FOUR BROTHERS
ENVIRONMENTAL

Asbestos Survey Report

064-NH-22-001

487 North Stark Highway
Weare, NH 03281

October 29, 2022

Prepared for:

Town of Weare, New Hampshire

Prepared By:

Four Brothers Environmental
9 Alden Avenue
Greenland, NH

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1.0 INTRODUCTION

Four Brothers Environmental, LLC (hereinafter "4BE") of Greenland, New Hampshire was retained by the Town of Weare, NH to perform sampling of suspect asbestos-containing building materials (ACBM) for the building located at 487 North Stark Highway, Weare, NH 03281 (Subject Property).

Accessible areas scheduled for demolition at the Subject Property were inspected. 4BE's scope of work did not include extensive exploratory demolition of building/structural components or dismantling of operating equipment or appliances in order to access potential hidden ACBM.

The inspection was conducted by Mr. Jeremy Boucher, a State of New Hampshire licensed and certified asbestos inspector.

2.0 BACKGROUND

4BE understands that the Subject Property is currently a single-story, approximately 1,000 ft^2 abandoned residential building. Interior finishes include gypsum wallboard walls, plywood flooring, a metal framed glass door, fiberglass insulation, cementitious wall panels, and a CMU block chimney to exhaust a wood stove as the primary heating source. Exterior finishes include wood shingle siding, siding paper, multiple types of caulking, asphalt shingle roof and roofing paper. Windows throughout the building include a mix of fixed and single hung metal framed units, and a large, fixed wooden framed concave unit on the Southeast corner of the building. 4BE understands the building is scheduled for full demolition.

3.0 ASBESTOS CONTAINING BUILDING MATERIALS (ACBM) SURVEY

3.1 METHODOLOGIES

Inspection, Identification of Homogeneous Areas and Sampling

An inspector (accredited and licensed in accordance with all applicable Federal, State and local requirements) performs the inspection and sampling. Inspection to identify ACBM begins with locating and listing all "homogeneous areas" of materials that are suspected to contain asbestos. A "homogeneous area" is a material application that is uniform in color and texture. Typically, date and/or occasion of material application are also considered in determining homogeneous areas. Materials of similar color and texture but installed in different buildings or during different construction events, are typically considered different homogeneous areas. Homogenous areas of building materials exist in the form of surfacing materials, thermal systems insulation (TSI), and miscellaneous materials.

SURFACING MATERIALS – Surfacing materials include sprayed or troweled-on applications of materials such as fireproofing, acoustical or decorative ceiling materials, or plaster.

THERMAL SYSTEM INSULATION (TSI) – TSI materials include materials applied to pipes, fittings, boilers, ducts, or other interior structural components to prevent heat loss or gain, water condensation, or other such purposes.

MISCELLANEOUS MATERIALS – Miscellaneous materials include any building material on structural components or fixtures such as floor and ceiling tiles, which do not include surfacing material or TSI.

Suspect ACBMs are sampled to obtain a representative analysis of the material type throughout each homogeneous area. Bulk samples, representing individual homogenous areas of suspect ACBM, are collected in a randomly distributed manner. Samples are collected with a utility knife which is driven through the suspect material to the substrate in a manner as to obtain a sample containing all discrete layers. The samples are then placed in sterilized zip-lock bags and assigned unique identifiers, which are recorded on the bags and the bulk sampling survey sheets.

Locations to collect bulk samples are determined based on the locations of observed suspect ACBMs identified during the assessment phase of the inspection; and samples are randomly distributed throughout the area of ACBM application. The number of samples collected is based on the material classification and quantity of each homogeneous area observed during the inspection. The following illustrates the sampling strategy employed by 4BE:

- **Surfacing materials:**
  - A minimum of three (3) bulk samples are collected from each homogeneous area that is less than or equal to 1,000 ft^2.
  - A minimum of five (5) bulk samples are collected from each homogeneous area that is greater than 1,000 ft^2, but less than or equal to 5,000 ft^2.
  - A minimum of seven (7) bulk samples are collected from each homogeneous area that is greater than 5,000 ft^2.
- **Thermal systems insulation (TSI):**
  - A minimum of three (3) bulk samples are collected from each homogeneous area of TSI.

- A minimum of one (1) bulk sample is collected from each patch of TSI, providing the section of patch is less than six (6) linear or square feet.
- A minimum of three (3) bulk samples are collected of each insulated mechanical system including but not limited to cementitious material used on pipe fittings such as tees, elbows, or valves. A sufficient number of samples are collected to determine whether each homogenous area is ACBM or non-ACBM.
- Bulk samples are not required to be collected from any material that the accredited asbestos inspector has determined that the TSI is a non-suspect ACBM (i.e., fiberglass, foam glass, rubber, or any other non-ACBM).

- **Miscellaneous materials:**
  - A minimum of two (2) representative bulk samples are collected of each miscellaneous material. A sufficient number of samples are collected to determine whether each homogenous area is ACBM or non-ACBM.

ACBM Condition Assessment

Once the inspector identifies all of the suspect ACBMs in a building(s), they perform a physical assessment of the suspect ACBMs. The physical assessment may include the following considerations:

- Location and amount of the material
- Condition of the material, specifying:
  - Type of damage or significant damage.
  - Severity of damage.
  - Extent or spread of damage.
- Whether the material is accessible
- Materials potential for disturbance
- Known or suspected causes of damage or significant damage
- Preventive measures that might eliminate the reasonable likelihood of undamaged ACBM from becoming significantly damaged.

4BE classifies the ACBMs as being in Good, Fair or Poor condition. The following are the general definitions of each category:

- **Good Condition** - Any material which is intact with no noticeable damage.
- **Fair Condition** - Any material with a small amount of overall or localized damage (generally less than 10% of the entire area).
- **Poor Condition** - Any material with a large amount of damage (generally greater than 10% of the entire surface area).

NESHAP Categories of ACBMs

ACBM, as defined by the U.S. EPA and OSHA, are materials with an asbestos concentration of greater than one percent (> 1%). The U.S. EPA further defines friable and non-friable ACM as follows:

- **Friable ACBM** 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 (i.e., the PLM method), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. The term includes non-friable ACM after such previously non-friable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.

- **Non-friable ACBM** is any material containing more than one percent (1%) asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. The EPA further defines two categories of non-friable ACBM:

Analytical Procedures

Hayes Microbial Consulting (hereinafter "Hayes") of Midlothian, VA, is an accredited laboratory by the EPA for "Interim Asbestos Bulk Sample Analysis Quality Assurance Program". Hayes is also accredited by the U.S. Department of Commerce, National Institute of Standards and Technology through the National Voluntary Laboratory Accreditation Program (NVLAP) for Bulk Asbestos Analysis. The polarized light microscopy with dispersion staining (PLM/DS) analytical method is modeled after 40 CFR Part 763, Subpart F, Appendix A: "Interim Method for the Determination of Asbestos in Bulk Insulation Samples". PLM/DS is an optical microscopic technique used to distinguish the different types of asbestos fibers by their shape and unique optical properties. The technique is based on the refraction of light from the various crystalline asbestos structures and observing the corresponding color changes through a microscope. By using the PLM/DS method, a trained microscopist is able to identify and distinguish between asbestos group minerals and other fibrous materials such as cellulose (paper), mineral (rock), wood, or glass fiber. The quantity of each of these substances is estimated on a weight basis and recorded as a percent.

The EPA considers various building materials, typically non-friable materials, to be very difficult to analyze by PLM/DS such as vinyl materials (i.e. floor tiles, sheetings), viscous matrix products (i.e. caulks/sealants, adhesives, coatings, joint compound/spackle), cementitious materials (i.e. pipes, sheetings), asphaltic roofing materials (i.e. shingles, roof rollings), and miscellaneous products (i.e. frictions plates, gaskets). Asbestos fibers can be too small to be seen by PLM/DS methods or may be obscured by binders or other matrix interference. The EPA recommends, but does not require, that these materials be analyzed by TEM. Upon client request, follow-up TEM analysis can be performed for these materials to verify the presence/absence of asbestos and/or asbestos concentration.

Interpretation of Analytical Results

To determine asbestos content, Hayes performs the EPA-required PLM/DS visual estimation analytical method, which does not include the Point Count Method by PLM. Utilizing this method, non-friable materials containing >1.0% asbestos by weight are considered ACBM, and non-friable materials containing ≤1.0% by weight are considered non-ACBM. When the asbestos content of a friable suspect ACBM is determined to be <10% (including ≤1.0%) as determined by a method other than the Point Count Method by PLM, the material is assumed to be ACBM. As such, friable materials with an asbestos concentration of ≥10% are considered ACBM and <10% (including ≤1.0%) are considered assumed ACBM.

Federal OSHA and National Emission Standards for Hazardous Air Pollutants (NESHAP) define an ACBM as any material containing greater than one percent (>1.0%) asbestos. Handling, disturbance, removal and disposal of ACBM is required to be performed by licensed contractors utilizing protective work practices as prescribed by these regulatory agencies.

If asbestos content of a material is "<1%", the material is still regulated by OSHA as the airborne asbestos concentrations may exceed the OSHA Permissible Exposure Limit (PEL) depending on the work activity. OSHA states that employers performing construction activities on materials containing any detectable asbestos must comply with all applicable provisions of OSHA Asbestos Construction Standard 29 CFR 1926.1101. OSHA requires worker training, exposure monitoring/protection, safe work practices and engineering controls. Therefore, materials which contain any detectable asbestos are still regulated, and should be handled by qualified personnel.

Materials having all laboratory results of "No Asbestos Detected" or "NAD" are not subject to asbestos regulatory requirements.

3.2 SCOPE OF WORK

A demolition level Asbestos-Containing Building Material (ACBM) inspection of the Subject Property building was performed. The survey involved locating and assessing the condition of accessible suspect ACBM scheduled for demolition using sampling and visual inspection techniques, and to develop a report which identifies the extent of the materials present within the inspected areas.

3.3 ASBESTOS-CONTAINING BUILDING MATERIAL FINDINGS

Twenty (20) representative samples of suspect ACBM were collected at the time of the inspection and were submitted to Hayes Microbial Consulting.

Analytical results identified the following materials as non-ACBM:

- Siding paper, silver/black/brown
- Asphalt roof shingle, black
- Roofing paper, black
- Gypsum wallboard, white/brown
- Window glazing, white

Analytical results identified the following materials as ACBM:

- Window glazing, gray
- Window glazing, white
- Exterior trim caulking, white/gray
- Cementitious wall panel, gray
- Exterior window caulking, black

The following table lists the materials that were identified as **non-ACBM** via sample analysis including homogenous area, suspect material description, material location, asbestos content, friability, general condition, and estimated quantity:

Asbestos Sampling Table								
HA #	**Sample #**	**Suspect Material Description**	**Suspect Material Location**	**Sample Location**	**Condition**	**Result (% Asbestos)**	**Friable**	**Quantity**
3	03A	Siding Paper, black/silver/brown	Behind exterior wood single siding	Exterior of building at West side	Good	NAD	Non-Friable	N/A
	03B			Exterior of building at North side				
5	05A	Asphalt roofing shingle, black	Roof exterior, surface layer	Roof of building at NE corner	Good	NAD	Non-Friable	N/A
	05B			Roof of building at NW corner				
6	06A	Gypsum wallboard, white/brown	Ceiling and walls inside kitchen area	Sloped ceiling in kitchen at West end	Good	NAD	Non-Friable	N/A
	06B			Roof of building at NW corner				
8	08A	Roofing paper, black	Roof exterior, under asphalt shingles	Sloped ceiling in kitchen at West end	Fair	NAD	Non-Friable	N/A
	08B			Roof of building at NW corner				
9	09A	Window glazing, white	Exterior faces of panes in concave window at SW corner of building	West side of window unit	Fair	NAD	Non-Friable	N/A
	09B			East side of window unit				

HA – Homogenous Area
NAD – No Asbestos Detected
N/A – Not Applicable

The following table lists the materials that were identified as **ACBM** via sample analysis including homogenous area, suspect material description, material location, asbestos content, friability, general condition, and estimated quantity:

Asbestos Sampling Table								
HA #	**Sample #**	**Suspect Material Description**	**Suspect Material Location**	**Sample Location**	**Condition**	**Result (% Asbestos)**	**Friable**	**Quantity**
1	01A	Window glazing, gray	Between panes/frame of aluminum framed window units	South kitchen window	Good	2% Chrysotile	Non-Friable	Approx. 10 linear ft
	01B			East kitchen window				
2	02A	Window glazing, white	Between panes/frame of concave window unit at SW corner of building	West side of window	Good	4% Chrysotile	Non-Friable	Approx. 40 linear ft
	02B			East side of window				
4	04A	Cementitious wall panel (transite), gray	North wall of kitchen at NW corner	Wall mounted panel	Good	15% Chrysotile	Non-Friable	Approx. 15 ft^2
	04B			Panel resting on floor below wall mounted panel				
7	07A	Exterior trim caulking, white/gray	Between wood shingle siding and wood trim	Building exterior siding at NE corner	Good	2% Tremolite	Non-Friable	Approx. 200 linear ft
	07B			Building exterior siding at SE corner				
10	10A	Exterior window caulking, black	Between window frame/siding on exterior of concave window unit at SW corner of building	West side of window frame	Good	8% Chrysotile	Non-Friable	Approx. 12 linear ft
	10B			East side of window frame				

HA – Homogenous Area
N/A – Not Applicable

Laboratory analytical results indicate that five (5) homogenous area sampled at the Subject Property contain >1% asbestos and are considered ACBMs. The laboratory Chain of Custody can be found in **Appendix B**. Laboratory results can be found in **Appendix C**.

4.0 RECOMMENDATIONS

4.1 ASBESTOS-CONTAINING BUILDING MATERIALS

The EPA NESHAP regulations require removal of ACBM prior to renovation or demolition including Regulated Asbestos-Containing Material (RACM). RACM includes Friable ACBM; Category I non-friable ACBM that has become friable; Category I non-friable ACBM that will be or has been subjected to sanding, grinding, cutting or abrading; or Category II non-friable ACBM 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. Results of inspection identified RACM in the form of window glazing, exterior window caulking, exterior trim caulking and cementitious wall panels. 4BE recommends that any and all quantities and locations of these ACBMs, that will be

disturbed as part of planned renovations or demolition, be removed in advance by a licensed asbestos abatement contractor and disposed of appropriately in accordance with local, state and federal regulations.

The OSHA Asbestos Construction Standard 29 CFR 1926.1101 requires protection of workers from asbestos exposure associated with all work activities: not limited to renovation and demolition work, and not limited to ACBM and assumed ACBM. OSHA requires protection procedures associated with materials containing any detectable concentration of asbestos including <1% or "Trace" concentrations; protective measures include worker protection, training, and medical surveillance portions, wet methods, prompt cleanup and proper disposal, prohibited procedures/equipment/methods, and exposure-dependent engineering controls. As such, 4BE recommends that any disturbance of identified ACBM, assumed ACBM as well as materials containing <1% or "Trace" concentrations of asbestos be performed by a licensed asbestos contractor in accordance with local, state and federal regulations.

Additional suspect ACBMs may be present at the Subject Property in areas that were not inspected on due to access limitation within inspected areas. If additional suspect or assumed ACBMs are identified in the future (that were not sampled as part of this inspection), they must be treated as ACBMs unless future laboratory analytical results in conjunction with inspection by an appropriately accredited and/or licensed inspector identify the material(s) as non-ACBM. Based on the limitations of this inspection, 4BE recommends that an asbestos inspection be performed in accordance with all applicable federal, state, and local regulatory requirements prior to renovation, demolition, or other activities that could cause a material disturbance.

Removal is not required of asbestos-containing materials that are in good condition and that will remain undisturbed. Said ACBMs, assumed ACBMs, and materials containing "Trace" asbestos concentrations may be managed in place with an Asbestos O&M Plan.

5.0 GENERAL LIMITATIONS

Report information was obtained through sources deemed reliable (i.e. interviews with owners, agents, occupants or other appropriate persons involved with the subject property). Findings, conclusions and/or recommendations are based on our visual observations, the information provided to or obtained by 4BE, or provided by the Client or property contact, and/or a review of readily available and supplied documents and drawings. 4BE renders no opinion as to the property condition at un-surveyed and/or inaccessible portions of the subject property.

This Report presents the findings of a limited investigation but does not constitute a complete determination of whether past or present owners or occupants of the Subject Property have been in compliance with all applicable local, state, and federal environmental regulations. The information contained herein is based on on-site observations and on a limited investigation involving site observations. The investigative methods applied to this assessment are consistent with current industry standards for the performance of investigation within the limits of the scope of work, budget, and schedule. Survey evaluations are limited in the sense that conclusions and recommendations are developed from personal interviews and information obtained from limited research, site observations and secondary informational sources. Except as set forth in this report, 4BE has made no independent investigations as to the accuracy or completeness of the information derived from the secondary sources and personal interviews and has assumed that such information was accurate and complete. It should be noted that no conclusions can be drawn regarding the existence of conditions that were not addressed by the scope of work.

This assessment and Report were prepared by 4BE solely for the use of the Town of Weare, New Hampshire. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users and use or re-use of this document or the findings, conclusions, or recommendations, is at risk of said user. Third party use of this Report is prohibited without the prior written consent of 4BE and use thereof is at the risk of the user. The observations and results presented in this Report are believed to be representative of site conditions prevailing at the time of the assessment in the areas explored. Changes in site conditions or in the availability of information regarding past or current site conditions should be brought to 4BE's attention so that they can be addressed and 4BE's conclusions verified or modified as appropriate. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated. This document is not designed for bidding purposes. This report is not to be provided to potential bidders for the purpose of soliciting proposals for asbestos abatement.

It has been a pleasure to prepare this *Report.* Please contact me at (603) 203-6235 if you have any questions, comments, or if I can be of further assistance in any way.

Respectfully Submitted,

Jeremy Boucher
President

APPENDIX A

CHAIN OF CUSTODY

HAYES MICROBIAL CONSULTING

Company: Four Brothers Env.
Address: 9 Alden Ave, Greenland, NH 03840

N

SHIP: FEDEX - ENV SO
DATE: 12-09-2022

8170 3738 7369

ASBESTOS

22049353

Job Number: 064-NH-22-001	Job Name: 487 North Stark Highway Weare, NH
Collector: Jeremy Boucher	Mobile: 6032036235 Email:
Date Collected: ~~10/28/22~~ 10/29/22	Note:

Analysis Type		Analysis Methods	Turnaround Times					
PLM	Bulk	EPA 600*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Point Count	400 Point*, 1000 Point*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Vermiculite	EPA 600*, Cincinnati Method	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Soil	EPA 600*, CARB 435	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
TEM	Air	EPA AHERA, NIOSH 7402	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Bulk	Chatfield	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Wipe	ASTM D6480-05	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Microvac	ASTM D5755-09	-	Same Day	1 Day	2 Day	3 Day	5 Day
PCM	Air	NIOSH 7400	3 Hour	Same Day	1 Day	2 Day	3 Day	5 Day

#	Group	Number	Sample Name	Analysis Type	Turnaround	Volume / Area	Stop (+)
1	01	A	Window Glazing / Aluminum frame	PLM	3 day	N/A	Yes
2	↓	B	↓ ↓				
3	02	A	| / ~~Rectangular~~ Hexagonal				
4	↓	B	↓ ↓ wood frame				
5	03	A	Siding paper / Behind Wood shingles				
6	↓	B	↓ ↓				
7	04	A	Cementitious panel / Behind fireplace				
8	↓	B	↓ ↓				
9	05	A	Asphalt roof shingle / Roof				
10	↓	B	↓ ↓				
11	06	A	Gypsum Wallboard / ~~Exterior~~				
12	↓	B	↓ ↓				
13	07	A	Caulking / ~~Where cedar planks~~ between trim + shingles				
14	↓	B	↓ ↓				
15	08	A	Roof paper / Under 05 A				
16	↓	B	↓ ↓ B				

Released by: JBA	Date: 12/8/22	Received By: VH	Date: 12/9/22

HAYES
MICROBIAL CONSULTING

Company: _____
Address: _____
Pg. # 1/2

N
SHIP: FEDEX - ENV SO
DATE: 12-09-2022
8170 3738 7369

ASBESTOS
22049353

Job Number: See Job Name: Pg	
Collector:	
Date Collected:	

Mobile:	Email:
Note:	

Analysis Type		Analysis Methods	Turnaround Times					
PLM	Bulk	EPA 600*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Point Count	400 Point*, 1000 Point*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Vermiculite	EPA 600*, Cincinnati Method	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Soil	EPA 600*, CARB 435	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
TEM	Air	EPA AHERA, NIOSH 7402	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Bulk	Chatfield	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Wipe	ASTM D6480-05	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Microvac	ASTM D5755-09	-	Same Day	1 Day	2 Day	3 Day	5 Day
PCM	Air	NIOSH 7400	3 Hour	Same Day	1 Day	2 Day	3 Day	5 Day

#	Group	Number	Sample Name	Analysis Type	Turnaround	Volume / Area	Stop (+)
1	09	A	Window Glazing				
2	↓	B	↓				
3	10	A	Caulking, black				
4	↓	B	↓				
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

Released by:	Date: 12/8/22	Received By: KH	Date: 12/9/22

APPENDIX B

ASBESTOS LABORATORY RESULTS

HAYES MICROBIAL CONSULTING

#22049353

Analysis Report prepared for

Four Brothers Environmental

9 Alden Avenue
Greenland, NH 03840

Phone: **(603) 203-6235**

064-NH-22-001
487 North Stark Highway
Weare, NH

Collected: **October 29, 2022**
Received: **December 9, 2022**
Reported: **December 14, 2022**

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 20 samples by FedEx in good condition for this project on December 9th, 2022.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. Information supplied by the customer can affect the validity of results. These results apply only to the samples as received. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

All information provided to Hayes Microbial is confidential information relating to our customers and their clients. We will not disclose, copy, or distribute any information verbally or written, except to those designated by the customer(s). We take confidentiality very seriously. No changes to the distribution list will be made without the express consent of the customer.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

Steve Hayes, BSMT(ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC.

EPA Laboratory ID: VA01419

Lab ID: #188863

DPH License: #PH-0198

Jeremy Boucher
Four Brothers Environmental
9 Alden Avenue
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(603) 203-6235

064-NH-22-001
487 North Stark Highway
Weare, NH

#22049353

Asbestos PLM Bulk
EPA 600/R-93, M-4/82-020

#	Sample	Material Description	Non-Asbestos Fibers	Asbestos Fibers
1	01 A - Window Glazing / Aluminum Frame	Glazing / Gray		2% Chrysotile
2	01 B - Window Glazing / Aluminum Frame	Glazing / Gray		2% Chrysotile
3	02 A - Window Glazing	Glazing / White		4% Chrysotile
4	02 B - Window Glazing	Glazing / White		4% Chrysotile
5	03 A - Siding Paper / Behind Wood Shingles	Paper / Black/Silver/Brown	80% Cellulose Fibers	**None Detected**
6	03 B - Siding Paper / Behind Wood Shingles	Paper / Black/Silver/Brown	80% Cellulose Fibers	**None Detected**
7	04 A - Cementitious Panel / Behind Fireplace	Transite / Gray		15% Chrysotile
8	04 B - Cementitious Panel / Behind Fireplace	Transite / Gray		15% Chrysotile
9	05 A - Asphalt Roof Shingle / Roof	Shingle / Black	10% Cellulose Fibers	**None Detected**
10	05 B - Asphalt Roof Shingle / Roof	Shingle / Black	10% Cellulose Fibers	**None Detected**
11	06 A - Gypsum Wallboard / Interior	Drywall / White/Brown	10% Cellulose Fibers	**None Detected**
12	06 B - Gypsum Wallboard / Interior	Drywall / White/Brown	10% Cellulose Fibers	**None Detected**
13	07 A - Caulking / Between Trim & Shingles	Caulk / Gray		2% Tremolite
14	07 B - Caulking / Between Trim & Shingles	Caulk / Gray		2% Tremolite
15	08 A - Roof Paper / Under 05 A	Tar Paper / Black	70% Cellulose Fibers	**None Detected**

Collected: **Oct 29, 2022** Received: **Dec 9, 2022** Reported: **Dec 14, 2022**

Project Analyst:
Brian Keith,

Date: **12 - 14 - 2022**

Reviewed By:
Samuel Settle,

Date: **12 - 14 - 2022**

HAYES MICROBIAL CONSULTING
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064-NH-22-001
487 North Stark Highway
Weare, NH

#22049353

Asbestos PLM Bulk
EPA 600/R-93, M-4/82-020

#	Sample	Material Description	Non-Asbestos Fibers	Asbestos Fibers
16	08 B - Roof Paper / Under 05 B	Tar Paper / Black	70% Cellulose Fibers	**None Detected**
17	09 A - Window Glazing	Glazing / White		**None Detected**
18	09 B - Window Glazing	Glazing / White		**None Detected**
19	10 A - Caulking - Black	Caulk / Black		**8% Chrysotile**
20	10 B - Caulking	Caulk / Black		**8% Chrysotile**

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064-NH-22-001
487 North Stark Highway
Weare, NH

#22049353

Asbestos Analysis Information

Analysis Details	All samples were received in acceptable condition unless otherwise noted on the report. This report must not be used by the client to claim product certification, approval, or endorsement by AIHA, NIST, NVLAP, NY ELAP, or any agency. The results relate only to the items tested. Hayes Microbial Consulting reserves the right to dispose of all samples after a period of 60 days in compliance with state and federal guidelines.
PLM Analysis	All Polarized Light Microscopy (PLM) results include an inherent uncertainty of measurement associated with estimating percentages by PLM. Materials with interfering matrix, low asbestos content, or small fiber size may require additional analysis via TEM Analysis.
TEM Analysis	Analysis by TEM is capable of providing positive identification of asbestos type(s) and semi-quantitation of asbestos content.
Definitions	'None Detected' - Below the detected reporting limit of 1% unless point counting is performed, then the detected reporting limit is .25%.
New York ELAP	Per NY ELAP198.6 (NOB), TEM is the only reliable method to declare an NOB material as Non-Asbestos Containing. Any NY ELAP samples that are subcontracted to another laboratory will display the name and ELAP Lab Identification number in the report page heading of those samples. The original report provided to Hayes Microbial Consulting is available upon request.

APPENDIX C

CERTIFICATIONS

This is to certify that

Jeremy Boucher

36 Haverhill Road, Unit 3201, Amesbury, MA 01913

has completed requisite training by Video Conference, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

Course Location

Zoom Video Conference

Institute for Environmental Education 16 Upton Drive Wilmington, MA 01887

March 4, 2022
Course Dates

22-4294-106-257333
Certificate Number

March 04, 2022
Examination Date

March 04, 2023
Expiration Date

Training Director

16 Upton Drive, Wilmington, MA 01887 Telephone 978.658.5272 www.ieetrains.com

INSTITUTE FOR ENVIRONMENTAL EDUCATION

APPENDIX D

GLOSSARY

GLOSSARY

Air Cell: Insulation normally used on pipes and ductwork that is comprised of corrugated cardboard which is frequently comprised of asbestos combined with cellulose or refractory binders.

Air Monitoring: The process of measuring the fiber content of a specific volume of air.

Amosite - An asbestiform mineral of the amphibole group. It is the second most commonly used form of asbestos in the U.S. (brown asbestos).

Amphibole - One of the two major groups of minerals from which the asbestiform minerals are derived; distinguished by their chain-like crystal structure and chemical composition. Amosite and crocidolite are examples of amphibole minerals.

Anthophyllite - One of six naturally-occurring asbestos minerals. It is of limited commercial value.

Asbestos: The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, amosite, anthophylite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

Asbestos-Containing Material (ACM): Any material containing more than 1% of asbestos of any type or mixture of types.

Asbestos-Containing Building Material (ACBM): Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a school building (AHERA definition).

Assumed Asbestos-Containing Material: Any suspect ACM that has not been appropriately tested to confirm whether or not it contains asbestos.

Bulk Samples - Samples of bulk material, in the case of asbestos, suspect material

Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Class I Work (OSHA): Work activities, performed by an outside licensed abatement contractor, that involve the removal of boiler, pipe and duct insulation, and surfacing material such as spray-applied fireproofing.

Class II Work (OSHA): Work activities, performed by an outside licensed abatement contractor, that involve the removal of asbestos-containing materials other than boiler, pipe and duct insulation, and surfacing material such as spray-applied fireproofing.

Class III Work (OSHA): Work activities that involve the repair of minor amounts of damaged asbestos-containing materials.

Class IV Work (OSHA): Work activities that involve the maintenance and custodial activities during which tenants and employees contact but do not disturb asbestos-containing materials or presumed ACM. Class IV work may involve the clean-up of dusts, wastes and debris in areas where asbestos is, was or may be located.

Crocidolite - Strongest of asbestos minerals. An asbestiform mineral of the amphibole group. It is of minor commercial value In the U.S. (blue asbestos).

Chrysotile - The only asbestiform mineral of the serpentine group, it is the most common form of asbestos used in buildings (white asbestos).

Damaged Friable Surfacing Miscellaneous) Material - Friable surfacing (miscellaneous) ACM which has deteriorated or sustained physical injury such that the internal structure (cohesion) of the material is inadequate or, if applicable, which has delaminated such that the bond to the substrate (adhesion) is inadequate or which for any other reason lacks fiber cohesion or adhesion qualities. Such damage or deterioration may be illustrated by the separation of ACM into layers; separation of ACM from the substrate; flaking, blistering, or crumbling of ACM surface; water damage; significant or repeated water stains, scrapes, gauges, mars or other signs of physical injury on the ACM. Asbestos debris originating from the ACBM in question may also indicate damage (AHERA definition)

Damaged or Significantly Damaged Thermal System Insulation - Thermal system insulation on pipes, boilers, tanks, ducts, and other thermal system insulation equipment which the insulation has lost its structural integrity, or its covering, in whole or in part, is crushed, water-stained, gouged, punctured, missing, or not intact such that it is not able to contain fibers. Damage may be further illustrated by occasional punctures, gouges, or other signs of physical injury to ACM; occasional water damage on the protective coverings/jackets; or exposed ACM ends or joints. Asbestos debris, originating from the ACBM in question may also indicate damage (AHERA definition).

Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.

Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.

Bridging encapsulant: an encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.

Penetrating encapsulant: an encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.

Removal encapsulant: a penetrating encapsulant specifically designed for removal of asbestos-containing materials rather that for in situ encapsulation.

Encapsulation - The use of an agent to seal the surface (budging encapsulant) or penetrate the bulk (penetrating encapsulant) of ACM.

Enclosure: The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

Fiber Release: Any uncontrolled or unintentional disturbance of ACBM resulting in visible emission.

Fitting: Within any piping system, any valve, tee, elbow, 45°, flange, union, reducer, or other piping connector which may be insulated with asbestos.

Friable Asbestos Material: Material that contains more than 1.0% asbestos by weight, and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be 99.97% efficient for retaining fibers of 0.3 microns or larger.

High-Efficiency Particulate Air Filter (HEPA): A filter which removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometer.

Miscellaneous Material - Interior building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal system insulation (AHERA definition).

NESHAP: National Emission Standard for Hazardous Air Pollutants, 40 CFR Part 61 Subpart M.

Operations and Maintenance (O & M) Plan - A plan for an O & M program, which is designed to clean up asbestos contamination, minimize future fiber release, and maintain ACM in good condition.

Phase Contrast Microscopy (PCM) - A method of analyzing air samples for fibers using a light microscope.

Physical Assessment - Assessing suspect material to determine the current condition of the material and the potential for future disturbance.

Polarized Light Microscopy (PLM) - A method of analyzing bulk samples for asbestos in which the sample is illuminated with polarized light (light which vibrates in only one plane) and viewed under a light microscope.

Presumed Asbestos-Containing Material (PACM): Thermal systems insulation, surfacing material or miscellaneous materials found in buildings constructed prior to 1980 that has not been appropriately tested to confirm whether or not it contains asbestos.

Repair: Returning damaged ACM to an undamaged condition to prevent fiber release.

Response Actions - Actions specified in the management plan to control ACM; includes repair, O & M, and the various methods of abatement.

Serpentine - One of the two major groups of minerals from which the asbestiform minerals are derived; distinguished by their tubular structure and chemical composition. Chrysotile is a serpentine mineral.

Significantly Damaged Friable Surfacing (Miscellaneous) Material - Friable surfacing (miscellaneous) ACM in a functional space where damage is extensive and severe (AHERA definition).

Surfacing Material - Material in a school building that is sprayed on, troweled on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes (AHERA definition).

Suspect Asbestos-Containing Material (Suspect ACM): The term "suspect ACM" is used by the asbestos industry to refer to any building material that is suspected of being asbestos-containing (based on appearance, usage, age of building, etc.), but has not been proven conclusively to be ACM (based on sampling and analysis). Suspect material would include any material that a building owner suspects of containing asbestos and is found in a building of any age or construction date. Refer to section 2.1 for a list of typical suspect ACMs.

Thermal System Insulation (TSI) - Material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

Transmission Electron Microscopy - A method of analyzing air samples for asbestos fibers using a transmission electron microscope and, possibly, associated instruments for further identifying asbestos.

Tremolite - One of six naturally-occurring asbestos minerals. Tremolite has few commercial uses.