

**REMEDIAL INVESTIGATION – WASTE CHARACTERIZATION REPORT
BINGHAM PARK
GREENSBORO, GUILFORD COUNTY
NORTH CAROLINA
ID No. NONCD0000244
State of North Carolina Contract No. N10003S
NCDEQ Task Order 244DP-15**



Prepared for:
North Carolina Department of Environmental Quality
Superfund Section, Pre-Regulatory Landfill Unit
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Prepared by:
S&ME, Inc.
3201 Spring Forest Road
Raleigh, NC 27616

February 26, 2016

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❖ SUMMARY OF CURRENT INVESTIGATION

S&ME completed the following Scope of Services for this remedial investigation in general conformance with our proposal dated January 4, 2016 for Task Order 244DP-15 under State contract N10003S:

- ◆ Installed three soil/waste borings for sample screening/collection;
- ◆ Field screened soil/waste samples using a handheld XRF analyzer;
- ◆ Collected nine soil samples (plus QA samples) for laboratory analysis;
- ◆ Subcontracted the analyses of soil/waste samples including quality control samples for laboratory analysis; and,
- ◆ Prepared this report.

Investigation Goals: Determine areas of lead with soil concentrations over 10,000 milligrams per kilogram (mg/kg).

1.0 WASTE AREA SAMPLING AND ANALYSIS

1.1 Waste Borings

On February 3, 2016, S&ME used hand augers to advance three soil borings (L3-1 through L3-3) around the former boring location L2-25 for the collection of soil/waste samples, as shown on **Figure 1**. Coordinates of sample locations are included in **Appendix I**.

Soil boring logs and types of waste encountered are included with the field notes in **Appendix II**. The observed waste typically had a uniform dark brown or black sandy loam matrix with gravel and identifiable fragments of glass, metal, and brick. Discrete sources of heavy metal contaminants (such as batteries) were not observed.

1.2 Waste Sampling

In general, waste samples were collected from each boring at three intervals: 0 – 1, 1 – 3, and 3 – 5 feet below ground surface (bgs) and sent to a North Carolina certified laboratory for analysis of lead by EPA Method 6020. A handheld XRF analyzer was used to identify discrete sample zones within each interval for the purpose of selecting the waste samples with the highest lead concentrations for laboratory analysis. Samples were screened with the XRF at seven intervals: 0 – 0.5, 0.5 – 1, 1 – 1.5, 1.5 – 2.0, 2 – 3, 3 – 4, and 4 – 5 feet bgs. A total of 11 samples (nine record soil samples, a duplicate and one equipment blank) were submitted for laboratory analysis.

1.3 Waste Lead Analytical Results

Lead concentrations reported by the laboratory are below 10,000 mg/kg. Reported concentrations of lead for the two sampling depth intervals 1 – 3 and 3 – 5 are greater than the Soil Remediation Goal (SRG) of 400 mg/kg. The ranges of reported detections are summarized below:

- 0 – 1': Detections ranged from 11 mg/kg to 18.9 mg/kg.
- 1 – 3': Detections ranged from 1,310 mg/kg to 8,180 mg/kg.

- 3 – 5': Detections ranged from 764 mg/kg to 3,650 mg/kg.

Laboratory results of the current investigation are summarized on **Table 1**. Reported lead concentrations for each sampling depth interval (0-1', 1-3', and 3-5') are shown on **Figure 1**. The laboratory report and chain of custody are included in **Appendix III**.

2.0 INVESTIGATIVE DERIVED WASTE

Auger cuttings, sand and bentonite were used to seal the borings. There were no left-over auger cuttings at locations where waste was encountered; therefore, no contaminated soils or other investigative derived wastes (IDW) were containerized during this investigation.

3.0 QUALITY CONTROL

Quality control samples were collected and analyzed as follows:

- ◆ Duplicate: One duplicate sample was collected for the one-day sampling event and submitted to the laboratory for lead analysis. The reported lead concentration for the duplicate sample was within a reasonable range of the record sample concentration.
- ◆ Equipment Blank: One equipment blank sample was collected and submitted for lead analysis. Lead was not detected in the equipment blank.
- ◆ The laboratory conducted USEPA quality assurance and quality control procedures and reporting as required for laboratory analysis according to USEPA Level II Protocols.

All reported laboratory analytical data met data quality objectives.

4.0 SOLE USE STATEMENT

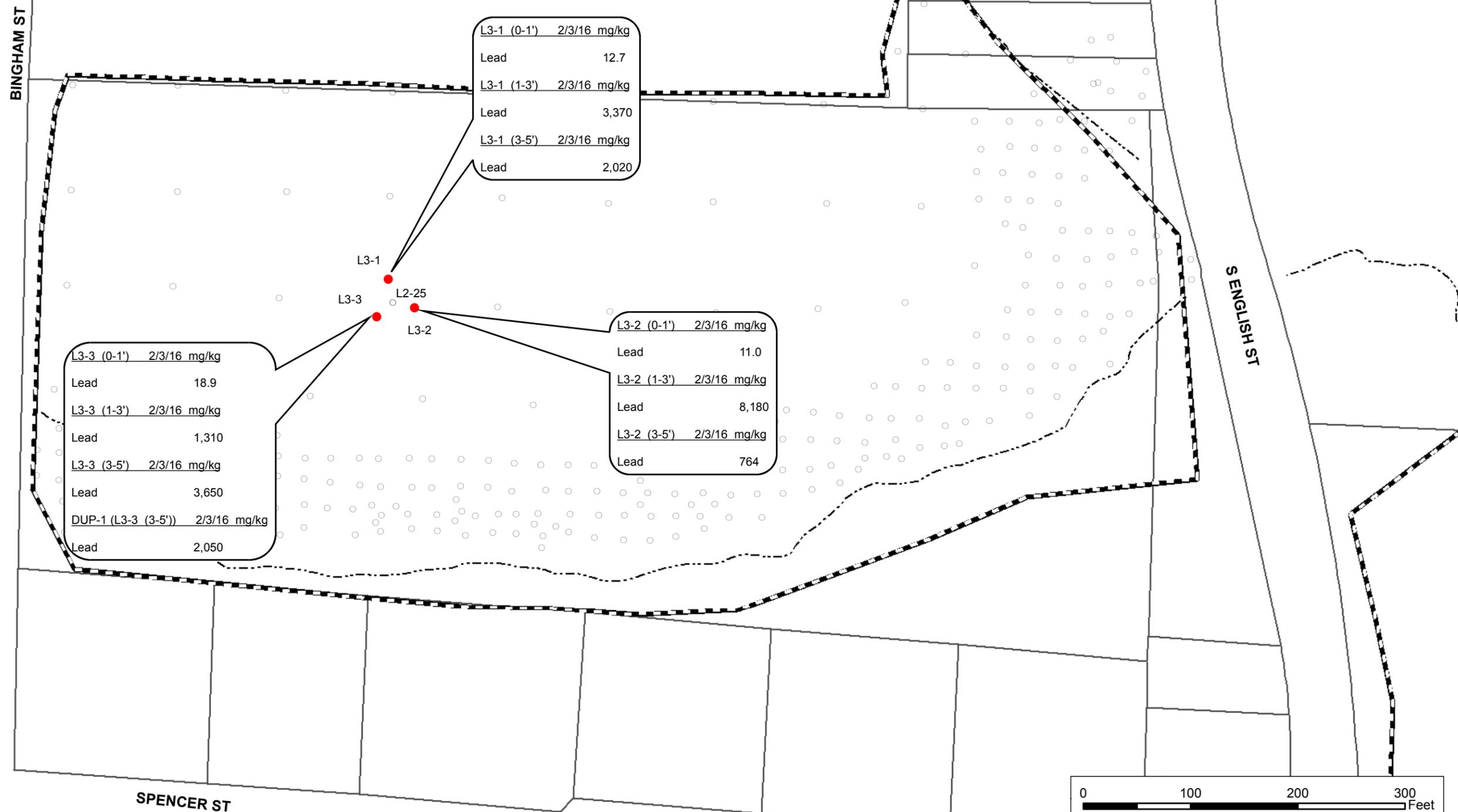
This report is solely intended for use by the NCDEQ for the services that were performed in accordance with S&ME's Proposal dated January 4, 2016 as authorized by NCDEQ Task Order No. 244DP-15 dated January 20, 2016.

NOTES:

ONLY CONSTITUENTS EXCEEDING SRGs ARE SHOWN
 mg/kg - MILLIGRAMS PER KILOGRAM
 PARCEL SOURCE: GUILFORD CO. GIS, DATED JULY 2011
 ROAD NAMES: GUILFORD CO. GIS, DATED AUG. 2008
 STREAM SOURCE: GUILFORD CO. GIS, RECEIVED AUG. 2011

Legend

- BORING LOCATION
- FORMER BORING LOCATION
- - - - APPROXIMATE STREAM CENTERLINE
- ▭ WASTE DISPOSAL AREA BOUNDARY



DATE: FEB. 2016
 DRAWN BY: JLV
 CHECKED BY:
 SCALE: 1" = 100'
 PROJECT NO: 1054-11-1020
 DRAWING NUMBER:



NC ENG. LICENSE #F-0176
 3201 SPRING FOREST RD., RALEIGH, NC 27616

WASTE SAMPLE RESULTS

BINGHAM PARK - TASK ORDER 244DP-15
 GREENSBORO, NORTH CAROLINA

FIGURE NO.
1



TABLE 1
Waste Sample Results
Bingham Park
Greensboro, Guilford County, North Carolina
No. NONCD0000244 Task Order 244DP-15

Method	Sample ID		L3-1 (0-1')	L3-1 (1-3')	L3-1 (3-5')	L3-2 (0-1')	L3-2 (1-3')	L3-2 (3-5')	L3-3 (0-1')	L3-3 (1-3')	L3-3 (3-5')	DUP-1 (L3-3 (3-5'))	Soil Remediation Goal
	Parameter	Date	2/3/16	2/3/16	2/3/16	2/3/16	2/3/16	2/3/16	2/3/16	2/3/16	2/3/16	2/3/16	
EPA 6020	Lead		12.7	3,370	2,020	11.0	8,180	764	18.9	1,310 O1 V	3,650	2,050	400

Notes:

Concentrations are reported in milligrams per kilogram (mg/kg).

Soil Remediation Goal (SRG), NCDENR, Inactive Hazardous Sites Branch, September 2015.

All detections that exceed the SRG are shown in BOLD.

O1: The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.

V: Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Appendices

Appendix I – Coordinates of Selected Features

**Coordinates of Selected Features
Bingham Park
Greensboro, Guilford County, North Carolina
No. NONCD0000244 Task Order 244DP-15**

Site Feature	Location			
	Northing	Easting	Latitude	Longitude
L2-25	257,549.363	541,124.178	36.06927	-79.76017
L3-1	257,555.959	541,122.875	36.06933	-79.76018
L3-2	257,547.997	541,130.324	36.06926	-79.76010
L3-3	257,545.492	541,119.568	36.06924	-79.76022

Coordinates are presented in State Plane Coordinate System in meters using the North American Datum of 1983 (NAD83) and latitude and longitude in decimal degrees using the World Geodetic System 1984 (WGS84).

Appendix II – Field Notes



Boring ID: L3-3

PG. 1/3

Project Name: Bingham Park
 Task Number.: 244 DP-15
 (HAND AUGER) Date Drilled: 2/3/15
 Sampling Personnel: A. Culpepper, James Peck
 Depth to Groundwater: NA
 Total Boring Depth: 5.0

Depth (ft-bgs)		SOIL DESCRIPTION	USCS CLASS	Visual/Odor Indications of Contamination	ORGANIC VAPOR READINGS (ppm)	
To	From				XRF PID	ft. bgs.
0	18"	Grass topsoil to tan brown silty sand w/ gravel	SM	-	ND	0-6" *
18"	5.0'	Dark brown to black waste, w/ silt, brick & glass, gravel	SM	Waste	NP	6"-12" -
					ND	12"-18"
					182	18"-24"
					240	2-3' *
					1283	3-4' *
					137	4-5'

Notes: PID = Photo-ionization detector (readings in parts per million or ppm)

Sampler Notes:

* samples selected for lab
 DUP collected 3-4'

Groundwater Information:

Piezometer Depth = _____
 Screen = _____
 Riser = _____
 Date Sampled = _____



Boring ID: L3-1

Project Name: Bingham Park
 Task Number.: 244 PP-15
 Date Drilled: 2/3/15
 Sampling Personnel: A. Culpepper J. Peele
 Depth to Groundwater: N/A
 Total Boring Depth: 5.0'

Depth (ft-bgs)		SOIL DESCRIPTION	USCS CLASS	Visual/Odor Indications of Contamination	ORGANIC VAPOR READINGS	
To	From				XRF (ppm)	Pb
0	18"	Gross, top soil transitioning to tan brown silty sand, loose, moist	SM	—	19	0-6" *
10"	5.0'	Dark brown silt w/ waste, glass, metal transitioning to silty sand @ 5.0' bgs	SM	Waste	ND	6"-12"
					108	12"-18"
					1,119	18"-24" *
					617	2-3
					908	3-4
					1,573	4-5 *

Notes: PID = Photo-ionization detector (readings in parts per million or ppm)

Sampler Notes: * samples selected for lab

Groundwater Information:
 Piezometer Depth = _____
 Screen = _____
 Riser = _____
 Date Sampled = _____

**Appendix III – Laboratory Report and
Chain of Custody**

S&ME, Inc. QUALITY ASSURANCE & QUALITY CONTROL LABORATORY DATA REVIEW	
Project: Bingham Park, Greensboro, NC	February 25, 2016
S&ME Project No. 1054-11-1020, 244DP-15	Page 1 of 6

1.0 Project Identification

Client: NCDENR, Pre-Regulatory Landfill Unit
Project Name/Location: Bingham Park, Greensboro, NC
NCDENR ID Number: NONCD0000244

Sampling Event Date(s): 2/3/16

Lab Report Number(s): L815544

2.0 Laboratory Information

Laboratory Name: Environmental Science Corporation
Location: 12065 Lebanon Road, Mt. Juliet, TN 37122
NC Certification Nos.: ENV375/DW21704

S&ME, Inc. QUALITY ASSURANCE & QUALITY CONTROL LABORATORY DATA REVIEW	
Project: Bingham Park, Greensboro, NC	February 25, 2016
S&ME Project No. 1054-11-1020, 244DP-15	Page 2 of 6

3.0 Analytical Requirements

Confirm analytical method requirements were met:

Analytical Method	Requested Method?		Lab Used Correct Method?			Comments if Lab Used Different Method
	Yes	No	Yes	No	N/A	
VOCs – 8260B					X	
SVOCs – 8270D					X	
1,4-Dioxane – 8260SIM					X	
Metals – 6020	X		X			
Mercury – 7470A/7471					X	
Nitrate – 9056/300.0					X	
Sulfate – 9056/300.0					X	
Ammonia N – 350.1/4500B					X	
Asbestos – EPA 600/R-93-116					X	

S&ME, Inc. QUALITY ASSURANCE & QUALITY CONTROL LABORATORY DATA REVIEW	
Project: Bingham Park, Greensboro, NC	February 25, 2016
S&ME Project No. 1054-11-1020, 244DP-15	Page 3 of 6

4.0 Chain of Custody (CoC) & Log-In Review

CoC Check Items	Yes	No	Comments if Deviation
CoC Properly Signed by All Parties	X		
Correct Project Number on CoC	X		
Sample Receipt Condition at Lab Acceptable	X		
Sample Cooler Temperature Received at Lab 4°C (+/-2°C)			NA
Notes (if needed):			

5.0 Sample Holding Times

Holding times for extraction and/or analysis were met for each applicable analytical Method (see attached for reference: *Preservation and Container Guide*).

Holding Time Extraction and/or Analysis Exceeded for Any Method? (If YES – make notations below)		Yes: —	No: X —
Method	Notes		

S&ME, Inc. QUALITY ASSURANCE & QUALITY CONTROL LABORATORY DATA REVIEW	
Project: Bingham Park, Greensboro, NC	February 25, 2016
S&ME Project No. 1054-11-1020, 244DP-15	Page 4 of 6

6.0 Laboratory Quality Control Review

Laboratory Quality Control			
Quality Control Item	Yes	No	Notes
Provided USEPA Quality Assurance Report Level II (or higher)	X		
At least one matrix spike and one matrix spike duplicate per sample delivery group or 14-day period	X		
At least one method blank per sample delivery group or 12-hour period	X		
System monitoring compounds (surrogate recovery)	X		
Results for Tentatively Identified Compounds (TICs), Identify Top 10 Peaks (report if requested)			NA
Any QC qualifiers reported (Attachment A)?	X		If yes, see page #: 26
If QC Qualifiers reported, see explanation of qualifiers (Attachment B) page #: 33			
Any "R" (rejected) flagged data?		X	
Any "Q" (analyzed out of hold) flagged data?		X	
The laboratory has met their "data quality objectives"	X		
Notes: Lab does not bill for any "R" or "Q" flagged data.			

S&ME, Inc. QUALITY ASSURANCE & QUALITY CONTROL LABORATORY DATA REVIEW	
Project: Bingham Park, Greensboro, NC	February 25, 2016
S&ME Project No. 1054-11-1020, 244DP-15	Page 5 of 6

7.0 Data Reporting

Laboratory Data Report			
Report Item	Yes	No	Notes
All analytical reporting associated with the event was performed by the lab.	X		
Trip, field and/or equipment, and laboratory blank results have all been reported	X		
All laboratory method blanks, if any, have been 'flagged' with a 'B' where detected in other samples as appropriate and a laboratory narrative was provided.	X		
The report provides the reporting limit for each constituent.	X		
The results were reported at or below their proper reporting limits (e.g., 2L Groundwater Standards).	X		
Notes (if needed):			

8.0 Other Report Issues/Communications with laboratory/etc.

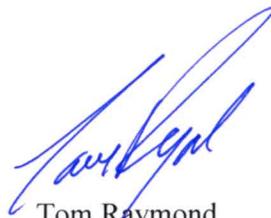
S&ME, Inc. QUALITY ASSURANCE & QUALITY CONTROL LABORATORY DATA REVIEW	
Project: Bingham Park, Greensboro, NC	February 25, 2016
S&ME Project No. 1054-11-1020, 244DP-15	Page 6 of 6

S&ME reviewed analytical results for the sampling events at the site. Qualitative and quantitative limitations associated with the analytical results were identified and defined based on the results of specific quality control criteria. Accuracy was determined from the review of spike recoveries. Analytical precision was based on the evaluation of laboratory duplicate results. An evaluation of field precision was based on the results of the field duplicate samples. Representativeness was evaluated from the review of holding times and blank data. There were no other qualitative and quantitative limitations associated with reported sample results. In summary, the data is considered representative for the purpose of this report.

S&ME, Inc.



Jason Volker
Data Reviewer



Tom Raymond
Senior Consultant

Attachments: Laboratory Report(s)
 Chain(s) of Custody

<p align="center">S&ME, Inc. QUALITY ASSURANCE & QUALITY CONTROL LABORATORY DATA REVIEW</p>	
<p align="center">Project: Bingham Park, Greensboro, NC</p>	<p align="center">February 25, 2016</p>
<p align="center">S&ME Project No. 1054-11-1020, 244DP-15</p>	<p align="center">Page 6 of 6</p>

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S&ME, Inc.

Jason Volker
Data Reviewer

Tom Raymond
Senior Consultant

Attachments: Laboratory Report(s)
 Chain(s) of Custody

File: T:\Projects\2011\ENV\11-1020 Bingham Park Greensboro\Projects 1020\11-2016 January 244DP-15 additional lead\Lab_Testing\Bingham Park 244DP-15 Lab Data Review Report Feb 2016.doc

February 11, 2016

S&ME Inc. - Raleigh NC

Sample Delivery Group: L815544
Samples Received: 02/04/2016
Project Number: 1054-11-1020
Description: Bingham Park, DP-15

Report To: Mr. Jerry Paul
3201 Spring Forest Road
Raleigh, NC 27616

Entire Report Reviewed By:



Craig Cothron
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



¹Cp: Cover Page	1	
²Tc: Table of Contents	2	
³Ss: Sample Summary	3	
⁴Cn: Case Narrative	5	
⁵Sr: Sample Results	6	
L3-1 0-6IN L815544-01	6	
L3-1 18-24IN L815544-02	7	
L3-1 4-5FT L815544-03	8	
L3-2 0-6IN L815544-04	9	
L3-2 18-24IN L815544-05	10	
L3-2 4-5FT L815544-06	11	
L3-3 0-6IN L815544-07	12	
L3-3 2-3FT L815544-08	13	
L3-3 3-4FT L815544-09	14	
DUP-1 L815544-10	15	
EQUIP BLANK L815544-11	16	
⁶Qc: Quality Control Summary	17	
Total Solids by Method 2540 G-2011	17	
Metals (ICPMS) by Method 6020	18	
⁷Gl: Glossary of Terms	20	
⁸Al: Accreditations & Locations	21	
⁹Sc: Chain of Custody	22	

SAMPLE SUMMARY



L3-1 0-6IN L815544-01 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:16	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 09:30
 Received date/time 02/04/16 09:00

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

L3-1 18-24IN L815544-02 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:18	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 09:30
 Received date/time 02/04/16 09:00

L3-1 4-5FT L815544-03 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:20	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 09:30
 Received date/time 02/04/16 09:00

L3-2 0-6IN L815544-04 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:23	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 09:45
 Received date/time 02/04/16 09:00

L3-2 18-24IN L815544-05 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	10	02/10/16 10:47	02/11/16 14:56	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 09:45
 Received date/time 02/04/16 09:00

L3-2 4-5FT L815544-06 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:32	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 09:45
 Received date/time 02/04/16 09:00

L3-3 0-6IN L815544-07 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:34	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 10:00
 Received date/time 02/04/16 09:00

SAMPLE SUMMARY



L3-3 2-3FT L815544-08 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 13:43	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 10:00
 Received date/time 02/04/16 09:00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L3-3 3-4FT L815544-09 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:37	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 10:00
 Received date/time 02/04/16 09:00

DUP-1 L815544-10 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847174	5	02/10/16 10:47	02/11/16 14:39	JDG
Total Solids by Method 2540 G-2011	WG847125	1	02/05/16 13:12	02/05/16 13:22	KDW

Collected by AC/JP
 Collected date/time 02/03/16 00:00
 Received date/time 02/04/16 09:00

EQUIP BLANK L815544-11 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICPMS) by Method 6020	WG847342	1	02/05/16 19:45	02/09/16 15:05	JDG

Collected by AC/JP
 Collected date/time 02/03/16 14:20
 Received date/time 02/04/16 09:00



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Technical Service Representative

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	81.9		1	02/05/2016 13:22	WG847125

1 Cp

2 Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	12.7		0.120	0.611	5	02/11/2016 14:16	WG847174

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	62.3		1	02/05/2016 13:22	WG847125

¹ Cp

² Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	3370		0.120	0.803	5	02/11/2016 14:18	WG847174

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	76.0		1	02/05/2016 13:22	WG847125

¹ Cp

² Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	2020		0.120	0.658	5	02/11/2016 14:20	WG847174

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	87.7		1	02/05/2016 13:22	WG847125

1 Cp

2 Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	11.0		0.120	0.570	5	02/11/2016 14:23	WG847174

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	76.6		1	02/05/2016 13:22	WG847125

¹ Cp

² Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	8180		0.240	1.30	10	02/11/2016 14:56	WG847174

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	94.9		1	02/05/2016 13:22	WG847125

1 Cp

2 Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	764		0.120	0.527	5	02/11/2016 14:32	WG847174

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	78.7		1	02/05/2016 13:22	WG847125

¹ Cp

² Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	18.9		0.120	0.636	5	02/11/2016 14:34	WG847174

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	85.1		1	02/05/2016 13:22	WG847125

1 Cp

2 Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	1310	O1 V	0.120	0.500	5	02/11/2016 13:43	WG847174

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	79.4		1	02/05/2016 13:22	WG847125

¹ Cp

² Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	3650		0.120	0.630	5	02/11/2016 14:37	WG847174

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	72.2		1	02/05/2016 13:22	WG847125

1 Cp

2 Tc

Metals (ICPMS) by Method 6020

Analyte	Result (dry) mg/kg	Qualifier	MDL mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	2050		0.120	0.693	5	02/11/2016 14:39	WG847174

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Lead	U		0.240	2.00	1	02/09/2016 15:05	WG847342

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) 02/05/16 13:22

Analyte	MB Result	MB Qualifier	MB RDL
	%		%
Total Solids	0.00120		

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

L815544-04 Original Sample (OS) • Duplicate (DUP)

(OS) 02/05/16 13:22 • (DUP) 02/05/16 13:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	87.7	87.5	1	0.197		5

7 Gl

8 Al

Laboratory Control Sample (LCS)

(LCS) 02/05/16 13:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	99.9	85.0-115	

9 Sc



Method Blank (MB)

(MB) 02/11/16 13:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Lead	U		0.12	0.500

¹Cp

²Tc

³Ss

⁴Cn

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/11/16 13:38 • (LCSD) 02/11/16 13:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Lead	100	103	106	103	106	80-120			2	20

⁵Sr

⁶Qc

L815544-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/11/16 13:43 • (MS) 02/11/16 13:55 • (MSD) 02/11/16 13:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	20.0	1310	1590	1310	278	0	5	75-125	V	V	19	20

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) 02/09/16 14:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Lead	U		0.00024	0.00200

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/09/16 14:51 • (LCSD) 02/09/16 14:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Lead	0.0500	0.0507	0.0505	101	101	80-120			0	20

L815710-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/09/16 14:56 • (MS) 02/09/16 15:00 • (MSD) 02/09/16 15:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	0.0500	0.000106	0.0502	0.0489	100	98	1	75-125			3	20

⁷ Gl

⁸ Al

⁹ Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.



State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

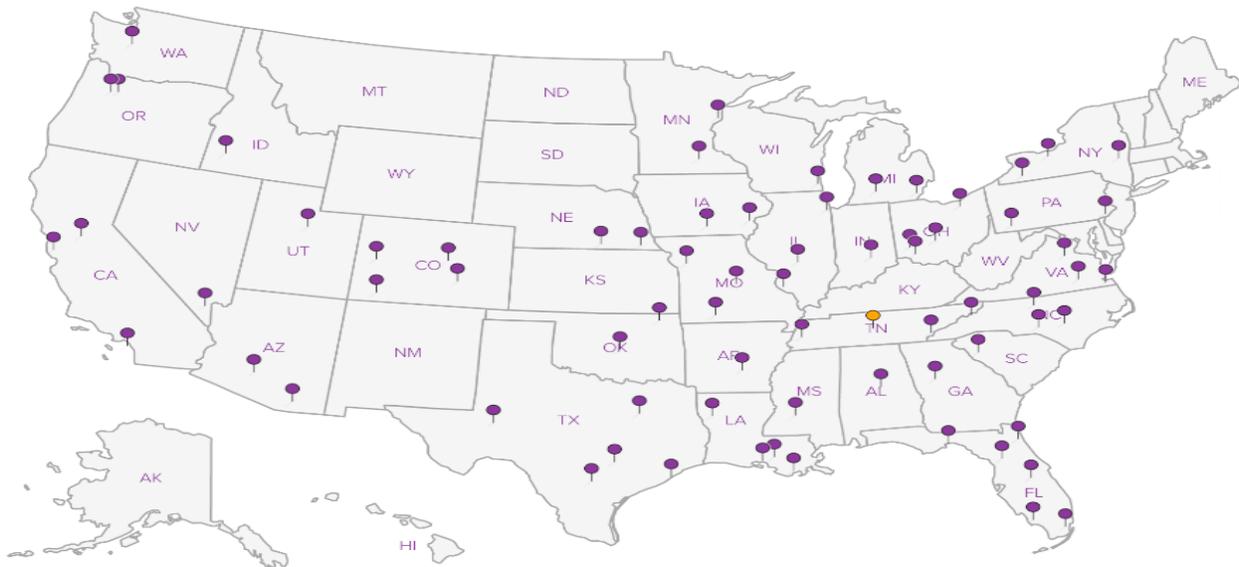
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Company Name/Address:
S & ME (SMERLNC)
3201 Spring Forest Road
Raleigh, North Carolina 27604

Billing Information:
SMERLNC-NC

Report to:
Jason Volker

Email To:
jvolker@smeinc.com

Project Description:
Bingham Park, DP-15

City/State Collected:
Greensboro, NC

Phone: **919-872-2660**
 Fax: **919-876-3958**

Client Project #
1054-11-1020

Lab Project #
SMERLNC-NC

Collected by (print):
Alex Colpepper / Jim Perle

Site/Facility ID #

P.O. #

Collected by (signature):
[Signature]
 Immediately
 Packed on Ice N Y X

Rush? (Lab MUST Be Notified)
 ___ Same Day200%
 ___ Next Day100%
 ___ Two Day50%
 ___ Three Day25%

Date Results Needed
 Email? ___ No ✓ Yes
 FAX? ___ No ___ Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Lead x 6020
L3-1 (0-6")	Grab	SS	0-6	2/3/16	0930	1	
L3-1 (18-24)	GRAB	SS	18-24	2/3/16	0930	1	
L3-1 (4-5')	GRAB	SS	4-5	2/3/16	0930	1	
L3-2 (0-6")	GRAB	SS	0-6	2/3/16	0945	1	
L3-2 (18-24")	GRAB	SS	18-24	2/3/16	0945	1	
L3-2 (4-5')	GRAB	SS	4-5	2/3/16	0945	1	
L3-3 (0-6")	GRAB	SS	0-6	2/3/16	1000	1	
L3-3 (2-3')	GRAB	SS	2-3	2/3/16	1000	1	
L3-3 (3-4')	GRAB	SS	2-3	2/3/16	1000	1	
DUP-1	GRAB	SS	—	2/3/16	—	1	

Analysis / Container / Preservative									

Chain of Custody Page 1 of 2



ESC
 L.A.B S.C.I.E.N.C.E.S

YOUR LAB OF CHOICE

12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



L# **1815544**
B050

Acctnum: **SMERLNC**
 Template:
 Prelogin:
 TSR: **Cothron**
 Cooler:
 Shipped Via: **Raleigh Serv**

Rem./Contaminant	Sample # (lab only)
	-01
	-02
	-03
	-04
	-05
	-06
	-07
	-08
	-09
	-10

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: **NC Pre-Reg Landfill**

Relinquished by: (Signature) <i>[Signature]</i>	Date: 2/3/16	Time: 1500	Received by: (Signature) <i>[Signature]</i>
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature) <i>[Signature]</i>	Date: 2/3/18	Time: 16:45	Received for lab by: (Signature) <i>[Signature]</i>

pH _____ Temp _____
 Flow _____ Other _____

Samples returned via: UPS
 FedEx Courier *YES*

Temp: 21°C Bottles Received: 12

Hold # _____
 Condition: (lab use only) *toil ok*

COC Seal Intact: ✓ Y ___ N ___ NA
 pH Checked: 2 NCF:

Date: 2/4/16 Time: 0900

