Asbestos & Lead Based Paint Assessment

City of Spartanburg
595 Charlevoix Street
Spartanburg, South Carolina 29303

Prepared for:
The City of Spartanburg
440 South Church St., Suite B
Spartanburg, South Carolina 29306

Prepared by:
Apex Environmental Management, Inc.
7 Winchester Court
Mauldin, South Carolina 29662

Project Number: 0519-118

June 24, 2019

Environmental Management

Environmental Management

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Apex Project Number 0519-118

June 24, 2019

Mr. Jeff Tillerson
City of Spartanburg
440 South Church Street, Suite B
Spartanburg, SC 29306

Reference: Asbestos and Lead-Based Paint Assessment Services
595 Charlevoix Street
Spartanburg, South Carolina 29303

Dear Mr. Tillerson:

Apex Environmental Management, Inc. (Apex) is pleased to provide the results of our assessment services for the referenced property.

This report and the associated attachments summarize our evaluation of the conditions observed at the project site. The findings presented by Apex are based upon sampling performed in the subject building. There is a chance that undetected ACM may exist in the building between walls or in other areas that would only be exposed during demolition or structural renovations. Should material be discovered that could potentially contain asbestos during the demolition process, additional samples of the material should be collected by a licensed asbestos inspector and submitted to an accredited laboratory for analytical interpretation. Our recommendations are based on the guidelines presented in EPA and/or OSHA regulations.

Please note that this document is not a specification for asbestos removal. It does not contain means and methods for abatement. Quantities are estimates and contractors must verify amounts prior to bidding or removal. If you are planning an abatement project, please contact Apex to discuss the requirements. Use of this document without the express written consent of Apex is at the sole risk of the user and or/abatement contractor.

The conclusions and/or recommendations contained in this report are based on our understanding of the applicable standards at the time this report was prepared. No warranty, expressed or implied, is made. If you have any questions please feel free to contact us at (864) 404-3210.

Respectfully submitted,
APEX ENVIRONMENTAL MANAGEMENT, INC.

Tom Oliver
Director of Operations

Appendices

ASBESTOS AND LEAD BASED PAINT ASSESSMENT

CITY OF SPARTANBURG
595 CHARLEVOIX STREET
SPARTANBURG, SOUTH CAROLINA 29303

APEX PROJECT NO. 0519-118

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SECTION

SECTION I

Asbestos & Lead Evaluation Report

ASBESTOS EVALUATION REPORT
APEX PROJECT NUMBER: 0519-118

Date:	6/24/2019	Page Number:	1 of 4
Client:	City of Spartanburg	Client Contact:	Mr. Jeff Tillerson
Client Address:	440 South Church Street Suite B Spartanburg, SC 29306	Client Phone Number:	(864) 596-2911
Project:	Asbestos Evaluation and Lead Based Paint Assessment		
Property Address:	595 Charlevoix Street Spartanburg, SC 29303		
Assessor:	Tom Oliver	Date of Assessment:	5/31/2019
Company:	Apex Environmental Management 7 Winchester Court Mauldin, SC 29662	Phone Number:	(864) 404-3210
Purpose of Assessment:	Demolition	Age of Structure:	Approximately 80 years
Building Type:	Residential	Number of Stories:	1
Foundation:	CMU Block Crawlspace	Approximate Square Footage	950 SF

EXTERIOR BUILDING MATERIALS

- Pitched wooden framed roof with shingles & no felt. Roll roofing & felt on front porch & adjacent area & on back of house.
- Wooden pressboard siding with felt beneath over wooden clapboard siding.
- Wooden windows with glazing & caulk on the glass panes & on the wooden casings.
- A portion of the windows have no glazing & caulk.
- Wooden doors with no caulk.
- 2 Chimneys with tar – sampled.
- Front porch roof & a portion of the house roof are collapsed.

INTERIOR BUILDING MATERIALS

- Drywall with joint compound & tape walls & ceilings throughout.
- Wooden wall panels with no mastic & drywall beneath throughout.
- 12” x 12” wooden ceiling tiles with no mastic on a grid system.
- Multiple types & layers of vinyl floor with & without mastics. Vinyl flooring exists under carpet & wood.
- Carpet over wooden floors.
- Large amounts of household items & debris throughout the house.
- Large portion of the floors & ceilings are unstable & are collapsed.

SCOPE OF THE SURVEY

The objectives of the asbestos and lead assessment included the following:

- Identification of suspect asbestos-containing material (ACM) and lead based paints (LBP) in readily observable locations. Limited demolition of building finishes was conducted.
- Asbestos survey with sample collection by a South Carolina accredited inspector.
- Suspect ACM analysis by polarized light microscopy (PLM) utilizing EMSL Analytical, Inc. (EMSL) as an NVLAP certified laboratory, their accreditation number is 200841-0.
- Transmission electron microscopy (TEM) analysis of non-friable organically bound materials suspected to contain asbestos and testing negatively by PLM analysis.
- Lead inspection by a lead inspector certified by the Environmental Protection Agency and licensed to conduct LBP surveys in South Carolina.
- In situ analysis of suspected lead based paints by X-ray fluorescence (XRF).
- Presenting the results in a report identifying confirmed ACMs and LBPs.

METHODS

Asbestos Containing Materials

In order to determine if the suspect materials observed during the visual survey contained asbestos, representative bulk samples were collected and placed in sealed packages. Forty-seven (37) bulk samples were collected during the survey and submitted to EMSL Analytical, Inc. (EMSL) in Charlotte, North Carolina for analysis using the EPA recommended method of Polarized Light Microscopy (PLM) coupled with dispersion staining (Method No. EPA 600/M4-82-020, Dec. 1982). EMSL participates in the National Voluntary Laboratory Accreditation Program (NVLAP). Their NVLAP accreditation number is 200841-0. EPA regulations require that multiple samples of each homogeneous material be collected for laboratory analysis and are split into homogeneous layers and each layer is analyzed separately. Fifty-seven (57) samples were analyzed due to layering by PLM method and positive stop methods. In accordance with SC DHEC Regulation 61-86.1, non-friable organically bound materials that are reported to be non-asbestos containing by PLM analysis must also be analyzed by Transmission Electron Microscopy (TEM). Twenty-one (21) samples were analyzed using TEM.

Lead-Based Paint

Lead painted surfaces were analyzed in place using X-ray fluorescence. Painted surfaces were selected based on color of topcoat, underlying layers and substrate on which it was painted.

RESULTS

Asbestos Results

The EPA defines an asbestos-containing material (ACM) as a material containing more than 1% asbestos. OSHA defines ACM as a material containing detectable amounts of asbestos.

Provided below is a general discussion of the asbestos containing materials identified in the residence. A specific *PLM and TEM Data Table* is located in Appendix II of this report and identifies positive materials and designates approximate quantities.

Suspect asbestos containing materials that were identified to be asbestos containing include:

- Approximately 12 LF of tar on 2 chimneys.

Lead Based Paint

OSHA does not recognize a threshold level of lead for definition purposes, only the presence or absence of lead. The current OSHA regulations recognize an airborne action level of thirty micrograms per cubic meter (30 µg/m^3) during an eight-hour workday and a permissible exposure level of fifty micrograms per cubic meter (50 µg/m^3) for employees.

Currently, EPA defines LBP as paint containing in excess of, or equal to, 1.0 mg/cm^2. The laboratory analytical results are included in the LBP Analysis Report in Appendix II of this report. The approximate locations of the paint samples collected and analytical results are presented in the *LBP Data Table* included in Appendix II of this report.

Several surfaces in the building tested positive for lead in excess of the regulatory definition:

Exterior:

- Yellow wooden clapboard siding beneath the pressboard siding.
- White wooden windows & window frames.
- White & beige wooden front porch columns.
- White wooden doors.

Interior:

- Gray wooden bead board ceilings.
- White wooden door frames.
- Red concrete fireplaces.
- Blue wooden doors.

RECOMMENDATIONS AND DISCUSSION

Asbestos Containing Materials

If the above referenced asbestos materials are to be disturbed by renovations or demolition, the asbestos must be removed in accordance with EPA, State of South Carolina and OSHA asbestos regulations. The State of South Carolina, Department of Health and Environmental Control (DHEC) has specific regulations that must be adhered to during asbestos removal/abatement projects.

Apex recommends the following:

1. Abate the asbestos containing materials in the structure prior to renovation or demolition.

2. Follow applicable asbestos regulations during renovation or demolition of the structure. You should be aware that stringent requirements are imposed upon anyone renovating or demolishing a structure in which ACM will be disturbed. This work must be performed in accordance with OSHA asbestos regulations, 29 CFR 1910 & 1926, and NESHAP asbestos regulations 40 CFR 61, subpart M. South Carolina regulations require the accreditation of personnel who work in the asbestos field and notification and permitting fees for asbestos removal projects. There is a 10 working day notification period required prior to abatement of asbestos in a facility. Failure to take proper precautions and actions to protect human health and the environment can result in penalties, danger to personnel, and construction delays.

Lead-Based Paint

Currently EPA defines LBP as paint containing greater than 1.0 milligrams per square centimeter (mg/cm^2) lead or in excess of, or equal to, 0.5 percent lead. Building materials identified as being painted with LBP should be segregated from the other building materials and recycled or disposed of in a municipal lined landfill.

Changes to SC DHEC and federal regulations have changed the disposal options for LBP waste and LBP residue. LBP waste is defined as material such as wood, brick, metal, etc. that is coated with LBP. LBP residue is defined as residue that is generated from the removal (scraped, chipped, sandblasted, chemical means, etc.) of LBP from a structure. The regulations allow LBP waste from residential and commercial structures to be disposed of in Class 2 (construction and demolition debris) and Class 3 (municipal solid waste or industrial) landfills in South Carolina. The management of LBP residue is based on the source and lead concentration characterized by Toxic Characteristic Leaching Procedures (TCLP) to determine if the waste is classified as hazardous or non-hazardous. LBP residues that have TCLP sample results less than 5 milligrams per liter (mg/L) lead may be disposed of in a Class 3 landfill and is considered to be non-hazardous. LBP residues that have TCLP sample results equal to or greater than 5 mg/L lead should be disposed of in a Subtitle C landfill and is considered to be hazardous. However, the landfills should be contacted to determine their specific disposal requirements.

Occupational Safety and Health Administration Lead Regulations apply to actions initiated on lead containing materials. This regulation applies to lead concentrations greater than the analytical limit of detection. This regulation sets exposure levels on airborne lead and does not reference the percent lead in paint. Therefore, initial personal air monitoring should be conducted on workers performing work on surfaces which have a lead concentration of 0.1 mg/cm^2 or above to satisfy the OSHA requirements. If a baseline exposure lower than the OSHA Action Level of 30 micrograms per cubic meter ($\mu g/m^3$) is established, personal air monitoring may be terminated. The full OSHA lead standard should be referenced for compliance.

A copy of this report must be submitted to SCDHEC at least ten (10) working days prior to demolition when applying for a demolition permit.

SECTION II

Asbestos & LBP Data Tables

ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS

Project Name: COS 595 Charlevoix Street ACM/LBP
Sampled By: Tom Oliver

Project Location: 595 Charlevoix Street, Spartanburg, SC 29303
Project Manager: Tom Oliver

Project Number: 0519-118
Date: 5/31/2019

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	Main roof	Roof shingles (2 layers) & no felt	PLM - NAD	Non-Friable	Good	1,050 SF
2						
3			TEM - NAD			
4	Front porch roof & adjacent area & back portion of the roof	Roll roofing (1 layer) & felt (1 layer)	PLM - NAD	Non-Friable	Good	300 SF
5						
6			TEM - NAD			
7	**2 Chimneys**	**Tar on 2 chimneys**	**PLM - 4% chrysotile**	**Non-Friable**	**Good**	**12 LF**
8						
9						
10	Exterior siding	Felt paper beneath wooden pressboard siding	PLM - NAD	Non-Friable	Good	1,40 SF
11						
12			TEM - NAD			
13	Wooden windows	Window glazing	PLM - NAD	Non-Friable	Good	9 EA
14						
15			TEM - NAD			
16	Wooden windows	Window caulk on the glass panes	PLM - NAD	Non-Friable	Good	9 EA
17						
18			TEM - NAD			
19	Wooden window casings	Window caulk on the wooden casings	PLM - NAD	Non-Friable	Good	11 EA
20						
21			TEM - NAD			
22	Throughout	Drywall with joint compound & tape	PLM - NAD	Friable	Damaged	2,300 SF
23						
24						
25						
26						

ASBESTOS SURVEY FIELD DATA SHEET
PLM & TEM ANALYSIS

Project Name: COS 595 Charlevoix Street ACM/LBP
Sampled By: Tom Oliver

Project Location: 595 Charlevoix Street, Spartanburg, SC 29303
Project Manager: Tom Oliver

Project Number: 0519-118
Date: 5/31/2019

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
27	Front right bedroom (under carpet)	Black pattern vinyl floor with felt backing	PLM - NAD	Non-Friable	Good	115 SF
28						
29			TEM - NAD			
30	Living room (under carpet) & dining room (3rd layer)	Brown pattern vinyl floor with felt backing	PLM - NAD	Non-Friable	Good	310 SF
31						
32			TEM - NAD			
33	Dining room (1st & 2nd layers)	Orange pattern vinyl floor & mastic over brown vinyl floor with felt backing	PLM - NAD	Non-Friable	Good	125 SF
34						
35			TEM - NAD			
36	Kitchen (under wood)	Yellow pattern vinyl floor & mastic	PLM - NAD	Non-Friable	Good	90 SF
37						
38			TEM - NAD			
39	Middle left bedroom (under carpet)	Brown/black pattern vinyl floor with felt backing	PLM - NAD	Non-Friable	Good	140 SF
40						
41			TEM - NAD			
42	Bathroom hallway (partially under wood)	Grey square pattern vinyl floor & mastic	PLM - NAD	Non-Friable	Good	15 SF
43						
44			TEM - NAD			
45	Bathroom under carpet	White pattern vinyl floor with no mastic	PLM - NAD	Non-Friable	Good	25 SF
46						
47			TEM - NAD			

NAD = No Asbestos Detected
Bold = Positive For Asbestos
LF = Linear Feet
SF = Square Feet
EA = Each
Chry = Chrysotile
Amos = Amosite
FT3 = Cubic Feet

FIELD DATA SHEET
XRF LBP ANALYSIS

Project Name: COS 595 Charlevoix Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 595 Charlevoix Street, Spartanburg, SC 29303

Project Manager: Tom Oliver

Project Number: 0519-118

Date: 5/31/2019

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m^3)
33	Calibration				1.09
34	Calibration				1.06
35	Calibration				1.05
36	Exterior	Siding	Beige	Pressboard	0.03
37	**Exterior**	**Siding**	**Yellow**	**Wood**	**2.28**
38	**Exterior**	**Window**	**White**	**Wood**	**3.93**
39	**Exterior**	**Window frame**	**White**	**Wood**	**3.96**
40	Exterior	Awning	White	Metal	0.00
41	**Exterior**	**Front porch column**	**White**	**Wood**	**3.14**
42	**Exterior**	**Front porch column**	**Beige**	**Wood**	**3.74**
43	Exterior	Front porch floor/steps	Green	Concrete	0.00
44	Exterior	Front porch ceiling	Beige	Wood	0.00
45	Exterior	Front porch door frame	White	Wood	0.00
46	**Exterior**	**Front porch door**	**White**	**Wood**	**3.02**
47	Exterior	Soffit	White	Wood	0.18
48	Exterior	Fascia	White	Wood	0.19
49	Exterior	Corner trim	White	Wood	0.07
50	**Interior**	**Ceiling**	**Gray**	**Bead board**	**1.57**
51	Interior	Header board	White	Wood	0.58
52	Interior	Ceiling	White	Drywall	0.00
53	Interior	12" x 12" ceiling tile	White	Pressboard	0.00
54	Interior	Crown molding	White	Wood	0.00
55	**Interior**	**Door frame**	**White**	**Wood**	**5.00**
56	Interior	Door	White	Wood	0.38
57	**Interior**	**Fireplace mantle**	**White**	**Wood**	**1.11**

FIELD DATA SHEET
XRF LBP ANALYSIS

Project Name: COS 595 Charlevoix Street ACM/LBP

Sampled By: Tom Oliver

Project Location: 595 Charlevoix Street, Spartanburg, SC 29303

Project Manager: Tom Oliver

Project Number: 0519-118

Date: 5/31/2019

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m^3)
58	**Interior**	**Fireplace**	**Red**	**Concrete**	**3.58**
59	Interior	Window	White	Wood	0.00
60	**Interior**	**Window frame**	**White**	**Wood**	**3.86**
61	Interior	Wall panel	Pink	Wood	0.00
62	Interior	Wall	Gray	Drywall	0.00
63	Interior	Wall panel	Brown	Wood	0.00
64	Interior	Cabinets	Yellow	Metal	0.00
65	Interior	Base board	Blue	Wood	0.00
66	Interior	Door frame	Blue	Wood	0.43
67	**Interior**	**Door**	**Blue**	**Wood**	**1.36**
68	Calibration				1.18
69	Calibration				1.07
70	Calibration				1.02

Bold = LBP FFM = Factory Finish Metal FFM = Factory Finish Vinyl

SECTION III

Laboratory Analytical Results & Chain of Custody

EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

Tel/Fax: (704) 525-2205 / (704) 525-2382

http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411905474
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Attention: Tom Oliver
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (864) 640-5274
Fax:
Received Date: 06/05/2019 9:05 AM
Analysis Date: 06/10/2019
Collected Date: 05/31/2019

Project: 0119-09 COS 595 Charlevoix St. (City of Spartanburg)

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1-Shingle 1 *411905474-0001*	Roof Shingles (2 Layers) & No Felt	White Fibrous Heterogeneous	20% Cellulose	15% Quartz 5% Micaceous Flakes 60% Non-fibrous (Other)	None Detected
1-Shingle 2 *411905474-0001A*	Roof Shingles (2 Layers) & No Felt	Black Fibrous Heterogeneous	15% Cellulose	10% Quartz 5% Micaceous Flakes 70% Non-fibrous (Other)	None Detected
2-Shingle 1 *411905474-0002*	Roof Shingles (2 Layers) & No Felt	White/Black Fibrous Homogeneous	30% Cellulose	10% Quartz 60% Non-fibrous (Other)	None Detected
2-Shingle 2 *411905474-0002A*	Roof Shingles (2 Layers) & No Felt	Black Fibrous Homogeneous	30% Cellulose	10% Quartz 60% Non-fibrous (Other)	None Detected
4-Shingle *411905474-0003*	Roll Roofing (1 Layer) & Felt (1 Layer)	White/Black Fibrous Heterogeneous	5% Glass	10% Quartz 10% Ca Carbonate 75% Non-fibrous (Other)	None Detected
4-Felt *411905474-0003A*	Roll Roofing (1 Layer) & Felt (1 Layer)	Black Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
5-Shingle *411905474-0004*	Roll Roofing (1 Layer) & Felt (1 Layer)	White/Black Fibrous Homogeneous	5% Glass	10% Quartz 20% Ca Carbonate 65% Non-fibrous (Other)	None Detected
5-Felt *411905474-0004A*	Roll Roofing (1 Layer) & Felt (1 Layer)	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
7 *411905474-0005*	Chimney Tar	Black Non-Fibrous Homogeneous	1% Cellulose	5% Micaceous Flakes 90% Non-fibrous (Other)	4% Chrysotile
8 *411905474-0006*	Chimney Tar				Positive Stop (Not Analyzed)
10 *411905474-0007*	Felt Paper under Wooden Pressboard Siding	Black Non-Fibrous Homogeneous	50% Cellulose	50% Non-fibrous (Other)	None Detected
11 *411905474-0008*	Felt Paper under Wooden Pressboard Siding	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
13 *411905474-0009*	Window Glazing	Tan Non-Fibrous Homogeneous		20% Ca Carbonate 80% Non-fibrous (Other)	None Detected
14 *411905474-0010*	Window Glazing	Tan Non-Fibrous Homogeneous		20% Ca Carbonate 80% Non-fibrous (Other)	None Detected
16 *411905474-0011*	Window Caulk on the Panes	Tan/White Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
17 *411905474-0012*	Window Caulk on the Panes	White Non-Fibrous Homogeneous		25% Ca Carbonate 75% Non-fibrous (Other)	None Detected

Initial report from: 06/10/2019 13:27:35

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411905474
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
19 *411905474-0013*	Window Caulk on the Casings	White Non-Fibrous Homogeneous		8% Ca Carbonate 92% Non-fibrous (Other)	None Detected
20 *411905474-0014*	Window Caulk on the Casings	Tan/White Non-Fibrous Homogeneous		20% Ca Carbonate 80% Non-fibrous (Other)	None Detected
22-Drywall *411905474-0015*	Drywall w/ Joint Compound & Tape	Gray Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22-Joint Compound *411905474-0015A*	Drywall w/ Joint Compound & Tape	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
22-Tape *411905474-0015B*	Drywall w/ Joint Compound & Tape	Tan Fibrous Homogeneous	100% Cellulose		None Detected
23-Drywall *411905474-0016*	Drywall w/ Joint Compound & Tape	Gray Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
23-Joint Compound *411905474-0016A*	Drywall w/ Joint Compound & Tape	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
23-Tape *411905474-0016B*	Drywall w/ Joint Compound & Tape	Tan Fibrous Homogeneous	100% Cellulose		None Detected
24-Drywall *411905474-0017*	Drywall w/ Joint Compound & Tape	Gray Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
24-Joint Compound *411905474-0017A*	Drywall w/ Joint Compound & Tape	White Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
24-Tape *411905474-0017B*	Drywall w/ Joint Compound & Tape	Tan Fibrous Homogeneous	100% Cellulose		None Detected
25-Drywall *411905474-0018*	Drywall w/ Joint Compound & Tape	Brown/Gray Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
25-Joint Compound *411905474-0018A*	Drywall w/ Joint Compound & Tape	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
25-Tape *411905474-0018B*	Drywall w/ Joint Compound & Tape	Tan Fibrous Homogeneous	100% Cellulose		None Detected
26-Drywall *411905474-0019*	Drywall w/ Joint Compound & Tape	Brown/Gray Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
26-Joint Compound *411905474-0019A*	Drywall w/ Joint Compound & Tape	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
26-Tape *411905474-0019B*	Drywall w/ Joint Compound & Tape	Tan Fibrous Homogeneous	100% Cellulose		None Detected
27-Flooring w/Backing *411905474-0020* *Layers not separable*	Black Vinyl Floor w/ Felt Backing	Brown/Black Fibrous Heterogeneous	40% Cellulose	60% Non-fibrous (Other)	None Detected

Initial report from: 06/10/2019 13:27:35

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411905474
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
28-Flooring w/Backing *411905474-0021* *Layers not separable*	Black Vinyl Floor w/ Felt Backing	Brown/Black Fibrous Homogeneous	40% Cellulose 3% Synthetic	57% Non-fibrous (Other)	None Detected
30-Flooring w/Backing *411905474-0022* *Layers not separable*	Brown Pattern Vinyl Floor w/ Felt Backing	Gray/Black Fibrous Heterogeneous	45% Cellulose 3% Synthetic	52% Non-fibrous (Other)	None Detected
31-Flooring w/Backing *411905474-0023* *Layers not separable*	Brown Pattern Vinyl Floor w/ Felt Backing	Brown/White/Black Fibrous Homogeneous	40% Cellulose 3% Synthetic	57% Non-fibrous (Other)	None Detected
33-Floor Tile *411905474-0024*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	White/Orange Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
33-Mastic *411905474-0024A*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	Clear Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
33-Flooring w/Backing *411905474-0024B* *Layers not separable*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	Gray/Black Fibrous Heterogeneous	45% Cellulose 3% Synthetic	52% Non-fibrous (Other)	None Detected
34-Floor Tile *411905474-0025*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	White/Orange Non-Fibrous Homogeneous	5% Synthetic	40% Ca Carbonate 55% Non-fibrous (Other)	None Detected
34-Mastic *411905474-0025A*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	Clear Non-Fibrous Homogeneous	1% Cellulose	5% Ca Carbonate 94% Non-fibrous (Other)	None Detected
34-Flooring w/Backing *411905474-0025B* *Layers not separable*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	Tan/Black Fibrous Homogeneous	40% Cellulose 3% Synthetic	57% Non-fibrous (Other)	None Detected
36-Flooring *411905474-0026*	Yellow Pattern Vinyl Floor & Mastic	Tan/White Fibrous Heterogeneous	5% Glass	95% Non-fibrous (Other)	None Detected
36-Mastic *411905474-0026A*	Yellow Pattern Vinyl Floor & Mastic	Tan Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
37-Flooring *411905474-0027*	Yellow Pattern Vinyl Floor & Mastic	Tan/White Fibrous Homogeneous	3% Glass	20% Ca Carbonate 77% Non-fibrous (Other)	None Detected
37-Mastic *411905474-0027A*	Yellow Pattern Vinyl Floor & Mastic	Tan/Clear Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
39-Flooring *411905474-0028*	Brown/Black Pattern Vinyl Floor w/ Felt Backing	Brown Fibrous Homogeneous	4% Cellulose	96% Non-fibrous (Other)	None Detected
39-Backing *411905474-0028A*	Brown/Black Pattern Vinyl Floor w/ Felt Backing	Black Non-Fibrous Homogeneous	50% Cellulose 3% Synthetic	47% Non-fibrous (Other)	None Detected

Initial report from: 06/10/2019 13:27:35

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
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http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411905474
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
40-Flooring *411905474-0029*	Brown/Black Pattern Vinyl Floor w/ Felt Backing	Brown/Tan Non-Fibrous Homogeneous	40% Cellulose	10% Ca Carbonate 50% Non-fibrous (Other)	None Detected
40-Backing *411905474-0029A*	Brown/Black Pattern Vinyl Floor w/ Felt Backing	Black Fibrous Homogeneous	50% Cellulose	50% Non-fibrous (Other)	None Detected
42-Flooring *411905474-0030*	Grey Square Pattern Vinyl Floor & Mastic	Gray/Tan Fibrous Heterogeneous	5% Cellulose 2% Glass	93% Non-fibrous (Other)	None Detected
42-Mastic *411905474-0030A*	Grey Square Pattern Vinyl Floor & Mastic	Tan Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
43-Flooring *411905474-0031* *No mastic present*	Grey Square Pattern Vinyl Floor & Mastic	Gray/Tan Fibrous Homogeneous	3% Glass	20% Ca Carbonate 77% Non-fibrous (Other)	None Detected
45-Flooring *411905474-0032*	White Vinyl Floor w/ No Mastic	Gray/Tan Non-Fibrous Homogeneous	10% Cellulose 2% Glass	88% Non-fibrous (Other)	None Detected
45-Mastic *411905474-0032A*	White Vinyl Floor w/ No Mastic	Tan Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
46-Flooring *411905474-0033*	White Vinyl Floor w/ No Mastic	Tan/Beige Fibrous Homogeneous	5% Synthetic	25% Ca Carbonate 70% Non-fibrous (Other)	None Detected
46-Mastic *411905474-0033A*	White Vinyl Floor w/ No Mastic	Tan Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected

Analyst(s)
Eric Loomis (31)
Katherine Sluder (26)

Lee Plumley, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312

Initial report from: 06/10/2019 13:27:35

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
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EMSL Order: 411905474
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Attention: Tom Oliver
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (864) 640-5274
Fax:
Received Date: 06/05/2019 9:05 AM
Analysis Date: 06/14/2019
Collected Date: 05/31/2019

Project: 0119-09 COS 595 Charlevoix St. (City of Spartanburg)

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
3-Shingle 1 *411905474-0034*	Roof Shingles (2 Layers) & No Felt	White/Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
3-Shingle 2 *411905474-0035*	Roof Shingles (2 Layers) & No Felt	Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
6-Shingle *411905474-0036*	Roll Roofing (1 Layer) & Felt (1 Layer)	Gray/Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
6-Felt *411905474-0037*	Roll Roofing (1 Layer) & Felt (1 Layer)	Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
12 *411905474-0038*	Pressboard Siding	Black Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
15 *411905474-0039*	Window Glazing	White Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
18 *411905474-0040*	Window Caulk on the Panes	White Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
21 *411905474-0041*	Window Caulk on the Casings	White Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
29- Flooring w/ Back *411905474-0042*	Black Vinyl Floor w/ Felt Backing	Red/Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
32-Flooring w/Back *411905474-0043*	Brown Pattern Vinyl Floor w/ Felt Backing	Tan/Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
35-Floor Tile *411905474-0044*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	Tan Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
35-Mastic *411905474-0045*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	Tan Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 06/14/2019 12:50:52

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http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411905474
Customer ID: AXEM25
Customer PO:
Project ID: City of Spartanburg

Attention: Tom Oliver
Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

Phone: (864) 640-5274
Fax:
Received Date: 06/05/2019 9:05 AM
Analysis Date: 06/14/2019
Collected Date: 05/31/2019

Project: 0119-09 COS 595 Charlevoix St. (City of Spartanburg)

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
35-Flooring w/ Back *411905474-0046*	Orange Pattern Vinyl Floor & Mastic over Brown Vinyl Floor w/ Felt Backing	Gray/Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
38-Flooring *411905474-0047*	Yellow Pattern Vinyl Floor & Mastic	Tan Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
38-Mastic *411905474-0048*	Yellow Pattern Vinyl Floor & Mastic	Tan Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
41-Flooring *411905474-0049*	Brown/Black Pattern Vinyl Floor w/ Felt Backing	Brown/Green Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
41-Backing *411905474-0050*	Brown/Black Pattern Vinyl Floor w/ Felt Backing	Black Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
44-Flooring *411905474-0051*	Grey Square Pattern Vinyl Floor & Mastic	Tan Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
44-Mastic *411905474-0052*	Grey Square Pattern Vinyl Floor & Mastic	Tan Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
47-Flooring *411905474-0053*	White Vinyl Floor w/ No Mastic	Beige Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
47-Mastic *411905474-0054*	White Vinyl Floor w/ No Mastic	Tan Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected

Analyst(s)

Aaron Hartley (21)

Lee Plumley, Laboratory Manager
or other approved signatory

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 06/14/2019 12:50:52

OrderID: 411905474

EMSL Analytical, Inc.
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Pineville, NC 28134
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EMSL ANALYTICAL, INC.
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Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411905474

Company: Apex Environmental Management, Inc.	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 7 Winchester Court	
City: Mauldin **State/Province:** SC	**Zip/Postal Code:** 29662 **Country:** US
Report To (Name): Tom Oliver	**Telephone #:** 864-404-3210
Email Address: toliver@apex-ehs.com	**Fax #:** 864-404-3213 **Purchase Order:**
Project Name/Number: 0119-09 COS 595 Charlevoix St.	**Please Provide Results:** ☐ Fax ☑ Email ☐ Mail
U.S. State Samples Taken: SC	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☑ 96 Hour ☐ 1 Week ☐ 2 Week

**For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PLM - Bulk (reporting limit)	TEM – Bulk
☐ PLM EPA 600/R-93/116 (<1%) 4 Day TAT	☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1 1 week TAT
☐ PLM EPA NOB (<1%)	☐ NY ELAP Method 198.4 (TEM)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
☐ NIOSH 9002 (<1%)	☐ TEM Qualitative via Filtration Prep Technique
☐ NY ELAP Method 198.1 (friable in NY)	☐ TEM Qualitative via Drop Mount Prep Technique
☐ NY ELAP Method 198.6 NOB (non-friable-NY)	**Other**
☐ OSHA ID-191 Modified	☐
☐ Standard Addition Method	

☑ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 5/31/2019

Samplers Name: Tom Oliver **Samplers Signature:**

Sample #	HA #	Sample Location	Material Description
1		Roof shingles (2 layers) + no	PLM
2		felt |	|
3		—	TEM
4		Roll roofing (1 layer) + felt	PLM
5		(1 layer) |	|
6		—	TEM
7		Chimney tar	PLM
8		|	|
9		—	TEM

Client Sample # (s): 1-47 **Total # of Samples:** 47

Relinquished (Client): **Date:** 6-4-19 **Time:** 12:30 PM

Received (Lab): KW **Date:** 6/5/19 **Time:** 9:05AM EST

Comments/Special Instructions:
Positive stop on all analysis. If joint compound is positive then positive stop on drywall and tape layers. Use City of Spartanburg Project special pricing. Ask Jason McDonald for details.

7957 2039 3565

OrderID: 411905474

EMSL ANALYTICAL, INC.
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Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411905474

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
10		Felt paper under wooden	PLM
11		pressboard siding	1
12			TEM
13		Window glazing	PLM
14			1
15			TEM
16		Window caulk on the	PLM
17		panes	1
18			TEM
19		Window caulk on the	PLM
20		casings	1
21			TEM
22		Drywall w/ joint compound	PLM
23		+ tape	
24			
25			
26			
27		Black vinyl floor w/ felt	PLM
28		backing	1
29			TEM
30		Brown pattern vinyl floor	PLM
31		w/ felt backing	1
32			TEM

*Comments/Special Instructions:

Positive stop on all analysis. If joint compound is positive then positive stop on drywall and tape layers. Use City of Spartanburg Project special pricing. Ask Jason McDonald for details.

OrderID: 411905474

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Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411905474

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
33		Orange pattern vinyl floor &	PLM
34		mastic over brown vinyl floor w/	〃
35		felt backing 〃	TEM
36		Yellow pattern vinyl floor &	PLM
37		mastic 〃	〃
38		〃	TEM
39		Brown/black pattern vinyl floor	PLM
40		w/ felt backing 〃	〃
41		〃	TEM
42		Grey square pattern vinyl	PLM
43		floor & mastic 〃	〃
44		〃	TEM
45		White vinyl floor w/ no	PLM
46		mastic 〃	〃
47		〃	TEM

*Comments/Special Instructions:

Positive stop on all analysis. If joint compound is positive then positive stop on drywall and tape layers. Use City of Spartanburg Project special pricing. Ask Jason McDonald for details.

Page 3 of 3 pages

SECTION IV

Photographic Log


Photo 1 – 595 Charlevoix Street in Spartanburg, South Carolina


Photo 2 – Roof shingles & no felt on the roof


Photo 3 – Roll roofing & felt on the front porch roof & adjacent area & back portion of the house roof


Photo 4 – Roll roofing & felt on the front porch roof & adjacent area & back portion of the house roof


Photo 5 – Chimney tar on 1 of 2 chimneys


Photo 6 – Chimney tar on 1 of 2 chimneys

Photo 7 – Felt paper beneath wooden pressboard siding

Photo 8 – Wooden window glazing & caulk on glass panes

Photo 9 – Window caulk on the wooden casings

Photo 10 – Drywall with joint compound & tape throughout

Photo 11 – Black pattern vinyl floor with felt backing in the front right bedroom under carpet

Photo 12 – Brown pattern vinyl floor with felt backing in the living room (under carpet) & dining room (3rd layer)

Photo 13 – Orange pattern vinyl floor & mastic over brown vinyl floor with felt backing in the dining room 1st & 2nd layers)

Photo 14 – Yellow pattern vinyl floor & mastic min the kitchen under wood

Photo 15 – Brown/black pattern vinyl floor with felt backing in the middle left bedroom under carpet

Photo 16 – Grey square pattern vinyl floor & mastic in the bathroom hallway (partially under wood)

Photo 17 – White pattern vinyl floor with no mastic in the bathroom under carpet

Photo 18 – Typical view of unstable & collapsed flooring

Photo 19 – Typical view of unstable & collapsed ceiling

Photo 20 – Typical view of unstable & collapsed flooring

Photo 21 – Typical view of large amount of household items & debris throughout

Photo 22 – Typical view of large amount of household items & debris throughout

SECTION V

SC DHEC Asbestos Inspector License

SCDHEC ISSUED

Asbestos ID Card

Thomas H Oliver

		Expiration Date:
CONSULTBI	**BI-00680**	**01/18/20**
AIRSAMPLER	**AS-00202**	**05/08/20**

This card is nontransferable and [illegible] invalid if loaned or given to another person for identification. This card will also be invalid if altered or defaced. This card is property of SCDHEC. It must be returned to the department if the holder's accreditation is revoked or if this card is invalidated. Any person performing regulated asbestos activities without current accreditation shall be subject to legal sanction. This card must be returned upon expiration and/or issuance of a new card.

YOU MUST HAVE THIS IDENTIFICATION CARD WITH YOU ON THE JOB.

For information of corrections contact:

SCDHEC – Asbestos Section
2600 Bull Street
Columbia, SC 29201
(803) 898-4289