TENNESSEE DEPARTMENT OF TRANSPORTATION
ASBESTOS INSPECTION REPORT

I-24 Silliman Evans Bridge over Cumberland River
Bridge ID Number 19I00240119
Davidson County, Tennessee

Prepared by:

K. S. WARE & ASSOCIATES, L.L.C.
54 Lindsley Avenue
Nashville, Tennessee 37210

May 2, 2014
KSWA Project Number: 100-14-0021

Daryl Corlew
Tennessee Asbestos Inspector Accreditation [A-I-78606-34727]

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1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials completed on the bridge identified in Section 1.1. The inspection was completed in accordance with the State of Tennessee, Department of Transportation Environmental Division, Social and Cultural Resources Office, Hazardous Materials Section requirements.

1.1 TDOT BRIDGE IDENTIFICATION

The bridge is identified in the TDOT Project System/Bridge Management System as:

TDOT PE Number: 19010-4164-04
TDOT PIN Number: 119964.00
Bridge Inventory Number: 19I00240019
State Route Number: I-24
Log Mile Number: 15.42

1.2 GENERAL DESCRIPTION

The I-24 Silliman Evans Bridge is a concrete structure over the Cumberland River in Davidson County, Tennessee. The bridge consists of three main spans and 37 approach spans. The existing bridge measures at 2362 feet in length and consists of asphalt, concrete, and steel components. **Figure – 1** shows the general location of the bridge.

2.0 INSPECTION

The identification of asbestos-containing materials (ACM) is performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. Asbestos-containing materials (ACM) are those materials found to contain greater than one percent asbestos by calibrated visual area estimation (CVAE) using Polarized Light Microscopy (PLM).

Bulk sampling is a procedure in which representative homogeneous sampling areas in a structure are identified and then sampled. A homogeneous sampling area is defined as an area that contains material of the same type (uniform in color and texture) and is applied during the same general time period. Once the homogeneous sampling areas are identified, bulk samples of suspect materials are obtained at the discretion of our inspectors, based on site conditions and past experience.

2.1 PERSONNEL AND DATE(S) OF INSPECTION

The sampling and field activities were performed on April 16, 17, 22, 23 and 29, 2014 by Daryl Corlew. Mr. Corlew is an accredited State of Tennessee Asbestos Inspectors. A copy of Mr. Corlew's current accreditation from the State of Tennessee is included in **Appendix A**.

2.2 VISUAL SURVEY

KSWA's survey began with a walk-through and visual survey of the structure located on the property. The visual survey consisted of:

- sketching the structure and/or verifying the plans provided
- locating and identifying homogeneous areas of suspect materials that may contain asbestos minerals
- determining applicable sampling locations

Table-1 lists the homogeneous areas identified during our visual survey.

2.3 ACCESS TO BRIDGE COMPONENTS

Individual bridge components were accessed by the following methods. Traffic control and a reach-all truck provided by TDOT were utilized in the bridge survey.

2.3.1 Top of Bridge Deck, Drain Material, Expansion Joints, and Bridge Decking

The asphalt bridge deck, drain material, and expansion joints were accessed and sampled from the top and shoulders of the bridge. The concrete bridge decking was accessed and sampled from beneath the bridge along the sides.

2.3.2 Underside of Bridge Deck

The underside of the steel bridge deck was accessed from beneath the bridge from the ground and from the reach-all truck. No samples were taken from the bridge deck underneath the bridge due to the steel construction material of the deck.

2.3.3 Bridge Beams

The steel bridge beams were accessed from beneath the bridge from the ground and from the reach-all truck. No samples were taken from the beams due to the steel construction material of the beams.

2.3.4 Bridge Piers/Bents and Supports

The two sets of concrete and steel bridge supports were accessed and sampled from beneath the bridge from the ground and from the reach-all truck. No steel samples were taken from the bridge piers due to the steel material.

2.3.5 Guardrails

The bridge guardrails were accessed and sampled from the top of the bridge.

2.3.6 Abutments, Abutment Slopes, and Wing Walls

The concrete bridge abutments, abutment slopes, and wing walls were accessed and sampled from beneath the bridge.

Table – 1: Bridge Component Descriptions

Homogeneous Area	Description	No. Of Samples
A	Concrete North Abutment	3
B	Concrete North Abutment Slope	3
C	Concrete Piers	7
D	Concrete Southwest Abutment	3
E	Concrete Southeast Abutment	3
F	Concrete Wing Wall	3
G	Asphalt Overlay	7
H	Concrete Guardrail	7
I	Concrete Inner Piers	3
J	Expansion Joint	3
K	Drain Material	3
L	Concrete Decking	4
M	Concrete Piers	4

3.0 ANALYTICAL PROCEDURES

3.1 ASBESTOS ANALYSIS PROCEDURES

The bulk samples are analyzed in the laboratory using Polarized Light Microscopy (PLM) coupled with dispersion staining. PLM is an analytical method for asbestos identification, which identifies the specific asbestos minerals by their unique optical properties. The optical properties are a result of the mineral's chemical composition, physical atomic structure, and visual morphology. This is the U.S. Environmental Protection Agency (EPA) recommended method of analysis for asbestos identification in bulk samples.

In most instances samples from each homogeneous area are analyzed on a “first positive stop” basis. “First positive stop” means that if one sample from a homogeneous area of material is found to contain greater than one percent asbestos, the remaining samples from that homogeneous area are not analyzed and the material is assumed to contain asbestos. In addition, samples which contain multiple layers, or that have associated mastic or adhesive backing, are analyzed as two or more separate samples. Samples that are identified to contain 1% or less asbestos minerals have been point counted by the laboratory for confirmation.

3.2 LABORATORY NAME AND ACCREDITATION

The bulk samples collected for this inspection were analyzed by a laboratory that has received accreditation from the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The name and accreditation number of the analytical laboratory that analyzed the samples for this inspection are indicated in **Table - 2**:

Table – 2: Analytical Laboratory

Laboratory	EMSL Analytical, Inc.
NVLAP Number	102104-0

4.0 REGULATORY OVERVIEW

4.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The EPA’s National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (40 CFR 61, Subpart B) requires that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

4.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAPS include:

Friable asbestos-containing material (ACM), is defined by the Asbestos NESHAP, as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. (Sec. 61.141)

Non-friable ACM is any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. EPA also defines two categories of non-friable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product which contains more than one percent (1%) asbestos as determined using polarized light microscopy (PLM) according to the method specified in Appendix A, Subpart F, 40 CFR Part 763. (Sec. 61.141)

Category II non-friable ACM is any material, excluding Category I non-friable ACM, containing more than one percent (1%) asbestos as determined using polarized light microscopy according to the methods specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (Sec. 61.141)

"Regulated Asbestos-Containing Material" (RACM) is (a) friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Friable materials are defined as those which can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

5.0 RESULTS

The results of the asbestos inspection are presented in the following sections.

5.1 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

Fifty-three samples were obtained from the I-24 Silliman Evans Bridge over the Cumberland River. Multiple samples of each homogeneous area were collected in accordance with State of Tennessee, Department of Transportation Environmental Division, Social and Cultural Resources Office, Hazardous Materials Section requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on homogeneous areas of suspect materials, as described in Section 2.2.

Building material homogeneous areas sampled included: concrete abutments, concrete inner and outer piers, concrete abutment slopes, concrete wing walls, asphalt overlay, concrete guardrails, drain material, expansion joints, and concrete decking. Photographs of the subject Davidson County Bridge are presented in **Appendix B.** Photo 8 shows the approximate area from which the concrete decking samples were collected. The analytical results of all the samples collected from the property, along with the chain-of-custody records, are included in **Appendix C**.

Of the various material sampled, the textures on the outer concrete piers, north, southeast, and southwest concrete abutments, southwest concrete wing wall, and decking were found to be asbestos-containing. Although no samples of the texture covering the outside of the guardrails were collected, it is assumed that these textures are asbestos-containing due to appearing similar to other positive samples. Samples with detections of ACM were also analyzed using the 400 point count procedure. **Table – 3** summarizes the various sampled materials which were found to contain asbestos as well as point counting results. Photographs of the different homogeneous areas sampled that tested positive for containing asbestos are presented in **Appendix B.**

Table – 3: Materials Containing Asbestos

Sample No.	HA/Material Description	Location (Bridge Component)	Approx. Qty.	Friable (Y/N)	Asbestos Type and Content
W-SE-1-Texture*	Concrete Abutment	North Abutment - West	North Abutment	No	1.50% Chrysotile
W-SE-2-Texture**	Concrete Abutment	North Abutment - Middle	North Abutment	No	First Positive Stop
W-SE-3-Texture**	Concrete Abutment	North Abutment - East	North Abutment	No	First Positive Stop
W-SE-7-Texture*	Concrete Piers	North	All Piers	No	2.75% Chrysotile
W-SE-8-Texture**	Concrete Piers	North	All Piers	No	First Positive Stop
W-SE-9-Texture**	Concrete Piers	North-Middle	All Piers	No	First Positive Stop
W-SE-10-Texture**	Concrete Piers	North-Middle	All Piers	No	First Positive Stop
W-SE-11-Texture**	Concrete Piers	South-SE	All Piers	No	First Positive Stop
W-SE-12-Texture**	Concrete Piers	South-SW	All Piers	No	First Positive Stop
W-SE-13-Texture**	Concrete Piers	South	All Piers	No	First Positive Stop
W-SE-14-Texture*	Concrete Abutment	Southwest	Southwest Abutment	No	3.00% Chrysotile
W-SE-15-Texture**	Concrete Abutment	Southwest	Southwest Abutment	No	First Positive Stop
W-SE-16-Texture**	Concrete Abutment	Southwest	Southwest Abutment	No	First Positive Stop
W-SE-17-Texture*	Concrete Abutment	Southeast	Southeast Abutment	No	1.25% Chrysotile
W-SE-18-Texture**	Concrete Abutment	Southeast	Southeast Abutment	No	First Positive Stop
W-SE-19-Texture**	Concrete Abutment	Southeast	Southeast Abutment	No	First Positive Stop
W-SE-20-Texture*	Concrete Wing Wall	Southwest	South Wing Wall	No	1.00% Chrysotile
W-SE-21-Texture*	Concrete Wing Wall	Southwest	South Wing Wall	No	1.25% Chrysotile
W-SE-22-Texture*	Concrete Wing Wall	Southwest	South Wing Wall	No	0.75% Chrysotile
W-SE-47 Texture*	Concrete Decking	Northeast	Bridge Decking	No	1.25% Chrysotile
W-SE-48 Texture*	Concrete Decking	Southwest	Bridge Decking	No	2.25% Chrysotile
W-SE-49 Texture*	Concrete Decking	Southeast	Bridge Decking	No	0.75% Chrysotile

***Sample was Point Counted for confirmation**

****Sample was not analyzed. Assumed to be asbestos-containing using "First Positive Stop" (FPS) method**

6.0 QUALIFICATIONS

The information presented herein is based on information obtained during the site visit and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, K. S. Ware & Associates, L.L.C. requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted.

This report has been prepared on behalf of the Tennessee Department of Transportation. This document is not a Bid Document or a Contract Document. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Furthermore, any party, other than our Client, relying on this document is cautioned that all conclusions made or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.

Figure – 1: Site Vicinity Map

APPENDIX A:
ASBESTOS INSPECTION PERSONNEL ACCREDITATIONS

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

Date Issued: 2/24/2

Initial

Daryl J Corlew

DOB	Sex	HGT	WGT
12-May-1988	M	5' 11"	180

Discipline	Accreditation	Expiration
Inspector	A-I-78606-34727	Feb-28-2015
Project Monitor	A-PM-78606-27982	Apr-30-2014

Asbestos Accreditation

APPENDIX B: PHOTOGRAPHS

Photo 1: View of the I-24 (Silliman Evans) Eastbound Bridge over Cumberland River in Davidson County, Tennessee.

Photo 2: View of the I-24 (Silliman Evans) Eastbound Bridge over Cumberland River in Davidson County, Tennessee from below.

Photo 3: View of the Asbestos-Containing North Abutment beneath the I-24 Bridge over the Cumberland River

Photo 4: View of the Asbestos-Containing Southwest Abutment beneath the I-24 Bridge over the Cumberland River

Photo 5: View of the Asbestos-Containing Southeast Abutment beneath the I-24 Bridge over the Cumberland River

Photo 6: View of one of the Asbestos-Containing Wing Walls on the Southwest Abutment beneath the I-24 Bridge over the Cumberland River

Photo 7: View of the Asbestos-Containing Outer Piers beneath the I-24 Bridge over the Cumberland River

Photo 8: View of the Asbestos-Containing Bridge Deck from the side on the I-24 Bridge over the Cumberland River

APPENDIX C:
ASBESTOS SAMPLE LABORATORY ANALYSIS DATA

EMSL Analytical, Inc.
706 Gralin Street

Kernersville, NC 27284
PHONE: (336) 992-1025
FAX: (336) 992-4175

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 2105

Company : K.S. Ware and Associates	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 54 Lindsley Ave	
City: Nashville **State/Province:** TN	**Zip/Postal Code:** 37210 **Country:** United States
Report To (Name): Daryl Corlew	**Telephone #:** 615-255-9702
Email Address: dcorlew@kswarellc.com	**Fax #:** 615-256-5873 **Purchase Order:**
Project Name/Number: West Silliman Evans 100-14-0021	**Please Provide Results:** ☐ Fax ☑ Email ☐ Mail
U.S. State Samples Taken: TN	**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%)	☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
☐ 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:** April 17, 2014

Samplers Name: Daryl Corlew **Samplers Signature:** Daryl Corlew

Sample #	HA #	Sample Location	Material Description
W-SE-1	A	North - West	Concrete Abutment
W-SE-2	A	North - Middle	" "
W-SE-3	A	North - East	" "
W-SE-4	B	North - West	Concrete Abutment Slope
W-SE-5	B	North - Middle	" "
W-SE-6	B	North - East	" "
W-SE-7	C	North	Concrete Pier
W-SE-8	C	North	" "
W-SE-9	C	North Middle	" "
W-SE-10	C	North Middle	" "

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

Relinquished (Client): **Date:** **Time:**

Received (Lab): SF **Date:** 4·22·14 **Time:** 10:25

Comments/Special Instructions:
W-SE KSWA project Number 100-14-0021, TAT 24 hrs

1Z245 3AR 13 9457 7072

EMSL Analytical, Inc.
706 Gralin Street

Kernersville, NC 27284
PHONE: (336) 992-1025
FAX: (336) 992-4175

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 2105

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

Sample #	HA #	Sample Location	Material Description
W-SE-11	C	South SE	Concrete Pier
W-SE-12	C	South SW	" "
W-SE-13	C	South	" "
W-SE-14	D	SW	Concrete Abutment
W-SE-15	D	SW	" "
W-SE-16	D	SW	" "
W-SE-17	E	SE	Concrete Abutment
W-SE-18	E	SE	" "
W-SE-19	E	SE	" "
W-SE-20	F	South	Wingwall
W-SE-21	F	South	" "
W-SE-22	F	South	" "

***Comments/Special Instructions:**
W-SE KSWA project Number 100-14-0021, TAT 24 hrs

Page 2 of 2 pages

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706 Gralin Street

Kernersville, NC 27284
PHONE: (336) 992-1025
FAX: (336) 992-4175

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

EMSL Order Number *(Lab Use Only)*: 2175

Company : K.S. Ware and Associates	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 54 Lindsley Ave	
City: Nashville **State/Province:** TN	**Zip/Postal Code:** 37210 **Country:** United States
Report To (Name): Daryl Corlew	**Telephone #:** 615-255-9702
Email Address: dcorlew@kswarellc.com	**Fax #:** 615-256-5873 **Purchase Order:**
Project Name/Number: 100-14-0021	**Please Provide Results:** ☐ Fax ✓ Email ☐ Mail
U.S. State Samples Taken: TN	**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.*

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☐ 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:** 4/22/2014 and 4/23/2014

Samplers Name: Daryl Corlew **Samplers Signature:** Daryl Corlew

Sample #	HA #	Sample Location	Material Description
W-SE-23	G	North	Asphalt Overlay
W-SE-24	G	North middle	" "
W-SE-25	G	Middle	" "
W-SE-26	G	South middle	" "
W-SE-27	G	South	" "
W-SE-28	G	Southwest	" "
W-SE-29	G	Southeast	" "
W-SE-30	H	Northwest	Concrete Guardrail
W-SE-31	H	Northeast	" "
W-SE-32	H	Middle west	" "

Client Sample # (s): W-SE-23 G - W-SE-45 K **Total # of Samples:** 23

Relinquished (Client): Daryl Corlew **Date:** 4/23/14 **Time:** 11:00 am

Received (Lab): NS **Date:** 4/24/14 **Time:** 10:45

Comments/Special Instructions:
West Silliman Evans Bridge - 24 hr TAT

UPS 1Z2453AR1391954491

Page 1 of 2 pages

EMSL Analytical, Inc.
706 Gralin Street

Kernersville, NC 27284
PHONE: (336) 992-1025
FAX: (336) 992-4175

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Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 2175

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

Sample #	HA #	Sample Location	Material Description
W-SE-33	H	Middle east	Concrete Guardrail
W-SE-34	H	Southwest	" "
W-SE-35	H	South middle	" "
W-SE-36	H	Southeast	" "
W-SE-37	I	North over river	Concrete Pier
W-SE-38	I	Middle over river	" "
W-SE-39	I	South over river	" "
W-SE-40	J	Northeast	Drain Material
W-SE-41	J	North middle	" "
W-SE-42	J	Southeast	" "
W-SE-43	K	North	Expansion Joints
W-SE-44	K	Middle	" "
W-SE-45	K	South	" "

***Comments/Special Instructions:**
West Silliman Evans Bridge - 24 hr TAT

Page 2 of 2 pages

OrderID: 021402105

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

EMSL Order Number *(Lab Use Only)*: 2278

EMSL Analytical, Inc.
706 Gralin Street

Kernersville, NC 27284
PHONE: (336) 992-1025
FAX: (336) 992-4175

Company: K.S. Ware and Associates	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 54 Lindsley Ave	
City: Nashville **State/Province:** TN	**Zip/Postal Code:** 37210 **Country:** United States
Report To (Name): Daryl Corlew	**Telephone #:** 615-255-9702
Email Address: dcorlew@kswarellc.com	**Fax #:** 615-256-5873 **Purchase Order:**
Project Name/Number: 100-14-0021 SE-WEST	**Please Provide Results:** ☐ Fax ✓ Email ☐ Mail
U.S. State Samples Taken: TN	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

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

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☐ 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:** 4/29/2014

Samplers Name: Darly Corlew **Samplers Signature:** Daryl Corlew

Sample #	HA #	Sample Location	Material Description
W-SE-46	L	NW	Concrete Decking
W-SE-47	L	NE	" "
W-SE-48	L	SW	" "
W-SE-49	L	SE	" "
W-SE-50	M	NW	Concrete Piers
W-SE-51	M	NE	" "
W-SE-52	M	SW	" "
W-SE-53	M	SE	" "

Client Sample # (s): W-SE-46 - W-SE-53 **Total # of Samples:** 8

Relinquished (Client): Daryl Corlew **Date:** 4/29/14 **Time:** 10:15am

Received (Lab): SF **Date:** 4.30.14 **Time:** 10:20

Comments/Special Instructions:

1Z 245 3AR 01 9189 2302

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Received:	04/22/14 10:25 AM
Analysis Date:	4/23/2014
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Project: **West Sillman Evans 100-14-0021**

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**
W-SE-1-Texture *021402105-0001*	Concrete Abutment	Gray/Beige Non-Fibrous Homogeneous	<1% <1% <1%	Fibrous (other) Glass Cellulose	97%	Non-fibrous (other)	**3% Chrysotile**
W-SE-1-Concrete *021402105-0001A*	Concrete Abutment	Gray/Tan Non-Fibrous Homogeneous			10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-2-Texture *021402105-0002*	Concrete Abutment						**Stop Positive (Not Analyzed)**
W-SE-2-Concrete *021402105-0002A*	Concrete Abutment	Gray/Tan Non-Fibrous Homogeneous			5% 95%	Quartz Non-fibrous (other)	**None Detected**
W-SE-3-Texture *021402105-0003*	Concrete Abutment						**Stop Positive (Not Analyzed)**
W-SE-3-Concrete *021402105-0003A*	Concrete Abutment	Gray/Tan Non-Fibrous Heterogeneous			10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-4 *021402105-0004*	Concrete Abutment Slope	Brown/Gray/Tan Non-Fibrous Homogeneous	<1%	Cellulose	10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-5 *021402105-0005*	Concrete Abutment Slope	Gray/Tan Non-Fibrous Homogeneous			5% 95%	Quartz Non-fibrous (other)	**None Detected**

Analyst(s)

James Cole (3)
Nicole Shutts (11)

Stephen Bennett, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Report Amended: 04/28/2014 16:06:58 Replaces the Inital Report 04/23/2014 13:47:46. Reason Code: Client-Change to Appearance

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Project: **West Sillman Evans 100-14-0021**

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**
W-SE-6 *021402105-0006*	Concrete Abutment Slope	Gray/Tan Non-Fibrous Heterogeneous			10% 90%	Quartz Non-fibrous (other)		**None Detected**
W-SE-7-Texture *021402105-0007*	Concrete Pier	Gray/Beige Non-Fibrous Homogeneous	<1% <1%	Cellulose Fibrous (other)	97%	Non-fibrous (other)	**3%**	**Chrysotile**
W-SE-8-Texture *021402105-0008*	Concrete Pier	Gray/Beige Non-Fibrous Homogeneous	1% <1%	Cellulose Fibrous (other)	97%	Non-fibrous (other)	**2%**	**Chrysotile**
W-SE-9-Texture *021402105-0009*	Concrete Pier							**Stop Positive (Not Analyzed)**
W-SE-10-Texture *021402105-0010*	Concrete Pier							**Stop Positive (Not Analyzed)**
W-SE-11-Texture *021402105-0011*	Concrete Pier							**Stop Positive (Not Analyzed)**
W-SE-12-Texture *021402105-0012*	Concrete Pier							**Stop Positive (Not Analyzed)**
W-SE-13-Texture *021402105-0013*	Concrete Pier							**Stop Positive (Not Analyzed)**

Analyst(s)

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Project: **West Sillman Evans 100-14-0021**

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**
W-SE-14-Texture *021402105-0014*	Concrete Abutment	Gray/Tan/Beige Non-Fibrous Homogeneous	<1% <1% <1%	Cellulose Glass Fibrous (other)	97%	Non-fibrous (other)	**3%**	**Chrysotile**
W-SE-15-Texture *021402105-0015*	Concrete Abutment						**Stop Positive (Not Analyzed)**	
W-SE-16-Texture *021402105-0016*	Concrete Abutment						**Stop Positive (Not Analyzed)**	
W-SE-17-Texture *021402105-0017*	Concrete Abutment	Gray/Tan Non-Fibrous Homogeneous	<1%	Cellulose	2% 96%	Quartz Non-fibrous (other)	**2%**	**Chrysotile**
W-SE-18-Texture *021402105-0018*	Concrete Abutment						**Stop Positive (Not Analyzed)**	
W-SE-19-Texture *021402105-0019*	Concrete Abutment						**Stop Positive (Not Analyzed)**	
W-SE-20-Texture *021402105-0020*	Wingwall	Gray/Tan Non-Fibrous Homogeneous	1%	Cellulose	3% 96%	Quartz Non-fibrous (other)	**<1%**	**Chrysotile**
W-SE-21-Texture *021402105-0021*	Wingwall	Gray/Tan Non-Fibrous Homogeneous	<1% <1%	Cellulose Glass	3% 97%	Quartz Non-fibrous (other)	**<1%**	**Chrysotile**

Analyst(s)

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Nicole Shutts (11)

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Project: **West Sillman Evans 100-14-0021**

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**
W-SE-22-Texture	Wingwall	Gray/Tan			5%	Quartz	**<1%**	**Chrysotile**
021402105-0022		Non-Fibrous Heterogeneous			95%	Non-fibrous (other)		

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Received:	04/24/14 10:45 AM
Analysis Date:	4/25/2014
Collected:	

Project: **100-14-0021**

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**
W-SE-23 *021402175-0001*	Asphalt Overlay	Brown/Black Non-Fibrous Homogeneous	<1% <1%	Cellulose Glass	5% 95%	Quartz Non-fibrous (other)	**None Detected**
W-SE-24 *021402175-0002*	Asphalt Overlay	Brown/White/Black Non-Fibrous Homogeneous	1%	Cellulose	10% 89%	Quartz Non-fibrous (other)	**None Detected**
W-SE-25 *021402175-0003*	Asphalt Overlay	Black Non-Fibrous Homogeneous			10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-26 *021402175-0004*	Asphalt Overlay	Brown/Black Non-Fibrous Homogeneous	<1%	Cellulose	10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-27 *021402175-0005*	Asphalt Overlay	Brown/Black Non-Fibrous Homogeneous	<1%	Cellulose	5% 95%	Quartz Non-fibrous (other)	**None Detected**
W-SE-28 *021402175-0006*	Asphalt Overlay	Brown/Gray/Black Non-Fibrous Heterogeneous			5% 95%	Quartz Non-fibrous (other)	**None Detected**
W-SE-29 *021402175-0007*	Asphalt Overlay	Brown/Gray/Black Non-Fibrous Heterogeneous			5% 95%	Quartz Non-fibrous (other)	**None Detected**
W-SE-30-Texture *021402175-0008*	Concrete Guardrai	White Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**

Analyst(s)

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Project: **100-14-0021**

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**
W-SE-30-Concrete *021402175-0008A*	Concrete Guardrai	Gray/Tan Non-Fibrous Homogeneous			10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-31-Texture *021402175-0009*	Concrete Guardrail	White/Grayish Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
W-SE-31-Concrete *021402175-0009A*	Concrete Guardrail	Gray/Tan Non-Fibrous Homogeneous			5% 95%	Quartz Non-fibrous (other)	**None Detected**
W-SE-32-Texture *021402175-0010*	Concrete Guardrail	White/Grayish Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
W-SE-32-Concrete *021402175-0010A*	Concrete Guardrail	Gray/Tan Non-Fibrous Homogeneous			10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-33-Texture *021402175-0011*	Concrete Guardrail	White/Grayish Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
W-SE-33-Concrete *021402175-0011A*	Concrete Guardrail	Gray/Tan Non-Fibrous Homogeneous	<1%	Cellulose	10% 90%	Quartz Non-fibrous (other)	**None Detected**
W-SE-34-Texture *021402175-0012*	Concrete Guardrail	White Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**

Analyst(s)

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Project: **100-14-0021**

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**
W-SE-34-Concrete *021402175-0012A*	Concrete Guardrail	Gray/Tan Non-Fibrous Homogeneous			10% 90%	Quartz Non-fibrous (other)		**None Detected**
W-SE-35-Texture *021402175-0013*	Concrete Guardrail	Beige Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)		**None Detected**
W-SE-35-Concrete *021402175-0013A*	Concrete Guardrail	Gray/Tan Non-Fibrous Heterogeneous			5% 95%	Quartz Non-fibrous (other)		**None Detected**
W-SE-36-Texture *021402175-0014*	Concrete Guardrail	Beige Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)		**None Detected**
W-SE-36-Concrete *021402175-0014A*	Concrete Guardrail	Gray/Tan Non-Fibrous Heterogeneous			5% 95%	Quartz Non-fibrous (other)		**None Detected**
W-SE-37 *021402175-0015*	Concrete Pier	Gray/Tan/Beige Non-Fibrous Homogeneous	<1%	Cellulose	3% 97%	Quartz Non-fibrous (other)	**<1%**	**Chrysotile**
W-SE-38 *021402175-0016*	Concrete Pier	Gray/Tan/Beige Non-Fibrous Homogeneous	<1%	Cellulose	3% 97%	Quartz Non-fibrous (other)	**<1%**	**Chrysotile**
W-SE-39 *021402175-0017*	Concrete Pier	Gray/Tan Non-Fibrous Heterogeneous	<1%	Cellulose	5% 95%	Quartz Non-fibrous (other)		**None Detected**

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Project: **100-14-0021**

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**
W-SE-40 *021402175-0018*	Drain Material	Tan/Black Fibrous Heterogeneous	20% 1%	Synthetic Cellulose	79%	Non-fibrous (other)	**None Detected**
W-SE-41 *021402175-0019*	Drain Material	Gray/Black Fibrous Heterogeneous	10% <1%	Synthetic Cellulose	90%	Non-fibrous (other)	**None Detected**
W-SE-42 *021402175-0020*	Drain Material	Brown/Gray/Black Fibrous Heterogeneous	30% 1%	Synthetic Cellulose	69%	Non-fibrous (other)	**None Detected**
W-SE-43 *021402175-0021*	Expansion Joints	Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
W-SE-44 *021402175-0022*	Expansion Joints	Black Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
W-SE-45 *021402175-0023*	Expansion Joints	Tan/Black Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**

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Analysis Date:	4/30/2014
Collected:	

Project: **100-14-0021 SE-West**

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**
W-SE-46-Texture *021402278-0001*	Concrete Decking	White Non-Fibrous Homogeneous			20% 80%	Ca Carbonate Non-fibrous (other)		**None Detected**
W-SE-46-Concrete *021402278-0001A*	Concrete Decking	Gray/Tan Non-Fibrous Homogeneous	<1%	Cellulose	10% 90%	Quartz Non-fibrous (other)		**None Detected**
W-SE-47-Texture *021402278-0002*	Concrete Decking	Gray/Beige Non-Fibrous Homogeneous			10% 88%	Ca Carbonate Non-fibrous (other)	**2%**	**Chrysotile**
W-SE-47-Concrete *021402278-0002A*	Concrete Decking	Gray/Tan Non-Fibrous Homogeneous	1%	Cellulose	10% 89%	Quartz Non-fibrous (other)		**None Detected**
W-SE-48-Texture *021402278-0003*	Concrete Decking	Gray/Beige Non-Fibrous Homogeneous			10% 87%	Ca Carbonate Non-fibrous (other)	**3%**	**Chrysotile**
W-SE-48-Concrete *021402278-0003A*	Concrete Decking	Gray/Tan Non-Fibrous Homogeneous			10% 90%	Quartz Non-fibrous (other)		**None Detected**
W-SE-49-Texture *021402278-0004*	Concrete Decking	Beige/Grayish Non-Fibrous Homogeneous	<1%	Cellulose	98%	Non-fibrous (other)	**2%**	**Chrysotile**
W-SE-49-Concrete *021402278-0004A*	Concrete Decking	Gray/Tan Non-Fibrous Heterogeneous	<1%	Cellulose	15% 85%	Quartz Non-fibrous (other)		**None Detected**

Analyst(s)

Nicole Shutts (9)
Scott Combs (3)

Stephen Bennett, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from 04/30/2014 14:18:34

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Received:	04/30/14 10:20 AM
Analysis Date:	4/30/2014
Collected:	

Project: **100-14-0021 SE-West**

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**
W-SE-50 *021402278-0005*	Concrete Piers	Gray/Tan/Beige Non-Fibrous Homogeneous	<1%	Cellulose	10% 5% 85%	Quartz Ca Carbonate Non-fibrous (other)	**<1%**	**Chrysotile**
W-SE-51 *021402278-0006*	Concrete Piers	Gray/Tan/Beige Non-Fibrous Homogeneous	<1%	Cellulose	10% 5% 85%	Quartz Ca Carbonate Non-fibrous (other)	**<1%**	**Chrysotile**
W-SE-52 *021402278-0007*	Concrete Piers	Gray/Tan/Beige Non-Fibrous Homogeneous	1%	Cellulose	10% 5% 84%	Quartz Ca Carbonate Non-fibrous (other)	**<1%**	**Chrysotile**
W-SE-53 *021402278-0008*	Concrete Piers	Gray/Tan Non-Fibrous Heterogeneous	<1%	Cellulose	15% 85%	Quartz Non-fibrous (other)	**<1%**	**Chrysotile**

Analyst(s)

Nicole Shutts (9)
Scott Combs (3)

Stephen Bennett, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

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Received:	04/22/14 10:25 AM
Analysis Date:	4/23/2014
Collected:	

Project: **West Sillman Evans 100-14-0021**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
W-SE-1-Texture *021402105-0001*	Concrete Abutment	Gray/Beige Non-Fibrous Homogeneous		98.50% Non-fibrous (other)	**1.50% Chrysotile**
W-SE-7 *021402105-0007*	Concrete Pier	Gray/Beige Non-Fibrous Homogeneous		97.25% Non-fibrous (other)	**2.75% Chrysotile**
W-SE-14 *021402105-0014*	Concrete Abutment	Gray/Beige Non-Fibrous Homogeneous		97.00% Non-fibrous (other)	**3.00% Chrysotile**
W-SE-17 *021402105-0017*	Concrete Abutment	Gray/Beige Non-Fibrous Homogeneous		98.75% Non-fibrous (other)	**1.25% Chrysotile**
W-SE-20 *021402105-0020*	Wingwall	Gray/Beige Non-Fibrous Homogeneous		99.00% Non-fibrous (other)	**1.00% Chrysotile**
W-SE-21 *021402105-0021*	Wingwall	Gray/Beige Non-Fibrous Homogeneous		98.75% Non-fibrous (other)	**1.25% Chrysotile**
W-SE-22 *021402105-0022*	Wingwall	Gray/Beige Non-Fibrous Homogeneous		99.25% Non-fibrous (other)	**0.75% Chrysotile**

Analyst(s)

Nicole Shutts (7)

Stephen Bennett, Laboratory Manager
or other approved signatory

Disclaimer:Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. The limit of detection as stated in the method is 0.25%. EMSL Analytical Inc suggests that samples reported as <0.25% or none detected undergo additional analysis via TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval of EMSL Analytical Inc. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the United States Government. EMSL Analytical Inc., bears no responsibility for sample collection activities, analytical method limitations, or the accuracy of results when requested to separate layered samples. EMSL Analytical Inc., liability is limited to the cost of sample analysis.The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

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Initial report from 04/23/2014 13:49:16

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Received:	04/24/14 10:45 AM
Analysis Date:	4/25/2014
Collected:	

Project: **100-14-0021**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
W-SE-37 *021402175-0015*	Concrete Pier	Gray/Beige Non-Fibrous Homogeneous		99.50% Non-fibrous (other)	**0.50% Chrysotile**
W-SE-38 *021402175-0016*	Concrete Pier	Gray/Beige Non-Fibrous Homogeneous		99.25% Non-fibrous (other)	**0.75% Chrysotile**

Analyst(s)

Nicole Shutts (2)

Stephen Bennett, Laboratory Manager
or other approved signatory

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Analysis Date:	5/1/2014
Collected:	

Project: **100-14-0021 SE-West**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
W-SE-47-Texture *021402278-0002*	Concrete Decking	Gray/Beige Non-Fibrous Homogeneous		98.75% Non-fibrous (other)	**1.25% Chrysotile**
W-SE-48-Texture *021402278-0003*	Concrete Decking	Gray/Beige Non-Fibrous Homogeneous		97.75% Non-fibrous (other)	**2.25% Chrysotile**
W-SE-49-Texture *021402278-0004*	Concrete Decking	Gray/Beige Non-Fibrous Homogeneous		99.25% Non-fibrous (other)	**0.75% Chrysotile**

Analyst(s)

Nicole Shutts (3)

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