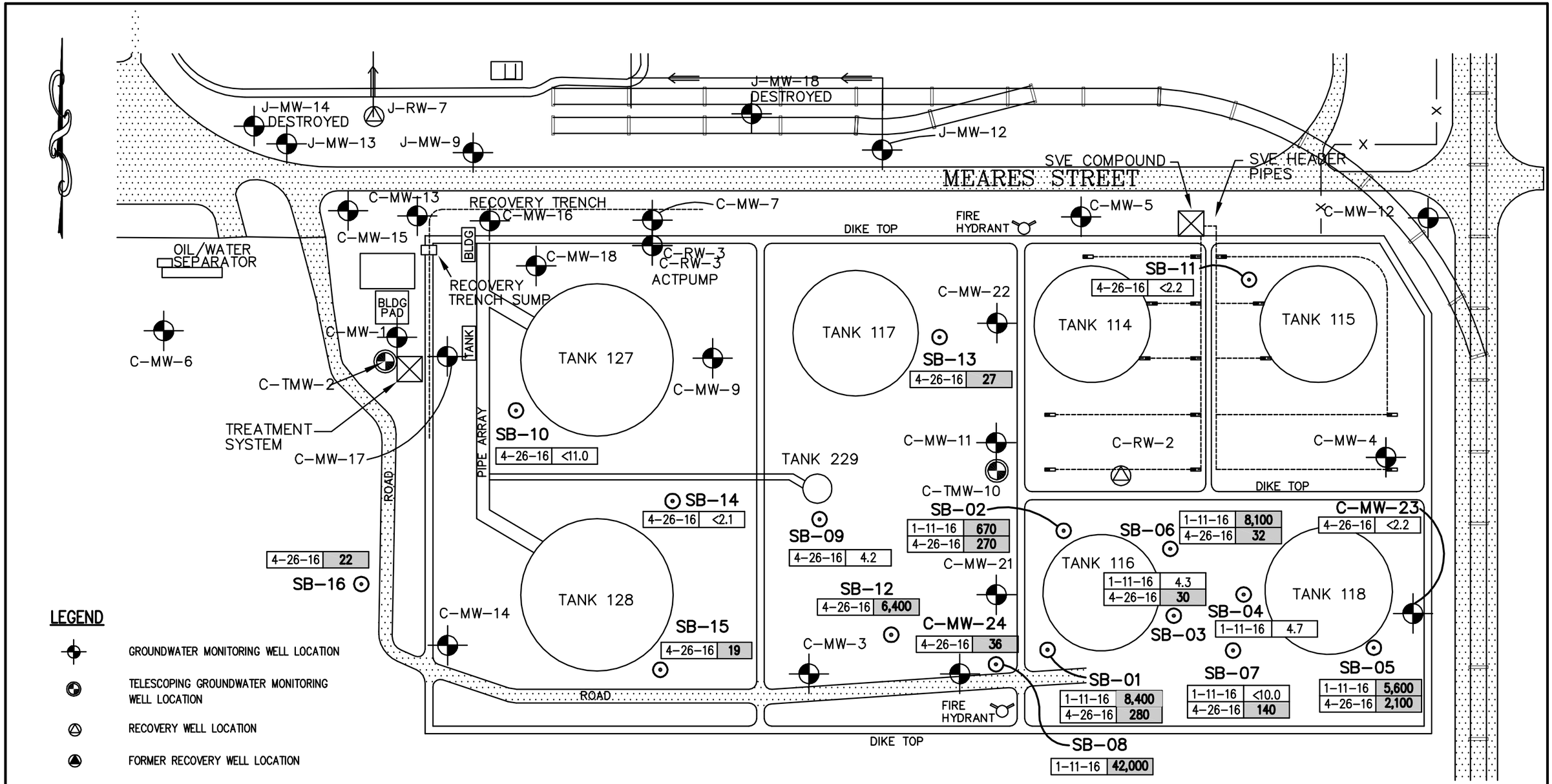
SITE BASE MAP
COLONIAL WILMINGTON TERMINAL
WILMINGTON, NORTH CAROLINA

FIGURE
3



LEGEND

- GROUNDWATER MONITORING WELL LOCATION
- TELESCOPING GROUNDWATER MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- FORMER RECOVERY WELL LOCATION
- APPROXIMATE LOCATION OF SOIL SAMPLE

4-26-16 | 22 — DATE SAMPLED AND METHANOL CONCENTRATION (mg/kg)

80 40 0 80 160
APPROXIMATE SCALE IN FEET

NOTES:

1. BASE MAP FOR FORMER JLM/UNOCAL TERMINAL PROVIDED BY JLM. DISCHARGE TO CAPE FEAR RIVER FROM FORMER JLM/ UNOCAL SITE DISCONTINUED 6-17-99.
2. SITE PLAN FOR COLONIAL TERMINAL SITE ADAPTED FROM HANDEX OF THE CAROLINAS, INC. REPORT DATED 10-2-2001.
3. SHADED CELLS INDICATE CONCENTRATIONS ABOVE PROTECTION OF GROUNDWATER PSRG FOR METHANOL

REFERENCE:
DRAWING TITLED "POTENTIOMETRIC SURFACE MAP" BY ECS DATED 1-6-14.

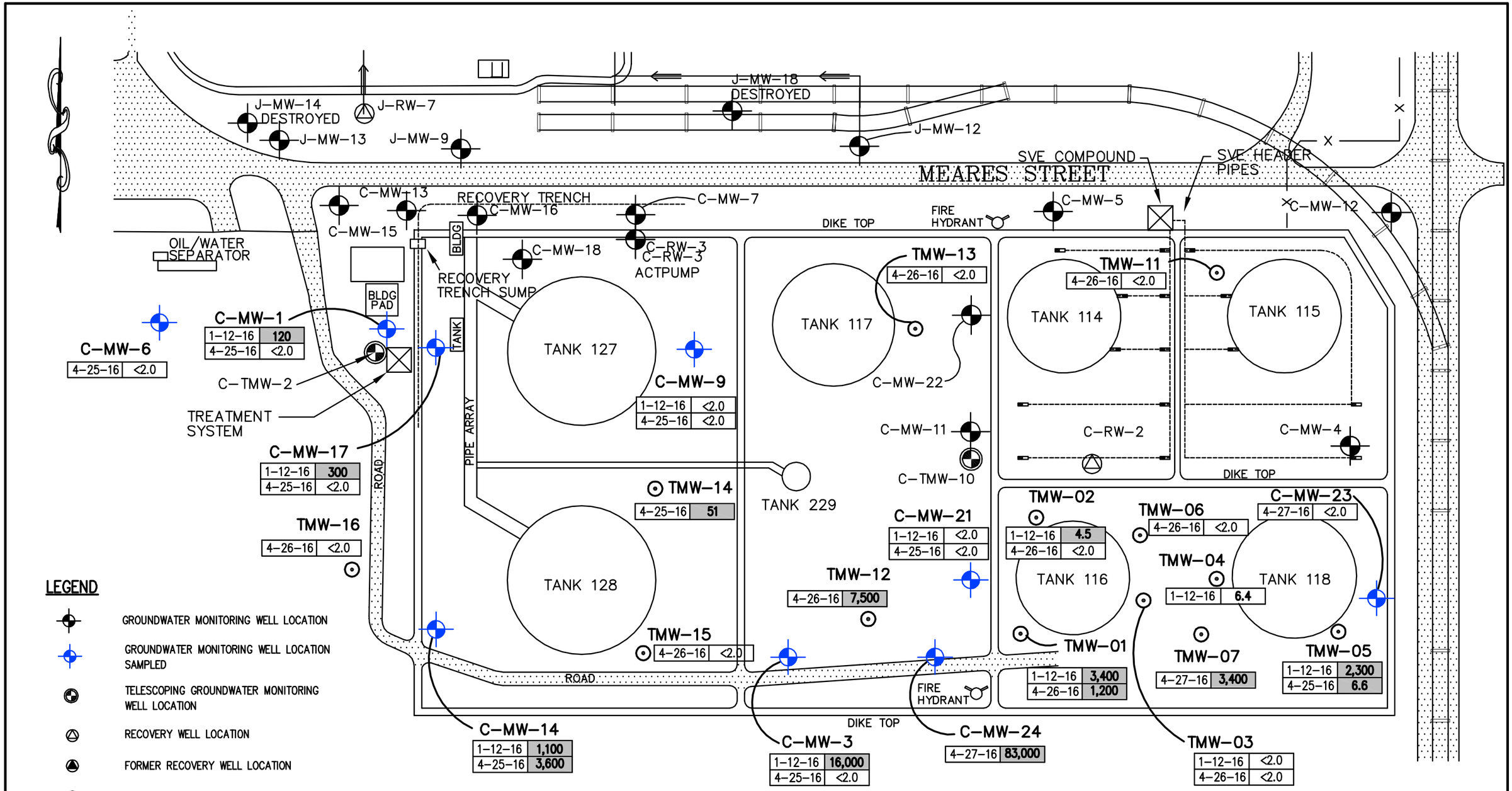
DRAWN BY:	ACE	DATE:	05-25-16
CHECKED BY:	DPO	FILE:	COLWILM91194-SCOC
APPROVED BY:		JOB NO:	J15-9119-04

REVISIONS		
No.	DESCRIPTION	BY

BUNNELL-LAMMONS ENGINEERING, INC.
6004 PONDERS COURT
GREENVILLE, SOUTH CAROLINA 29615
PHONE: (864)288-1265 FAX: (864)288-4430

SOIL METHANOL CONCENTRATIONS MAP
COLONIAL WILMINGTON TERMINAL
WILMINGTON, NORTH CAROLINA

FIGURE
4



NOTES:

1. BASE MAP FOR FORMER JLM/UNOCAL TERMINAL PROVIDED BY JLM. DISCHARGE TO CAPE FEAR RIVER FROM FORMER JLM/ UNOCAL SITE DISCONTINUED 6-17-99.
2. SITE PLAN FOR COLONIAL TERMINAL SITE ADAPTED FROM HANDEX OF THE CAROLINAS, INC. REPORT DATED 10-2-2001.
3. SHADED CELLS INDICATE CONCENTRATIONS ABOVE 2L STANDARD FOR METHANOL.

REFERENCE:
DRAWING TITLED "POTENTIOMETRIC SURFACE MAP" BY ECS DATED 1-6-14.

DRAWN BY: ACE	DATE: 06-09-16	REVISIONS			BUNNELL-LAMMONS ENGINEERING, INC. 6004 PONDERS COURT GREENVILLE, SOUTH CAROLINA 29615 PHONE: (864)288-1265 FAX: (864)288-4430	GROUNDWATER METHANOL CONCENTRATIONS MAP COLONIAL WILMINGTON TERMINAL WILMINGTON, NORTH CAROLINA	FIGURE 5
CHECKED BY: DPO	FILE: COLWILM91194-GWCOC	No.	DESCRIPTION	BY			
APPROVED BY:	JOB NO: J15-9119-04						

APPENDICES

APPENDIX A

Monitoring Well Construction Records and Boring Logs

WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

1. Well Contractor Information:

Jeffrey A Stewart

Well Contractor Name

(NCWC) 2540-A

NC Well Contractor Certification Number

Mid-Atlantic Drilling, Inc.

Company Name

2. Well Construction Permit #: _____

List all applicable well permits (i.e. County, State, Variance, Injection, etc.)

3. Well Use (check well use):

Water Supply Well:

☐Agricultural ☐Municipal/Public

☐Geothermal (Heating/Cooling Supply) ☐Residential Water Supply (single)

☐Industrial/Commercial ☐Residential Water Supply (shared)

☐Irrigation

Non-Water Supply Well:

☑Monitoring ☐Recovery

Injection Well:

☐Aquifer Recharge ☐Groundwater Remediation

☐Aquifer Storage and Recovery ☐Salinity Barrier

☐Aquifer Test ☐Stormwater Drainage

☐Experimental Technology ☐Subsidence Control

☐Geothermal (Closed Loop) ☐Tracer

☐Geothermal (Heating/Cooling Return) ☐Other (explain under #21 Remarks)

4. Date Well(s) Completed: 4/27/16 **Well ID#** C-MW23

5a. Well Location:

Colonial Terminal

Facility/Owner Name

Facility ID# (if applicable)

Physical Address, City, and Zip

New Hanover County

County

Parcel Identification No. (PIN)

5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

34° N 78° W

6. Is (are) the well(s): ☑**Permanent** or ☐**Temporary**

7. Is this a repair to an existing well: ☐**Yes** or ☑**No**

If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1

*For multiple injection or non-water supply wells **ONLY** with the **same construction**, you can submit one form.*

9. Total well depth below land surface: 12.5 **(ft.)**

For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: _____ **(ft.)**

If water level is above casing, use "+"

11. Borehole diameter: 6 **(in.)**

12. Well construction method: Auger

(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

For Internal Use ONLY:

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
2.3 ft.	12.3 ft.	1 in.	0.01"	SCH 40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
.2 ft.	.5 ft.	BentoniteChip	Pour
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
.5 ft.	12.5 ft.	#2 Size Torpedo	
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

22. Certification:

Jeffrey A Stewart 05/20/2016

Signature of Certified Well Contractor Date

By signing this form, I hereby certify that the well(s) was (were) constructed in accordance with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

23. Site diagram or additional well details:

You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617

24b. For Injection Wells ONLY: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636

24c. For Water Supply & Injection Wells:

Also submit one copy of this form within 30 days of completion of well construction to the county health department of the county where constructed.

WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

1. Well Contractor Information:

Jeffrey A Stewart

Well Contractor Name

(NCWC) 2540-A

NC Well Contractor Certification Number

Mid-Atlantic Drilling, Inc.

Company Name

2. Well Construction Permit #: _____

List all applicable well permits (i.e. County, State, Variance, Injection, etc.)

3. Well Use (check well use):

Water Supply Well:

☐Agricultural ☐Municipal/Public

☐Geothermal (Heating/Cooling Supply) ☐Residential Water Supply (single)

☐Industrial/Commercial ☐Residential Water Supply (shared)

☐Irrigation

Non-Water Supply Well:

☑Monitoring ☐Recovery

Injection Well:

☐Aquifer Recharge ☐Groundwater Remediation

☐Aquifer Storage and Recovery ☐Salinity Barrier

☐Aquifer Test ☐Stormwater Drainage

☐Experimental Technology ☐Subsidence Control

☐Geothermal (Closed Loop) ☐Tracer

☐Geothermal (Heating/Cooling Return) ☐Other (explain under #21 Remarks)

4. Date Well(s) Completed: 4/27/16 **Well ID#** C-MW24

5a. Well Location:

Colonial Terminal

Facility/Owner Name

Facility ID# (if applicable)

Physical Address, City, and Zip

New Hanover County

County

Parcel Identification No. (PIN)

5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

34° N 78° W

6. Is (are) the well(s): ☑**Permanent** or ☐**Temporary**

7. Is this a repair to an existing well: ☐**Yes** or ☑**No**

If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1

*For multiple injection or non-water supply wells **ONLY** with the **same construction**, you can submit one form.*

9. Total well depth below land surface: 11.3 **(ft.)**

For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: _____ **(ft.)**

If water level is above casing, use "+"

11. Borehole diameter: 6 **(in.)**

12. Well construction method: Auger

(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

For Internal Use ONLY:

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
1.1 ft.	11.1 ft.	1 in.	0.01"	SCH 40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
.01 ft.	.9 ft.	BentoniteChip	Pour
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
.9 ft.	11.3 ft.	#2 Size Torpedo	
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

22. Certification:

Jeffrey A Stewart — 05/20/2016

Signature of Certified Well Contractor — Date

By signing this form, I hereby certify that the well(s) was (were) constructed in accordance with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

23. Site diagram or additional well details:

You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617

24b. For Injection Wells ONLY: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636

24c. For Water Supply & Injection Wells:

Also submit one copy of this form within 30 days of completion of well construction to the county health department of the county where constructed.

BLE INC.

BUNNELL-LAMMONS ENGINEERING, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

GROUNDWATER MONITORING WELL NO. C-MW-23

PROJECT: Colonial Wilmington Terminal — PROJECT NO.: J16-9119-04

CLIENT: Colonial Terminal — START: 4-26-16 END: 4-29-16

LOCATION: Wilmington, North Carolina — ELEVATION:

DRILLER: Mid Atlantic Drilling, J. Stewart — LOGGED BY: I. Irizarry

DRILLING METHOD: Diedrich D25; 4-1/4 inch hollow stem auger

DEPTH TO - WATER> INITIAL: 5.0 AFTER 24 HOURS: 3.60 CAVING>

ELEVATION/ DEPTH (FT)	DESCRIPTION	SOIL TYPE	WELL INSTALLATION DETAILS
	GRAVEL		Grout, 0 to 0.2 feet Bentonite seal, 0.2 to 0.5 feet Filter pack, sand 0.5 to 13.0 feet
	Brown to yellowish-brown, dry to wet, slightly silty, very fine to medium SAND		
5	Yellowish-brown, wet, silty, very fine to medium SAND		
10			2-inch diameter, 0.010-inch slotted Schedule 40 PVC well screen, 7.35 to 12.35 feet Pipe cap
	Boring terminated at 13.0 feet. Groundwater encountered at 5.0 feet at time of drilling and at 3.60 feet after 24 hours.		Total well depth, 12.55 feet
15			SURFACE COMPLETION 2.71-foot stick-up with locking aluminum cover in a 2' x 2' concrete pad

GEOT_WELLNB 9119-04.GPJ 5/27/16

BLE INC.

BUNNELL-LAMMONS ENGINEERING, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

GROUNDWATER MONITORING WELL NO. C-MW-24

PROJECT: Colonial Wilmington Terminal — PROJECT NO.: J16-9119-04

CLIENT: Colonial Terminal — START: 4-26-16 END: 4-27-16

LOCATION: Wilmington, North Carolina — ELEVATION:

DRILLER: Mid Atlantic Drilling, J. Stewart — LOGGED BY: I. Irizarry

DRILLING METHOD: Diedrich D25; 4-1/4 inch hollow stem auger

DEPTH TO - WATER> INITIAL: 5.0 AFTER 24 HOURS: 3.30 CAVING>

ELEVATION/ DEPTH (FT)	DESCRIPTION	SOIL TYPE	WELL INSTALLATION DETAILS
	Brown to yellowish-brown, dry to moist, silty, fine to medium SAND		Grout, 0 to 0.2 feet Bentonite seal, 0.2 to 0.9 feet Filter pack, sand 0.9 to 11.3 feet
5	Gray, wet, silty, fine to medium SAND with very strong petroleum odor		2-inch diameter, 0.010-inch slotted Schedule 40 PVC well screen, 1.1 to 11.1 feet
10			Pipe cap
	Boring terminated at 11.3 feet. Groundwater encountered at 5.0 feet at time of drilling and at 3.30 feet after 24 hours.		Total well depth, 11.30 feet
15			SURFACE COMPLETION Flush-mount secured with an 8-inch diameter steel bolted manhole cover in a 2' x 2' concrete pad

GEOT_WELLNB 9119-04.GPJ 5/27/16

KEY TO SOIL CLASSIFICATIONS AND CONSISTENCY DESCRIPTIONS

BUNNELL-LAMMONS ENGINEERING, INC.
GREENVILLE, SOUTH CAROLINA

Penetration Resistance* Blows per Foot	Relative Density
SANDS	
0 to 4	Very Loose
5 to 10	Loose
11 to 20	Firm
21 to 30	Very Firm
31 to 50	Dense
over 50	Very Dense

Penetration Resistance* Blows per Foot	Consistency
SILTS and CLAYS	
0 to 2	Very Soft
3 to 4	Soft
5 to 8	Firm
9 to 15	Stiff
16 to 30	Very Stiff
31 to 50	Hard
over 50	Very Hard

*ASTM D 1586

Particle Size Identification

Boulder: Greater than 300 mm
Cobble: 75 to 300 mm
Gravel:
Coarse - 19 to 75 mm
Fine - 4.75 to 19 mm
Sand:
Coarse - 2 to 4.75 mm
Medium - 0.425 to 2 mm
Fine - 0.075 to 0.425 mm
Silt & Clay: Less than 0.075 mm

KEY TO DRILLING SYMBOLS


Grab Sample


Split Spoon Sample


Undisturbed Sample

NR = No reaction to HCL

NA = Not applicable

NS = No sample


Groundwater Table at Time of Drilling

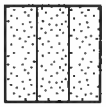

Groundwater Table 24 Hours after Completion of Drilling

KEY TO SOIL CLASSIFICATIONS


Well-graded Gravel
GW


Low Plasticity Clay
CL


Clayey Silt
MH


Silty Sand
SM

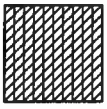

Poorly-graded Gravel
GP

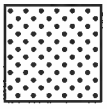

Sandy Clay
CLS

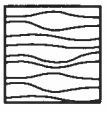

Sandy Silt
MLS


Topsoil
TOPSOIL


Partially Weathered Rock
BLDRCBBL


Silty Clay
CL-ML

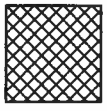

Sand
SW

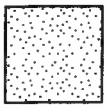

Liquid Sludge
SLUDGE


High Plasticity Clay
CH


Silt
ML


Clayey Sand
SC


Fill
FILL


Poorly Graded Sand
SP


Bedrock
BEDROCK


Waste
WOOD

APPENDIX B

Laboratory Analytical Report

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Bunnell-Lammons Engineering, Inc.
6004 Ponders Court
Greenville, SC 29615
Attention: Dan Osbourne

Project Name: **Colonial Wilmington**

Project Number: **9119-04**

Lot Number: **RD28062**

Date Completed: **05/05/2016**

Lucas Odom
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28062

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28062

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	SB-01	Solid	04/26/2016 0845	04/28/2016
002	SB-02	Solid	04/26/2016 1020	04/28/2016
003	SB-03	Solid	04/26/2016 0920	04/28/2016
004	SB-05	Solid	04/26/2016 1110	04/28/2016
005	SB-07	Solid	04/26/2016 1045	04/28/2016
006	SB-06	Solid	04/26/2016 0950	04/28/2016
007	SB-11	Solid	04/26/2016 1130	04/28/2016
008	SB-12	Solid	04/26/2016 1310	04/28/2016
009	SB-13	Solid	04/26/2016 1340	04/28/2016
010	SB-14	Solid	04/26/2016 1400	04/28/2016
011	SB-15	Solid	04/26/2016 1425	04/28/2016
012	SB-16	Solid	04/26/2016 1455	04/28/2016
013	C-MW-23 (4)	Solid	04/26/2016 1517	04/28/2016
014	C-MW-24 (4)	Solid	04/26/2016 1557	04/28/2016

(14 samples)

Executive Summary

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28062

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	SB-01	Solid	Methanol	8015C	280		mg/kg	5
002	SB-02	Solid	Methanol	8015C	270		mg/kg	6
003	SB-03	Solid	Methanol	8015C	30		mg/kg	7
004	SB-05	Solid	Methanol	8015C	2100		mg/kg	8
005	SB-07	Solid	Methanol	8015C	140		mg/kg	9
006	SB-06	Solid	Methanol	8015C	32		mg/kg	10
008	SB-12	Solid	Methanol	8015C	6400		mg/kg	12
009	SB-13	Solid	Methanol	8015C	27		mg/kg	13
011	SB-15	Solid	Methanol	8015C	19		mg/kg	15
012	SB-16	Solid	Methanol	8015C	22		mg/kg	16
014	C-MW-24 (4)	Solid	Methanol	8015C	36		mg/kg	18

(11 detections)

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-01**
Date Sampled: **04/26/2016 0845**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-001**
Matrix: **Solid**
% Solids: **83.7** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2149	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**280**		**1.8**	**0.45**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-02**
Date Sampled: **04/26/2016 1020**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-002**
Matrix: **Solid**
% Solids: **89.0** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2201	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**270**		**2.1**	**0.51**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-03**
Date Sampled: **04/26/2016 0920**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-003**
Matrix: **Solid**
% Solids: **74.6** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2213	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**30**		**2.5**	**0.64**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-05**
Date Sampled: **04/26/2016 1110**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-004**
Matrix: **Solid**
% Solids: **77.4** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		8015C	10	05/05/2016 0034	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**2100**		**21**	**5.2**	**mg/kg**	**2**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-07**
Date Sampled: **04/26/2016 1045**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-005**
Matrix: **Solid**
% Solids: **78.5** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2236	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**140**		**2.4**	**0.60**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Laboratory ID: **RD28062-006**
Description: **SB-06**
Matrix: **Solid**
Date Sampled: **04/26/2016 0950**
% Solids: **78.3** **04/28/2016 2316**
Date Received: **04/28/2016**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2248	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**32**		**2.2**	**0.56**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-11**
Date Sampled: **04/26/2016 1130**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-007**
Matrix: **Solid**
% Solids: **85.5** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2300	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	67-56-1	8015C	ND		2.2	0.55	mg/kg	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-12**
Date Sampled: **04/26/2016 1310**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-008**
Matrix: **Solid**
% Solids: **85.0** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		8015C	20	05/05/2016 0046	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**6400**		**47**	**12**	**mg/kg**	**2**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-13**
Date Sampled: **04/26/2016 1340**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-009**
Matrix: **Solid**
% Solids: **83.3** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2323	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**27**		**2.2**	**0.54**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-14**
Date Sampled: **04/26/2016 1400**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-010**
Matrix: **Solid**
% Solids: **81.0** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2335	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	67-56-1	8015C	ND		2.1	0.53	mg/kg	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-15**
Date Sampled: **04/26/2016 1425**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-011**
Matrix: **Solid**
% Solids: **75.2** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2347	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**19**		**2.1**	**0.51**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **SB-16**
Date Sampled: **04/26/2016 1455**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-012**
Matrix: **Solid**
% Solids: **80.2** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 2358	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**22**		**2.4**	**0.61**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **C-MW-23 (4)**
Date Sampled: **04/26/2016 1517**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-013**
Matrix: **Solid**
% Solids: **80.6** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/05/2016 0010	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	67-56-1	8015C	ND		2.2	0.55	mg/kg	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Bunnell-Lammons Engineering, Inc.**
Description: **C-MW-24 (4)**
Date Sampled: **04/26/2016 1557**
Date Received: **04/28/2016**

Laboratory ID: **RD28062-014**
Matrix: **Solid**
% Solids: **83.1** **04/28/2016 2316**

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/05/2016 0022	JJG		12539

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Methanol	**67-56-1**	**8015C**	**36**		**2.4**	**0.59**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

GC DAI - MB

Sample ID: RQ12539-001
Batch: 12539
Analytical Method: 8015C
Matrix: Solid

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Methanol	ND		1	2.0	0.50	mg/kg	05/04/2016 1948

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - LCS

Sample ID: RQ12539-002
Batch: 12539
Analytical Method: 8015C
Matrix: Solid

Parameter	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methanol	50	45		1	90	55-138	05/04/2016 1936

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - Duplicate

Sample ID: RD28062-005DU
Batch: 12539
Analytical Method: 8015C
Matrix: Solid

Parameter	Sample Amount (mg/kg)	Result (mg/kg)	Q	Dil	% RPD	% RPD Limit	Analysis Date
Methanol	140	130		1	5.4	20	05/05/2016 0058

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - MS

Sample ID: RD28062-006MS
Batch: 12539
Analytical Method: 8015C
Matrix: Solid

Parameter	Sample Amount (mg/kg)	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methanol	32	62	63	N	1	50	55-138	05/05/2016 0110

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 60229

Client: BLE	Report to Contact: Dan Osbourne	Telephone No. / E-mail: 864 288 6165 / Dan.Osbourne@bleengineering.com	Quote No.
Address: 6004 Powdersville Ct	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Greenville	State: SC	Zip Code: 29615	Printed Name: Ivan Ivinary
Project Name: Colonial Wilmington			
Project No.: 9119-04	P.O. No.		

RD28062

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Sample Components	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol (VOA)	Remarks / Cooler I.D.
SB-01	4/26/16	0845	G		✓		✓						✓	
SB-02		1020												
SB-03		0920												
SB-05		1110												
SB-07		1045												
SB-06		0950												
SB-11		1130												
SB-12		1310												
SB-13		1340												
SB-14	✓	1900	✓		✓		✓						✓	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☑ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished by: Ivan Ivinary	4/28/16	1423	1. Received by: SECURE AREA	4/28/16	1423
2. Relinquished by: SECURE AREA	4/28/16	1423	2. Received by: Jeffrey McClain	4/28/16	1423
3. Relinquished by: Jeffrey McClain	4/28/16	1724	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by: Melinda McDonald	4/28/16	1724

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack: Receipt Temp. 2.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

SHEALY ENVIRONMENTAL SERVICES, INC.

SHEALY ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 60226

Client: BLE
Report to Contact: Dean O Shaw
Telephone No. / E-mail: dow.03 [illegible] @ blecorp.com
Quote No.:
Address: 2004 Powders CT
Sampler's Signature: x [illegible signature]
City: Greenville State: SC Zip Code: 29615
Printed Name: Ivan Irizarry
Page 2 of 2
Project Name: Colonial Wilmington
Project No.: 919-04
P.O. No.:
Analysis (Attach list if more space is needed): [illegible]

RD28062

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	Unpres	H_2SO_4	HNO_3	HCl	NaOH	5035 Kit	[illegible]	Remarks / Cooler I.D.
SB-15	4/26/16	1425	G		✓		✓						✓	
SB-16	4/26/16	1455	↓		↓		↓						↓	
C-MW-23 (4)	4/26/16	1517	↓		↓		↓						↓	
C-MW-24 (4)	4/26/16	1557	✓		✓		✓						✓	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☑ Standard ☐ Rush (Specify)
Sample Disposal: ☐ Return to Client ☑ Disposal by Lab
Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown
QC Requirements (Specify):

Relinquished by	Date	Time	Received by	Date	Time
1. Ivan Irizarry	4/28/16	1423	1. Seluke Area	28APR16	1423
2. Seluke Area	28APR16	1423	2. Jeffrey McClain	28APR16	1423
3. Jeffrey McClain	28APR16	1721	3.		
4. [illegible]			4. Laboratory received by Melinda McDonald	4/28/16	1721

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack
Receipt Temp. 2.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

Shealy Environmental Services, Inc.
Document Number: ME0018C-04

Page 1 of 1
Effective Date: 02/05/2016
Expiry Date: 02/05/2021

Sample Receipt Checklist (SRC)

Client: BLE Cooler Inspected by/date: MM 4/28/16 Lot #: RD28062

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?
pH strip ID: _____ Cl strip ID: _____ Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt: 2.4 2.4°C / / °C / / °C / / °C Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None			
Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM was notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☐	No ☑		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples not listed on COC?
Yes ☐	No ☐	NA ☑	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/THEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be ≥ 2 by _____ Date: _____
Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR#

Sample labels applied by: MM Verified by: _____ Date: 4/28/16

Comments: _____

Report of Analysis

Bunnell-Lammons Engineering, Inc.
6004 Ponders Court
Greenville, SC 29615
Attention: Dan Osbourne

Project Name: Colonial Wilmington

Project Number: 9119-04

Lot Number: RD28063

Date Completed: 05/05/2016

Lucas Odom
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative
Bunnell-Lammons Engineering, Inc.
Lot Number: RD28063

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28063

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	TMW-01	Aqueous	04/26/2016 0850	04/28/2016
002	TMW-02	Aqueous	04/26/2016 1025	04/28/2016
003	TMW-03	Aqueous	04/26/2016 0925	04/28/2016
004	TMW-05	Aqueous	04/26/2016 1115	04/28/2016
005	TMW-06	Aqueous	04/26/2016 0955	04/28/2016
006	TMW-07	Aqueous	04/26/2016 1050	04/28/2016
007	TMW-11	Aqueous	04/26/2016 1135	04/28/2016
008	TMW-12	Aqueous	04/26/2016 1315	04/28/2016
009	TMW-13	Aqueous	04/26/2016 1345	04/28/2016
010	TMW-14	Aqueous	04/26/2016 1405	04/28/2016
011	TMW-15	Aqueous	04/26/2016 1430	04/28/2016
012	TMW-16	Aqueous	04/26/2016 1500	04/28/2016

(12 samples)

Executive Summary

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28063

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	TMW-01	Aqueous	Methanol	8015C	1200		mg/L	5
004	TMW-05	Aqueous	Methanol	8015C	6.6		mg/L	8
006	TMW-07	Aqueous	Methanol	8015C	3400		mg/L	10
008	TMW-12	Aqueous	Methanol	8015C	7500		mg/L	12
010	TMW-14	Aqueous	Methanol	8015C	51		mg/L	14

(5 detections)

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-001
Description: TMW-01
Matrix: Aqueous
Date Sampled: 04/26/2016 0850
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	20	05/03/2016 2252	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	1200		40	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-002
Description: TMW-02
Matrix: Aqueous
Date Sampled: 04/26/2016 1025
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/03/2016 2304	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-003
Description: TMW-03
Matrix: Aqueous
Date Sampled: 04/26/2016 0925
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/03/2016 2316	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-004
Description: TMW-05
Matrix: Aqueous
Date Sampled: 04/26/2016 1115
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		8015C	1	05/04/2016 1700	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	6.6		2.0	mg/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-005
Description: TMW-06
Matrix: Aqueous
Date Sampled: 04/26/2016 0955
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0114	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-006
Description: TMW-07
Matrix: Aqueous
Date Sampled: 04/26/2016 1050
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		8015C	10	05/04/2016 1723	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	3400		20	mg/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-007
Description: TMW-11
Matrix: Aqueous
Date Sampled: 04/26/2016 1135
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0138	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-008
Description: TMW-12
Matrix: Aqueous
Date Sampled: 04/26/2016 1315
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		8015C	50	05/04/2016 1735	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	7500		100	mg/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-009
Description: TMW-13
Matrix: Aqueous
Date Sampled: 04/26/2016 1345
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0202	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-010
Description: TMW-14
Matrix: Aqueous
Date Sampled: 04/26/2016 1405
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 1758	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	51		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-011
Description: TMW-15
Matrix: Aqueous
Date Sampled: 04/26/2016 1430
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 1810	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28063-012
Description: TMW-16
Matrix: Aqueous
Date Sampled: 04/26/2016 1500
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 1822	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

GC DAI - MB

Sample ID: RQ12425-001
Batch: 12425
Analytical Method: 8015C

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	Units	Analysis Date
Methanol	ND		1	2.0	mg/L	05/03/2016 2200

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - LCS

Sample ID: RQ12425-002
Batch: 12425
Analytical Method: 8015C

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methanol	50	48		1	95	70-130	05/03/2016 2133

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - LCSD

Sample ID: RQ12425-003
Batch: 12425
Analytical Method: 8015C

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methanol	50	48		1	96	0.17	70-130	20	05/03/2016 2145

PQL = Practical quantitation limit

ND = Not detected at or above the PQL

P = The RPD between two GC columns exceeds 40%

J = Estimated result < PQL and ≥ MDL

N = Recovery is out of criteria

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - MB

Sample ID: RQ12538-001
Batch: 12538
Analytical Method: 8015C

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	Units	Analysis Date
Methanol	ND		1	2.0	mg/L	05/04/2016 1624

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - LCS

Sample ID: RQ12538-002
Batch: 12538
Analytical Method: 8015C
Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methanol	50	47		1	95	70-130	05/04/2016 1612

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 60225

Client: BLE	Report to Contact: Dan Osbourne	Telephone No. / E-mail: Dan.Osbourne@Blecorp.com	Quote No.
Address: 6004 Powders CT	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of
City: Greenville	State: SC	Zip Code: 29615	Printed Name: Ivan Fritzsky
Project Name: Colonial Wilmington			RD28063
Project No.: 9119-04	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Composite	Matrix: Air/Water, Solid, Non Aqueous Liquid	No. of Containers by Preservative Type: Unpres, H2SO4, HNO3, HCl, NaOH, ZnAc/NaOH	Methanol	Remarks / Cooler I.D.
TMW-01	4/26/16	850	G		✓	✓	
TMW-02		1025					
TMW-03		925					
TMW-05		1115					
TMW-06		0955					
TMW-07		1050					
TMW-11		1135					
TMW-12		1315					
TMW-13		1345					
TMW-14	V	1405	V				

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Selenee Reed	28APR16	1423	1. Received by: Jeffrey McClain	28APR16	1423
2. Relinquished by: Jeffrey McClain	28APR16	1721	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by: Melinda McDonald	4/28/16	1721

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack
Receipt Temp. 2.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 09-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 60224

Client: BLE	Report to Contact: Dan Osbourne	Telephone No. / E-mail: Dan.Osbourne@Bkcorp.com	Quote No.
Address: 6004 Powders CT	Sampler's Signature: X	Analysis (Attach list if more space is needed): Methanol	Page 2 of 2
City: Greenville	State: SC	Zip Code: 29615	Printed Name: Ivan Irizarry
Project Name: Colonial Wilmington			RD28063
Project No.: 9119	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Gradient (Composite)	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc / NaOH
Tmw - 15	4/26/16	1430	G	Y						✓		
Tmw - 16	4/26/16	1500	↓	↓						✓		

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☑ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Selina Ake	26 APR 16	1423	1. Received by: Jeffrey McClain	26 APR 16	
2. Relinquished by: Jeffrey McClain	26 APR 16	1721	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by: Melinda McDonald	4/29/16	1721

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack Receipt Temp. 2.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 09-01-2014

Shealy Environmental Services, Inc.
Document Number: ME00187.04

Page 1 of 1
Effective Date: 02/05/2016
Expiry Date: 02/05/2021

Sample Receipt Checklist (SRC)

Client: BLE Cooler Inspected by/date: MW 4/28/16 Lot #: RD 28063

Means of receipt: ☑ SES1 ☐ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: _____ Cl strip ID: _____

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

/ 2.4 / 2.4 °C / / °C / / °C / / °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM was notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☐	No ☑		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples not listed on COC?
Yes ☐	No ☐	NA ☑	16. Were bubbles present >"pea-size" (¼" or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be ≥ 2 by _____ Date: _____

Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR# _____

Sample labels applied by: _____ Verified by: _____ Date: 4/28/16

Comments: _____

Report of Analysis

Bunnell-Lammons Engineering, Inc.
6004 Ponders Court
Greenville, SC 29615
Attention: Dan Osbourne

Project Name: Colonial Wilmington

Project Number: 9119-04

Lot Number: RD28064

Date Completed: 05/05/2016

Lucas Odom
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28064

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28064

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	C-MW-1	Aqueous	04/25/2016 1556	04/28/2016
002	C-MW-3	Aqueous	04/25/2016 1510	04/28/2016
003	C-MW-6	Aqueous	04/25/2016 1557	04/28/2016
004	C-MW-9	Aqueous	04/25/2016 1630	04/28/2016
005	C-MW-14	Aqueous	04/25/2016 1535	04/28/2016
006	C-MW-17	Aqueous	04/25/2016 1540	04/28/2016
007	C-MW-21	Aqueous	04/25/2016 1500	04/28/2016
008	C-MW-23	Aqueous	04/27/2016 1700	04/28/2016
009	C-MW-24	Aqueous	04/27/2016 1730	04/28/2016

(9 samples)

Executive Summary

Bunnell-Lammons Engineering, Inc.

Lot Number: RD28064

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	C-MW-14	Aqueous	Methanol	8015C	3600		mg/L	9
009	C-MW-24	Aqueous	Methanol	8015C	83000		mg/L	13

(2 detections)

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-001
Description: C-MW-1
Matrix: Aqueous
Date Sampled: 04/25/2016 1556
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/03/2016 2340	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-002
Description: C-MW-3
Matrix: Aqueous
Date Sampled: 04/25/2016 1510
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		8015C	1	05/04/2016 1711	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-003
Description: C-MW-6
Matrix: Aqueous
Date Sampled: 04/25/2016 1557
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0214	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-004
Description: C-MW-9
Matrix: Aqueous
Date Sampled: 04/25/2016 1630
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0003	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-005
Description: C-MW-14
Matrix: Aqueous
Date Sampled: 04/25/2016 1535
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	10	05/04/2016 0015	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	3600		20	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-006
Description: C-MW-17
Matrix: Aqueous
Date Sampled: 04/25/2016 1540
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0027	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-007
Description: C-MW-21
Matrix: Aqueous
Date Sampled: 04/25/2016 1500
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0039	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-008
Description: C-MW-23
Matrix: Aqueous
Date Sampled: 04/27/2016 1700
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		8015C	1	05/04/2016 0226	JJG		12425

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	ND		2.0	mg/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: Bunnell-Lammons Engineering, Inc.
Laboratory ID: RD28064-009
Description: C-MW-24
Matrix: Aqueous
Date Sampled: 04/27/2016 1730
Date Received: 04/28/2016

GC DAI

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2		8015C	500	05/04/2016 1747	JJG		12538

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
Methanol	67-56-1	8015C	83000		1000	mg/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

GC DAI - MB

Sample ID: RQ12425-001
Batch: 12425
Analytical Method: 8015C

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	Units	Analysis Date
Methanol	ND		1	2.0	mg/L	05/03/2016 2200

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - LCS

Sample ID: RQ12425-002
Batch: 12425
Analytical Method: 8015C

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methanol	50	48		1	95	70-130	05/03/2016 2133

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - LCSD

Sample ID: RQ12425-003
Batch: 12425
Analytical Method: 8015C
Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methanol	50	48		1	96	0.17	70-130	20	05/03/2016 2145

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - MB

Sample ID: RQ12538-001
Batch: 12538
Analytical Method: 8015C

Matrix: Aqueous

Parameter	Result	Q	Dil	PQL	Units	Analysis Date
Methanol	ND		1	2.0	mg/L	05/04/2016 1624

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - LCS

Sample ID: RQ12538-002
Batch: 12538
Analytical Method: 8015C
Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methanol	50	47		1	95	70-130	05/04/2016 1612

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

GC DAI - MS

Sample ID: RD28064-002MS
Batch: 12538
Analytical Method: 8015C
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methanol	ND	50	180	N	1	352	70-130	05/04/2016 1834

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Sample ID: RD28064-002MD
Batch: 12538
Analytical Method: 8015C
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Methanol	ND	50	180	N	1	365	3.5	70-130	20	05/04/2016 1845

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 60228

Client: BLE	Report to Contact: Dan Osbourne	Telephone No. / E-mail: 8692881265 / Dan.osBourne@Bleunp.com	Quote No.
Address: 6004 Powders CT	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page of
City: Greenville	State: SC	Zip Code: 29615	
Project Name: Colonial Williams Tow	Printed Name: Ivan Irizarry		
Project No.: 9119-04	P.O. No.		

RD28064

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Soil	Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Ascorbic Acid	Methanol	Remarks / Cooler I.D.
C-MW-1	4/25/16	1556	G	✓						✓			✓	
C-MW-3		1510												
C-MW-6		1557												
C-MW-9		1630												
C-MW-14		1535												
C-MW-17		1540												
C-MW-21		1500	✓	✓										
C-MW-23	4/27/16	1700	✓	✓										
C-MW-24	4/27/16	1730	✓	✓						✓			✓	

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☑ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Relinquished by	Date	Time	Received by	Date	Time
1.	Ivan Irizarry	4/28/16	1423	SECURE AREA	4/28/16	1423
2.	SECURE AREA	4/28/16	1423	Jeffrey McClain	4/28/16	1423
3.	Jeffrey McClain	4/28/16	1721		Date	Time
4.		Date	Time	Laboratory received by: Melinda McDonald	4/28/16	1721

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack Receipt Temp. 2.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: MF0018C-04

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Effective Date: 02/05/2016
Expiry Date: 02/05/2021

Sample Receipt Checklist (SRC)

Client: BLE Cooler Inspected by/date: MM 4/28/16 Lot #: RD28064

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other

Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: _____ Cl strip ID: _____

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

2.4/2.4 °C ___/___/___ °C ___/___/___ °C ___/___/___ °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM was notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☐	No ☑		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples not listed on COC?
Yes ☐	No ☐	NA ☑	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be ≥ 2 by _____ Date: _____

Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR# _____

Sample labels applied by: MM Verified by: _____ Date: 4/28/16

Comments: SR CUSTODIAN - MELINDA BROKE A VIAL OF SAMPLE #1 THERE IS STILL ONE VIAL.