



EARTHRES
ENGINEERING FOR SUCCESS™

April 3, 2019

Michael J. Menghini, District Mining Manager
Department of Environmental Protection
Pottsville District Mining Office
5 West Laurel Boulevard
Pottsville, PA 17901-2454

**SUBJECT: Qualitative Geologic Survey Sampling Plan
Rock Hill Quarry
SMP No. 7974SM1
East Rockhill Township, Bucks County
EARTHRES Project No. 061003.051**

Dear Mr. Menghini:

On behalf of Hanson Aggregates Pennsylvania, LLC (Hanson), Earthres Group, Inc. is providing the following Qualitative Geologic Survey Sampling Plan for continued assessment of Naturally Occurring Asbestos (NOA) at the Rock Hill Quarry Operation.

The sampling plan was prepared in follow-up to your letter of December 19, 2018, and our joint meeting on February 21, 2019 with the Pennsylvania Department of Environmental Protection (PA DEP), Hanson, Kelly Bailey, CIH, Drew R. Van Orden, P.E., and R.E. Pierson personnel.

This sampling plan has been designed to collect sufficient information for the preparation of a detailed Qualitative Geologic Survey of the site so that, based upon the results, the PA DEP will be able to lift the stop work order and allow Hanson and R.E. Pierson Materials to resume active operation of the Quarry.

CURRENT AND PROPOSED SAMPLING

Prior investigation, qualitative geological surveying and sampling conducted at the site during 2018 included the collection and analysis of thirty-three (33) samples including: 5 mineral vein rock samples, 21 drill hole cutting samples, 5 aggregate storage pile samples and 2 crusher run (fines) samples. All samples yielded non-detectable results for NOA, except for one biased rock sample that found a trace amount of asbestiform actinolite in a mineral vein.

The following work plan elements were developed in consultation with Hanson’s asbestos experts: Kelly Bailey, CIH, of Kelly Bailey Consulting, LLC and Drew R. Van Orden, P.E. of RJ Lee Group, Inc. The proposed work efforts include:

- 1) Aggregate storage pile sampling;
- 2) Rock coring and sampling;
- 3) Surficial geological analysis of the existing boulder field on the southern and eastern sides of the Quarry pit; and,
- 4) Sampling of water from the NPDES discharge, Sediment Basin 1, Sediment Basin 2, and the Quarry pit.

A minimum of two (2) days’ notice will be given to the PA DEP to allow for coordination of each field sampling event.

AGGREGATE STORAGE PILE SAMPLING

Per the Department’s letter of December 19, 2018, aggregate storage pile sampling is to include “...one test per 1,000 tons of material or any fraction thereof...” Hanson mapped the existing aggregate storage piles and determined the following tonnages and proposed samples as indicated in the below table. The relative locations of the various storage piles are also indicated by compass direction. The aggregate storage piles proposed for sampling are identified on Figure 1A.

Proposed Aggregate Storage Pile Sampling

Stone Type	Location	Tonnage	Proposed Samples
2B Stone	Northwest	9,946	10
1B Stone Pile	Northeast	1,695	2
2A Stone Pile	East	1,585	2
Screenings	South	1,983	2

Aggregate samples will be collected as material composites using AASHTO R90. The samples will be mixed and reduced in size prior to transmittal to the laboratory per AASHTO T248. Samples will be transmitted to the laboratory in one gallon sealed plastic bags. To accomplish the AASHTO R90 sampling, the 2B storage pile will be surveyed and marked into ten radial sections for subsequent collection of ten samples. Samples from the remaining storage piles will be collected from opposite sides of the piles. The exact sample locations will be determined and marked in the field at the time of sampling. Samples will be collected from storage pile locations that were not previously sampled.

Upon reduction of the sample sizes per AASHTO T248, the samples will be transmitted under chain-of-custody to RJ Lee Group, Inc. in Monroeville, PA for microscopic analysis and Polarized Light Microscopy (PLM). If asbestiform minerals are found via PLM analysis, the sample will be further analyzed by Transmission Electron Microscopy (TEM) to confirm mineral identification and morphology. Analytical methods to be employed for the proposed testing are included in Attachment 1. The Pennsylvania and national laboratory accreditation certificates for RJ Lee Group, Inc. are included in Attachment 2.

ROCK CORING

Four rock cores will be advanced in the planned mining area to an elevation of approximately 585 feet above mean sea level (MSL), which is approximately equivalent to the current water level in the Quarry pit. The approximate coring locations are shown on Figure 1B. The cores will be drilled on an approximately 30-degree angle from vertical with an azimuth of approximately N45W. This azimuth is projected perpendicular to the geologic structure (ridgeline trend and geological strike) and was chosen to intercept as many potential features as practical. Where safely accessible, the highwalls below the coring locations will be examined prior to drilling to assess the presence and trend (dip and azimuth) of mineral veining. Based upon what is observed, the azimuth and location of the core drilling locations may be modified to better intercept found mineral vein trends. The exact core locations will be determined and marked in the field at the time of drilling. Continuous wetting of the core will be accomplished during drilling to minimize dust formation. Retrieved cores will be boxed, labeled and stored onsite for logging and analysis.

A professional geologist will visually log the cores to identify and record the following:

- 1) Geological description;
- 2) Mineralogy and grain size;
- 3) The percentage of core recovered;
- 4) Bedding observations;
- 5) Fracture occurrence;
- 6) Mineral veining; and,
- 7) Other pertinent geological features.

Found mineral veins will be examined using a hand lens and fine steel pick to assess the presence of fibrous mineral morphology. If potentially suspect mineral morphology is identified, the mineral veining will be photographed and sampled in the following manner:

- 1) The section of the core containing the suspect mineral vein will be isolated using a wet saw or core splitter;
- 2) The portion of the core to be sampled will be split by wet sawing. Half of the sample will be saved, while the remainder of the sample will be transmitted for laboratory analysis.

The PA DEP will have the opportunity to collect a split sample from the sampled portion of the core;

- 3) The sample will be sent to RJ Lee Group, Inc. in Monroeville, PA under chain-of-custody for microscopic and PLM analysis; and,
- 4) If asbestiform minerals are found via PLM analysis, the sample will be further analyzed by TEM to confirm mineral identification and morphology.

Additionally, one (1) diabase sample from each rock core (4 samples total) will be collected from a representative core portion where veining is absent. Sample preparation and analysis will be in accordance with the above procedures.

BOULDER FIELD ANALYSIS

A boulder field exists on the southern and eastern sides of the quarry pit. Examinations of at least 30 mineral veins on randomly selected boulders located in the boulder field will be completed. A professional geologist will examine the found mineral veining with a hand lens and fine steel pick to assess the presence of fibrous mineral morphology. If potentially suspect mineral morphology is identified, the mineral veining will be photographed and sampled. The exact boulder and vein locations will be determined and marked in the field at the time of sampling. The samples will be sent to RJ Lee Group, Inc. in Monroeville, PA under chain-of-custody for microscopic and PLM analysis. If asbestiform minerals are found via PLM analysis, the sample will be further analyzed by TEM to confirm mineral identification and morphology.

WATER SAMPLING

Water samples will be collected from the NPDES discharge, Sediment Basin 1 (southern basin), Sediment Basin 2, and the Quarry pit (4 samples total). The water samples will be collected as grab samples using a telescopic pole sampler containing an attached sampling cup. The sampling apparatus will be washed with Alconox® and rinsed with distilled water initially and between each sampling location. Sample collection will proceed from downgradient to upgradient to minimize potential for sample cross-contamination. Proposed water sampling locations are shown on Figure 1A. The water samples will be collected in clean laboratory-provided one liter plastic bottles. The samples will be placed on ice and transmitted under chain-of-custody to RJ Lee Group, Inc. in Monroeville, PA for analysis per EPA Method 100.2.

SAMPLING AND REPORTING

Upon approval of the work plan, Hanson is prepared to commence sampling at the site. Results of the investigation should be available approximately three (3) weeks after submittal of all samples to the laboratory. Status reports will be provided to the PA DEP weekly once sampling has

commenced. The results of the investigation will be provided in a Qualitative Geologic Survey Report.

If you have any questions or concerns regarding the proposed investigation and sampling, please feel free to contact me at (215) 766-1211.

Sincerely,
Earthres Group, Inc.



Louis F. Vittorio, Jr., P.G.
Vice President

Figure 1A – Water & Aggregate Sampling Locations
Figure 1B – Proposed Coring Locations
Attachment 1 – Sample Analysis Procedures and Methods
Attachment 2 – Laboratory Certifications

cc: Mark E. Kendrick, Hanson*
Andrew J. Gutshall, P.G., Hanson*
Matthew S. Burns, Esq, Hanson*
Curt Mitchell, R.E. Pierson
Mike Logan, CPS*
Kelly F. Bailey, CIH, KBC, LLC*
Drew R. Van Orden, P.E., RJ Lee Group, Inc*
Michael P. Kutney, P.G., PA DEP*
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Marianne Morano, East Rockhill Township*
David J. Raphael, Esq., K&L Gates*
Robert W. Gundlach, Esq., Fox Rothschild*
(*via electronic mail)

FIGURES

Figure 1A

Water and Aggregate Sampling Locations

Legend




-  Aggregate Storage Pile
-  Water Sampling Location



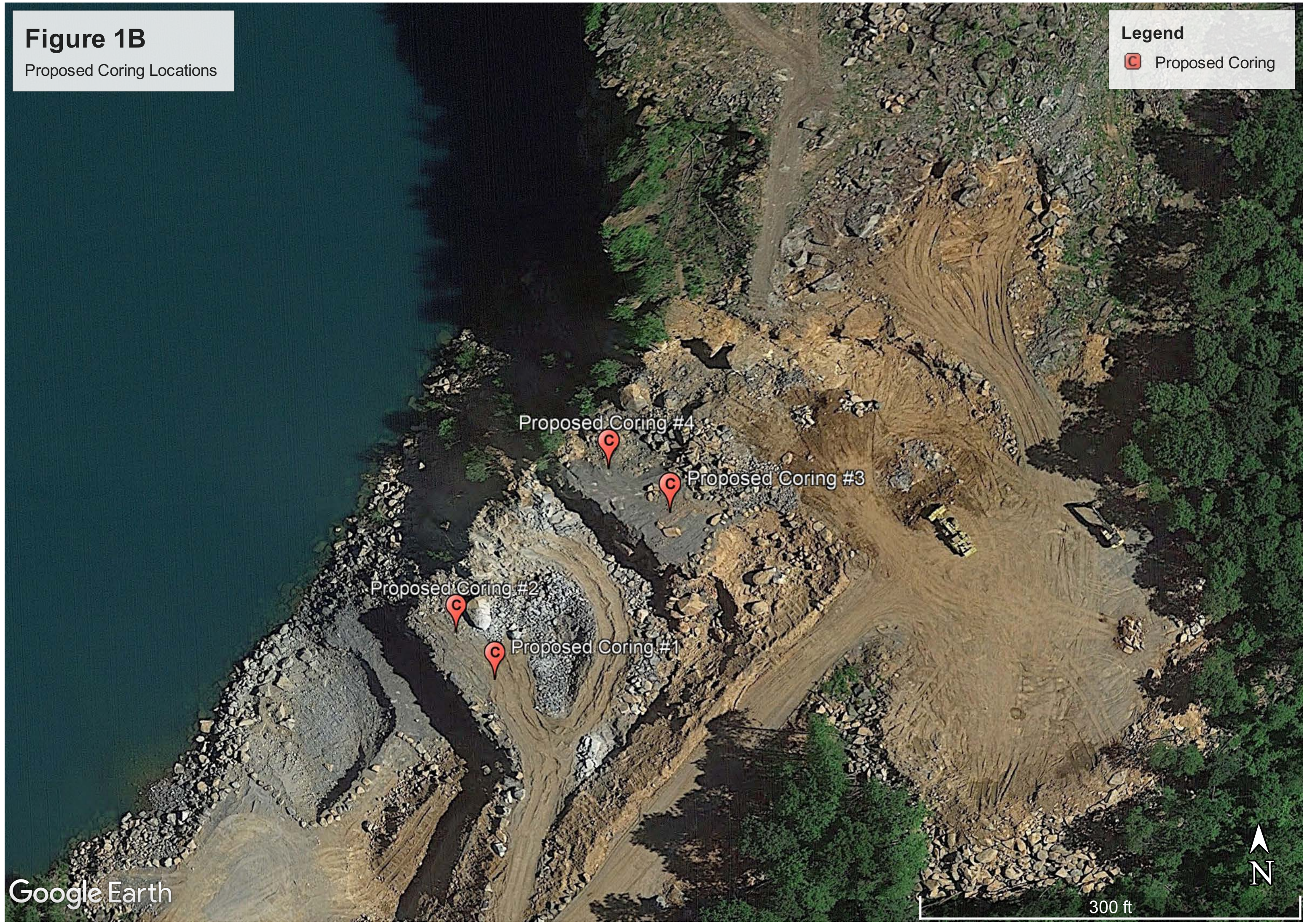
Figure 1B

Proposed Coring Locations

Legend

 Proposed Coring

Google Earth



Proposed Coring #4

Proposed Coring #3

Proposed Coring #2

Proposed Coring #1

300 ft



ATTACHMENT 1
Sample Analysis Methods

Attachment 1

Sample Analysis Procedures and Methods

For obtaining a representative sample from a large bulk sample, the AASHTO procedures for reducing the sample should be used. The subsequent analyses of the submitted samples will follow a three step procedure: 1) Basic microscopic analysis to assess the presence of asbestiform mineral habitat; 2) Polarized Light Microscopy (PLM) to determine the presence and asbestos mineral type, if present; and, 3) Should positive results be indicated by PLM, follow-up Transmission Electron Microscopy (TEM) analysis will be completed to confirm the minerals present and their morphology. The techniques and methods to be employed in sample analysis are provided below:

- A geologist will inspect hand and core samples initially using a stereo binocular microscope, with magnification ranging from 10x to 60x. Using a fine steel pick (dental pick) the geologist will scrape the surface of the suspect mineralization to determine if any of the minerals display typical asbestiform habit and characteristics such as fiber bundles, splayed ends, or matted or fibrous masses.
- Further examination of the sample will then be conducted using the Polarized Light Microscope (PLM) using EPA 600/R-93/116.
- If asbestiform minerals are found, representative samples will be further analyzed by Transmission Electron Microscopy per EPA 600/R-93/116 to confirm mineral identification and morphology.
- Where appropriate, the microscopic PLM and/or TEM analyses will include a count of the asbestiform fibers, representative digital images, and measurements of the width and length dimensions of found fibers counted.

Water samples will be collected as grab samples and will be analyzed by TEM per EPA 100.2.

The samples will be analyzed using the above procedures by RJ Lee Group, which is accredited by the American Industrial Hygiene Association and is in the NIST National Voluntary Laboratory Accreditation Program for asbestos analysis. RJ Lee Group has mineralogical expertise and has vast experience to detect asbestos fibers in the natural environment (e.g. rocks, soils, water, etc.).

ATTACHMENT 2

Laboratory Accreditation Certificates

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF LABORATORIES
LABORATORY ACCREDITATION PROGRAM



Certifies That

02-00396

RJ Lee Group, Inc.

350 Hochberg Road, Monroeville, PA 15146



Having duly met the requirement of
The act of June 29, 2002 (P.L. 596, No. 90)
dealing with Environmental Laboratories Accreditation
(27 Pa. C.S. §§4104-4113) and the
National Environmental Laboratory Accreditation Program Standard

is hereby approved as an

Accredited Laboratory

to conduct analysis within the fields of accreditations more fully described in the attached Scope of Accreditation

Expiration Date: **04/30/2019**

Certificate Number: **014**

A handwritten signature in black ink that reads "Aaren Alger".

Aaren S. Alger, Chief
Laboratory Accreditation Program
Bureau of Laboratories



AIHA Laboratory Accreditation Programs, LLC

acknowledges that

RJ Lee Group, Inc.

350 Hochberg Road, Monroeville, PA 15146

Laboratory ID: 100364

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories* in the following:

LABORATORY ACCREDITATION PROGRAMS

- | | |
|---|---------------------------------------|
| <input checked="" type="checkbox"/> INDUSTRIAL HYGIENE | Accreditation Expires: April 01, 2020 |
| <input checked="" type="checkbox"/> ENVIRONMENTAL LEAD | Accreditation Expires: April 01, 2020 |
| <input type="checkbox"/> ENVIRONMENTAL MICROBIOLOGY | Accreditation Expires: |
| <input type="checkbox"/> FOOD | Accreditation Expires: |
| <input type="checkbox"/> UNIQUE SCOPES | Accreditation Expires: |

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached **Scope of Accreditation**. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached **Scope of Accreditation**. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Elizabeth Bair

Elizabeth Bair
Chairperson, Analytical Accreditation Board

Cheryl O. Morton

Cheryl O. Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC



AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

RJ Lee Group, Inc.
 350 Hochberg Road, Monroeville, PA 15146

Laboratory ID: **100364**
 Issue Date: 03/30/2018

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Industrial Hygiene Laboratory Accreditation Program (IHLAP)

Initial Accreditation Date: 09/01/1991

IHLAP Scope Category	Field of Testing (FoT) (FoTs cover all relevant IH matrices)	Technology sub-type/ Detector	Published Reference Method/ Title of In-house Method	Method Description or Analyte <i>(for internal methods only)</i>
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 1003	
			NIOSH 1005	
			NIOSH 1007	
			NIOSH 1022	
			NIOSH 1300	
			NIOSH 1301	
			NIOSH 1400	
			NIOSH 1401	
			NIOSH 1402	
			NIOSH 1403	
			NIOSH 1450	
			NIOSH 1453	
			NIOSH 1457	
			NIOSH 1458	
			NIOSH 1459	
			NIOSH 1500	
			NIOSH 1501	
			NIOSH 1550	
			NIOSH 1615	
			NIOSH 2000	
NIOSH 2500				
NIOSH 2537				
NIOSH 2546				
NIOSH 2553				
NIOSH 2554				



IHLAP Scope Category	Field of Testing (FoT) (FoTs cover all relevant IH matrices)	Technology sub-type/ Detector	Published Reference Method/Title of In-house Method	Method Description or Analyte <i>(for internal methods only)</i>
Chromatography Core	Gas Chromatography	GC/FID	NIOSH 2555	
			NIOSH 4000	
			NIOSH 5020	
			NIOSH 5515	
			NIOSH 5523	
	Gas Chromatography (Diffusive Samplers)		NIOSH 1003	
			NIOSH 1005	
			NIOSH 1007	
			NIOSH 1022	
			NIOSH 1300	
			NIOSH 1301	
			NIOSH 1400	
			NIOSH 1401	
			NIOSH 1402	
			NIOSH 1403	
			NIOSH 1450	
			NIOSH 1453	
			NIOSH 1457	
			NIOSH 1458	
			NIOSH 1459	
			NIOSH 1500	
			NIOSH 1501	
			NIOSH 1550	
			NIOSH 1615	
			NIOSH 2000	
			NIOSH 2500	
			NIOSH 2537	
			NIOSH 2546	
	NIOSH 2553			
	NIOSH 2554			
	NIOSH 2555			
	NIOSH 4000			
	NIOSH 5020			
NIOSH 5515				
NIOSH 5523				
Ion Chromatography (IC)		NIOSH 7903		
Liquid Chromatography	HPLC/UV	OSHA ID - 215		
		NIOSH 2016		
		NIOSH 5506		



IHLAP Scope Category	Field of Testing (FoT) (FoTs cover all relevant IH matrices)	Technology sub-type/ Detector	Published Reference Method/Title of In-house Method	Method Description or Analyte <i>(for internal methods only)</i>
Chromatography Core	Liquid Chromatography	HPLC/UV	OSHA 42	
			OSHA 47	
			OSHA 58	
Spectrometry Core	Atomic Absorption	CVAA	NIOSH 6009	
	Inductively-Coupled Plasma	ICP/MS	NIOSH 7300 Modified	
		ICP/AES	NIOSH 7300	
			NIOSH 7300 Modified	
	X-ray Diffraction (XRD)		NIOSH 7500	
	Infrared		NIOSH 5026	
Asbestos/Fiber Microscopy Core	Polarized Light Microscopy (PLM)		40 CFR Part 763, Sub. E., Appendix E	Interim Method of the Determination of Asbestos in Bulk Insulation Samples
			EPA 600/R-93/116	
	Phase Contrast Microscopy (PCM)		NIOSH 7400A	
	Transmission Electron Microscopy (TEM)		40 CFR Part 763, Sub. E., Appendix A	
NIOSH 7402				
Miscellaneous Core	Gravimetric		NIOSH 0500	
			NIOSH 0600	
			NIOSH 5042	
			OSHA 58	
	Thermo-optical Analysis (TOA)		NIOSH 5040	
Beryllium Testing	Inductively-Coupled Plasma	ICP/MS	NIOSH 7303 Modified	
		ICP/AES	NIOSH 7300	
			NIOSH 7300 Modified	

A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA-LAP, LLC website at: <http://www.aihaaccreditedlabs.org>



AIHA Laboratory Accreditation Programs, LLC SCOPE OF ACCREDITATION

RJ Lee Group, Inc.

350 Hochberg Road, Monroeville, PA 15146

Laboratory ID: **100364**

Issue Date: 04/10/2018

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

The EPA recognizes the AIHA-LAP, LLC ELLAP program as meeting the requirements of the National Lead Laboratory Accreditation Program (NLLAP) established under Title X of the Residential Lead-Based Paint Hazard Reduction Act of 1992 and includes paint, soil and dust wipe analysis. Air and composited wipes analyses are not included as part of the NLLAP.

Environmental Lead Laboratory Accreditation Program (ELLAP)

Initial Accreditation Date: 12/05/1995

Field of Testing (FoT)	Technology sub-type/ Detector	Method	Method Description (for internal methods only)
Settled Dust by Wipe		EPA SW-846 3050B	
		EPA SW-846 7000B	

A complete listing of currently accredited Environmental Lead laboratories is available on the AIHA-LAP, LLC website at: <http://www.aihaaccreditedlabs.org>

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101208-0

RJ Lee Group, Inc.
Monroeville, PA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

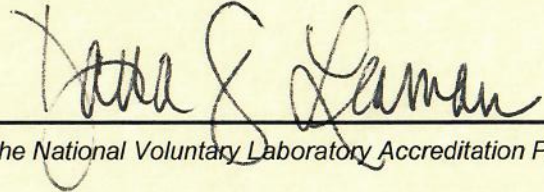
Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2018-07-01 through 2019-06-30

Effective Dates




For the National Voluntary Laboratory Accreditation Program



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

RJ Lee Group, Inc.
350 Hochberg Road
Monroeville, PA 15146-1516
Ms. Tammie Mussitsch
Phone: 724-325-1776 Fax: 724-733-1799
Email: accreditations@rjlg.com
<http://www.RJLG.COM>

ASBESTOS FIBER ANALYSIS

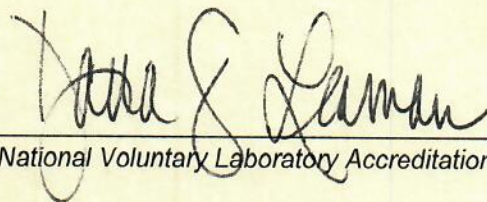
NVLAP LAB CODE 101208-0

Bulk Asbestos Analysis

<u>Code</u>	<u>Description</u>
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

<u>Code</u>	<u>Description</u>
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.



For the National Voluntary Laboratory Accreditation Program