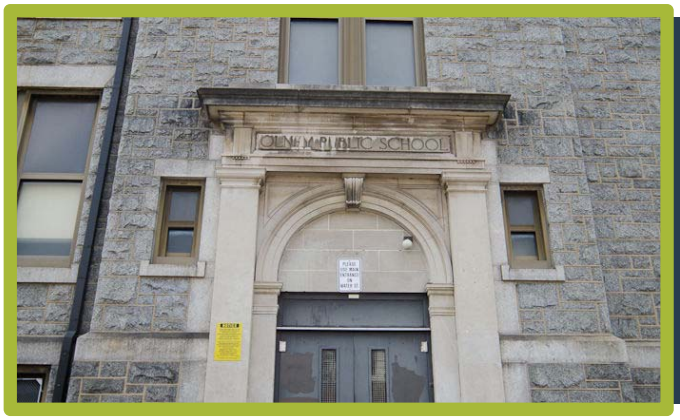

Olney Elementary School
5301 N. Water Street
Philadelphia, Pennsylvania

Asbestos Abatement Air Monitoring Report

AUGUST 16, 2018

PREPARED FOR:

School District of Philadelphia
440 North Broad Street, Room 3053
Philadelphia, Pennsylvania

Attn: Mr. Gerald Junod

PREPARED BY:

The Vertex Companies, Inc.
700 Turner Industrial Way
Aston, Pennsylvania 19014
PHONE 610.558.8902

VERTEX Project No: 51064

Work Order Numbers: 1642572, 1730552, 1730553, 1730558, 1730559, 1730591

Control No: 2018740003.1

Encumbrance Number: 582165

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1.0 EXECUTIVE SUMMARY

In June 2018, The Vertex Companies, Inc. (VERTEX) was retained by the School District of Philadelphia to provide air monitoring and laboratory services in conjunction with an abatement project at the Olney Elementary School located at 5301 N. Water Street in Philadelphia, PA. These services were performed under Encumbrance Number 582165, School District Control Number 2018740003.1 and Work Order Numbers 1642572, 1730552, 1730553, 1730558, 1730559 and 1730591.

Work activities were initiated in response to the newspaper article (i.e., dated May 10, 2018 online at Philly.com and May 13, 2018 in the Philadelphia Inquirer). The article reported that wipe sampling was performed by a staff member in the hallway outside of Room #311. The analytical result for the single wipe sample collected yielded a level of 8,510,000 F/cm^2.

Following the review of the article and the analytical result reported, the School District of Philadelphia initiated a remedial effort to address the reported concerns. To that end, the following protocol was employed:

Initial Response

1. The School District reviewed the recently completed 3-year AHERA Re-Inspection performed at the School.

Secondary Response

1. The School District of Philadelphia retained The Vertex Companies, Inc. (VERTEX) to consult/ oversee any resulting remediation or abatement to be performed.
2. VERTEX, in conjunction with a representative of the Philadelphia Federation of Teachers, Mr. Jerry Roseman of Occupational Health Consultation Services, Inc. (OHCS) and multiple representatives from the School, School District and the City of Philadelphia performed a re-inspection of the area sampled outside Room #311 as well as other areas throughout the facility.
3. The re-inspection confirmed that asbestos containing pipe insulation was identified throughout the facility.
4. A DDC was prepared by VERTEX. The DDC was utilized to define the abatement remedial effort to be employed. The scope of work included:

    - The removal of approximately 12 linear feet of pipe insulation within the hallway outside Classroom #311.
    - The removal of approximately 12 linear feet of pipe insulation within the hallway outside Classrooms #304/306.
    - The removal of approximately 12 linear feet of pipe insulation within the women's staff restroom next to Classroom #311.
    - The removal of approximately 56 linear feet of pipe insulation within Classroom #108. In addition, approximately 14 fittings and approximately 50 square feet of 9"x9" vinyl asbestos floor tile was removed within the Classroom #108 restroom.

Abatement Redial Effort

1. The first phase of abatement (i.e., 3rd floor) operations were performed on June 8, 2018. The second phase of abatement (i.e., Classroom #108/restroom) were performed between June 9, 2018 and July 6, 2018.
2. All work was performed in full accordance with the City of Philadelphia's Asbestos Control Regulations.
3. All work was performed by members of the School District of Philadelphia's A-Team. The A-Team workers are all licensed by the City of Philadelphia and Commonwealth of Pennsylvania to perform asbestos abatement operations.
4. Daily air monitoring was performed by a licensed Asbestos Project Inspector (API) throughout the duration of the remedial effort.
5. At the completion of each phase of abatement, VERTEX's API performed a visual inspection and did not observe any dust or debris on any surfaces within the work areas.
6. The final air testing protocol employed included:
    - VERTEX collecting five (5) samples within each minor work location to be analyzed by Phase Contrast Microscopy (PCM).
    - VERTEX collecting two (2) samples within each minor work area location to be analyzed by Transmission Electron Microscopy (TEM).
    - OHCS collecting one (1) sample within each minor work area location to be analyzed by TEM.
    - VERTEX and OHCS collecting five (5) samples within the major work area to be analyzed by TEM.
7. Analytical results of clearance testing within the first phase minor work areas for both VERTEX and OHCS yielded levels below the City of Philadelphia's clearance criteria and below the AHERA clearance criteria.
8. Analytical results of clearance testing within the second phase major work area found conflicting results. Specifically, VERTEX's results yielded levels below the clearance criteria and OHCS's results yielded levels above the clearance criteria.
9. The work area (Classroom #108/restroom) was re-cleaned on July 2, 2018. Following re-cleaning, the API performed a visual inspection and did not observe any dust or debris on any surfaces within the work area.
10. The second set of analytical results of clearance testing for both VERTEX and OHCS yielded levels below the City of Philadelphia's clearance criteria of 0.00554 AS/cc, and the AHERA clearance criteria <70 AS/mm^2.

2.0 PROJECT OVERSIGHT

VERTEX provided an API for on-site inspection and daily air monitoring throughout the duration of the project. Services were performed by certified APIs George Steffe (certification no. 951-1008), William Klinger (certification no. 011-1002), Bernard Brunner (certification no. 064-0008) and Louis DiMichele (certification no. 991-1004). The project was managed by Donald P. Heim.

3.0 RESULTS

1. Airborne concentrations (i.e., five PCM samples) collected in the three minor work areas after abatement (final clearances) were below the City of Philadelphia's clearance criteria of 0.01 F/cc.

2. Airborne concentrations (i.e., two TEM samples) collected in the three minor work areas after abatement (final clearances) were below the City of Philadelphia's clearance criteria of 0.00393 AS/cc, and the AHERA clearance criteria <70 AS/mm^2.

3. Airborne concentrations (i.e., five TEM samples) collected in the major work area after abatement (final clearances) were below the City of Philadelphia's clearance criteria of 0.00554 AS/cc, and the AHERA clearance criteria <70 AS/mm^2. Note: Initial testing by OHCS failed to achieve the clearance criteria.

4. Airborne concentrations collected outside the regulated work areas during abatement activities (perimeters) yielded levels below 0.01 F/cc.

5. Airborne concentrations collected inside the regulated work areas during abatement activities also yielded levels below 0.01 F/cc.

Please refer to the attached tables for a summary of all air sampling results. Note: Section 8.0 provides documentation in regard to sampling performed by OHCS for the PFT. VERTEX does not warrant these results but provides them for informational purposes only.

4.0 ANALYTICAL / AIR MONITORING METHODLOGIES

Phase Contrast Microscopy (PCM) air samples were collected and analyzed in accordance with the National Institute of Safety and Health (NIOSH) Analytical Method #7400, "Asbestos Fibers in Air," using A counting rules. A segment of the collected sample filter is mounted on a slide, treated chemically to make the filter transparent, and then examined using a special microscope reticule and counting procedure with phase contrast illumination at 400 to 500 magnification. Any particle having a length to width (or aspect) ratio greater than 3:1, and a length of 5 micrometers (µm) or greater is counted as a fiber. PCM analysis does not distinguish between asbestos and non-asbestos fibers.

All air samples were collected by the high-volume method in which a pump is used to draw a volume of air through a membrane filter at a known rate. Typical sampling rates for final air testing are less than 10 Liters per minute (L/min) for approximately 1200-1,800 liters. Samples are collected in 25-millimeter (mm) cassettes containing a mixed cellulose ester (MCE) filter with a 0.8 µm-effective pore size for PCM analysis.

Final clearance air samples were collected and analyzed by Transmission Electron Microscopy (TEM). Analysis was performed International Asbestos Testing Laboratories (IATL) of Mount Laurel, New Jersey (AIHA #100188).

5.0 ABATEMENT METHODOLOGIES

Abatement was performed by Commonwealth of Pennsylvania/City of Philadelphia licensed asbestos abatement workers. All licensed workers donned proper personal protective (PPE) equipment, including but not limited to TYVEK® suits and NIOSH approved half-face air purifying respirators.

Minor Projects

Critical barriers consisting of two layers of plastic sheeting were used to seal over all openings in the work areas and prevent airborne asbestos from migrating to adjacent areas.

A tent enclosure, comprised of 2 layers of 6-mil plastic sheeting on the walls and floor, was constructed around each work area. A single stage decontamination system was established at the entrance to each tent enclosure. The tent enclosure was utilized as a secondary containment to facilitate glovebag removal methodologies. Note: A remote three-stage decontamination system was established at a designated location on the first floor.

The pipe insulation removal process consisted of pre-wetting of the pipe insulation, taping the glovebag to the pipe, re-wetting of the asbestos insulation, cutting metal bands, removing the insulation, wetting the insulation in the glovebag, wet wiping of the pipe, followed by glovebag removal. A HEPA vacuum was utilized to establish negative pressure inside the glovebags prior to removal. All bags were double bagged for disposal as asbestos waste.

At the completion of abatement operations, final air testing incorporated both PCM (i.e., five samples each) and TEM (i.e., two samples each) methodologies. All clearance samples performed yielded levels below applicable clearance criteria.

Major Project

Critical barriers consisting of two layers of plastic sheeting were used to seal over all openings in the work areas and prevent airborne asbestos from migrating to adjacent areas.

A Negative Pressure Enclosure (NPE) was constructed and consisted of two layers of six mil plastic sheeting on the walls and floor. Negative pressure was achieved by ventilating the contained area utilizing HEPA air filtration devices (AFDs). AFDs were utilized to achieve a minimum of four air changes per hour within the enclosure and a minimum of 0.02 column inches of water pressure differential.

An airlock was established at the entrance to the NPE and entrance to the airlock was controlled using a three-stage personal decontamination system, containing plastic doorways. The integrity of these barriers was checked visually, and negative pressure was monitored, utilizing smoke tube measurements.

At the completion of abatement operations, final air testing incorporated TEM (i.e., five samples) methodologies. All clearance samples performed by VERTEX yielded levels below applicable clearance criteria. Note: Initial clearance testing performed by OHCS yielded levels which exceeded the clearance criteria. As a result, the work area was re-cleaned and re-encapsulated. Re-testing of the work area found levels below the applicable clearance criteria by both VERTEX and OHCS.

Following the completion of the abatement operations, all waste generated as part of the removal project was double-bagged and labeled for proper disposal at an EPA approved landfill. Asbestos waste will be transported by Super Kwik, a licensed waste transporter, and disposed of Dauphin Meadows, an EPA approved landfill.

6.0 SUMMARY OF PCM AIR SAMPLING RESULTS

Olney Elementary School 5301 N. Water Street Philadelphia, Pennsylvania				
Sample #	**Sample Location/Activity**	**Volume (L)**	**Fibers per 100 Fields**	**Sample Result (F/cc)**
Date collected: 6/8/18 Site Activity/Work Area: 3rd Floor Women's Staff Restroom/Baselines				
6.8.01	Baseline: In women's staff restroom	1210	6.5	0.003
6.8.02	Baseline: In women's staff restroom	1200	6	0.002
6.8.03	Baseline: In women's staff restroom	1200	5	<0.002
6.8.04	Blank	-	0	-
Date collected: 6/8/18 Site Activity/Work Area: 3rd Floor Hall/Baselines				
6.8.05	Baseline: In hall at room #311	1210	6	0.002
6.8.06	Baseline: In hall at room #304	1200	10	0.004
6.8.07	Baseline: In hall at stairwell	1200	8	0.003
6.8.08	Blank	-	0	-
Date collected: 6/8/18 Site Activity/Work Area: Basement Room 108/Baselines				
6.8.09	Baseline: Room 108 by kitchenette	1370	6	0.002
6.8.10	Baseline: Room 108 by kitchenette	1370	7	0.003
6.8.11	Baseline: Room 108 by computers	1350	5	<0.002
6.8.12	Baseline: Room 108 center of room	1350	4	<0.002
6.8.13	Baseline: Room 108 bathroom	1340	4.5	<0.002
6.8.14	Blank	-	0	-
6.8.15	Blank	-	0	-
Date collected: 6/8/18 Site Activity/Work Area: 3rd Floor Hallway & Women's Restrooms/Removal of ACPI				
6.8.16	Perimeter: In hall at women's restroom	900	6.4	0.004
6.8.17	Perimeter: In hall at room #304	900	1	<0.003
6.8.18	Work area: In tent at room #311	267	3.5	<0.010
6.8.19	Blank	-	0	-
Date collected: 6/8/18 Site Activity/Work Area: 3rd Floor Women's Staff Restrooms/PCM Finals				
6.8.20	Final: In tent in women's staff restroom	1220	2.5	<0.002
6.8.21	Final: In tent in women's staff restroom	1220	0	<0.002
6.8.22	Final: In tent in women's staff restroom	1220	1	<0.002
6.8.23	Final: In tent in women's staff restroom	1220	1.5	<0.002
6.8.24	Final: In tent in women's staff restroom	1220	3	<0.002
6.8.25	Blank	-	0	-

Olney Elementary School 5301 N. Water Street Philadelphia, Pennsylvania				
Sample #	**Sample Location/Activity**	**Volume (L)**	**Fibers per 100 Fields**	**Sample Result (F/cc)**
Date collected: 6/9/18 **Site Activity/Work Area: Basement Room 108/Pre-Clean & Prep**				
6.9.01	Perimeter: In hall 15' from room 108	1092	5.5	0.002
6.9.02	Perimeter: In hall at panel box adjacent to room	1086	4	<0.002
6.9.03	Perimeter: Outside room 108	1092	5	<0.002
6.9.04	Perimeter: At stairs	1086	3.5	<0.002
6.9.05	Blank	-	0	-
Date collected: 6/9/18 **Site Activity/Work Area: 3rd Floor Hall Tent at Room #304/PCM Finals**				
6.9.01	Final: In tent at room #304	1267	3	<0.002
6.9.02	Final: In tent at room #304	1267	0	<0.002
6.9.03	Final: In tent at room #304	1267	1.5	<0.002
6.9.04	Final: In tent at room #304	1257	1.5	<0.002
6.9.05	Final: In tent at room #304	1257	0	<0.002
6.9.06	Blank	-	0	-
Date collected: 6/9/18 **Site Activity/Work Area: 3rd Floor Hall Tent at Room #311/PCM Finals**				
6.9.07	Final: In tent at room #311	1247	3	<0.002
6.9.08	Final: In tent at room #311	1247	2.5	<0.002
6.9.09	Final: In tent at room #311	1238	2.5	<0.002
6.9.10	Final: In tent at room #311	1238	2	<0.002
6.9.11	Final: In tent at room #311	1238	4	<0.002
6.9.12	Blank	-	0	-
6.9.13	Blank	-	0	-
Date collected: 6/10/18 **Site Activity/Work Area: Prep in Room 108/Demobilization 3rd Floor**				
6.10.01	1st floor hallway (basement) outside room 108	1267	7.5	0.003
6.10.02	1st floor hallway (basement) outside boy's lunch room	1274	9	0.003
6.10.03	2nd floor hallway above room 108 next to Kindergarten class room across mech room	1274	4	<0.002
6.10.04	3rd floor hallway outside room	1274	6	0.002
6.10.05	3rd floor hallway outside room 307	1267	5	<0.002
6.10.06	Blank	-	0	-

Olney Elementary School 5301 N. Water Street Philadelphia, Pennsylvania				
Sample #	**Sample Location/Activity**	**Volume (L)**	**Fibers per 100 Fields**	**Sample Result (F/cc)**
Date collected: 6/16/18 **Site Activity/Work Area: Classroom 108/Prep Work Building Containment**				
6.16.01	Perimeter: Classroom 107	1329	10.5	0.004
6.16.02	Perimeter: Hallway outside classroom 107	1329	10.5	0.004
6.16.03	Perimeter: Hallway outside classroom 108	1329	9	0.003
6.16.04	Perimeter: At stairs	1329	8	0.003
6.16.05	Work area: Classroom 108	1329	21	0.008
6.16.06	Blank	-	0	-
6.16.07	Blank	-	0	-
Date collected: 6/18/18 **Site Activity/Work Area: Prep for Pipe Insulation & Floor Tile Removal under Containment Classroom 108, 108 Restroom**				
6.18.01	Perimeter: In hallway at room 107	1092	1.5	<0.002
6.18.02	Perimeter: In hallway at electrical panel box A1	1092	2	<0.002
6.18.03	Perimeter: In hallway at room 108	1089	2	<0.002
6.18.04	Work area: In room 108	1083	3.5	<0.002
6.18.05	Blank	-	0	
Date collected: 6/19/18 **Site Activity/Work Area: Classroom 108/Prep Work for Removal of APCI**				
6.19.01	Perimeter: In parking lot, outside stairwell No. 5 (south) entrance	705	6.5	0.005
6.19.02	Perimeter: In hall outside Classroom 108	702	3	<0.004
6.19.03	Perimeter: In hall outside girl's lunchroom	696	4	<0.004
6.19.04	Clean room: 3 stage decon	660	2	<0.004
6.19.05	Work area: Classroom 108, under pipe area	660	4	<0.004
6.19.06	Blank	-	0	-
Date collected: 6/19/18 **Site Activity/Work Area: Classroom 108/Prep Work for Removal of VAT & APCI**				
6.19.07	Perimeter: End of hall at electrical panel box #A-1	1116	0	<0.002
6.19.08	Perimeter: In hall at Room #108	1110	1	<0.002
6.19.09	Perimeter: In Room #108 at decon	1095	4.5	<0.002
6.19.10	Decon: Change room (3-stage w/shower)	1095	2	<0.002
6.19.11	Work area: In containment adjacent to restroom	1092	2.5	<0.002
6.19.12	Blank	-	0	-

Olney Elementary School 5301 N. Water Street Philadelphia, Pennsylvania				
Sample #	**Sample Location/Activity**	**Volume (L)**	**Fibers per 100 Fields**	**Sample Result (F/cc)**
Date collected: 6/20/18 **Site Activity/Work Area: Prep for Pipe Insulation & Floor Tile Removal under Containment Classroom 108, 108 Restroom**				
6.20.01	Perimeter: In parking lot, outside stairwell No. 5 (south) entrance	1113	1	<0.002
6.20.02	Perimeter: In hall, outside Classroom 108	1110	2.5	<0.002
6.20.03	Perimeter: In hall, outside girl's lunchroom	1098	2	<0.002
6.20.04	Clean room 3 stage decon	1113	4	<0.002
6.20.05	Work area: Classroom 108, under pipe area	1113	6	0.002
6.20.06	Perimeter: In parking lot, outside Stairwell No. 5 (south) entrance	795	0	<0.003
6.20.07	Perimeter: In hall, outside Classroom 108	795	1	<0.003
6.20.08	Perimeter: In hall, outside girl's lunchroom	795	2	<0.003
6.20.09	Clean room 3 stage decon	792	3.5	<0.003
6.20.10	Work area: Classroom 108, under pipe area	792	2	<0.003
6.20.11	Blank	-	0	-
Date collected: 6/21/18 **Site Activity/Work Area: Room 108 – Complete Area Prep/Removal of ACPI & VAT**				
6.21.01	Perimeter: In hallway at electrical panel box A1	1095	0	<0.002
6.21.02	Perimeter: At entrance to room 108	1092	1.5	<0.002
6.21.05	Perimeter: Outside building at AFD exhaust	999	0	<0.003
6.21.03	Decon: Change room 3-stage w/shower	1080	2	<0.002
6.21.04	Work area: Center of containment adj. to center pipe riser	996	20.5	0.010
6.21.06	Blank	-	0	-
Date collected: 6/21/18 **Site Activity/Work Area: Classroom 108/Removal ACPI & VAT**				
0110	Perimeter: Hallway outside classroom 108	735	11	0.007
0114	Perimeter: Classroom 108 shelf to right of entrance	735	6	0.004
0130	Clean room 3 stage decon	735	6	0.004
0132	Work area: Near AFD	735	6.5	0.004
0133	Blank	-	0	-
0134	Blank	-	0	-

Olney Elementary School 5301 N. Water Street Philadelphia, Pennsylvania				
Sample #	**Sample Location/Activity**	**Volume (L)**	**Fibers per 100 Fields**	**Sample Result (F/cc)**
Date collected: 7/2/18 **Site Activity/Work Area: Classroom 108 – Re-clean/Encapsulation**				
7.2.01	Perimeter: 2nd floor over Classroom #108	1800	3	<0.001
7.2.02	Perimeter: 1st floor hallway outside Classroom #108	1800	4.5	<0.001
7.2.03	Blank	-	0	-

7.0 SUMMARY OF TEM AIR SAMPLING RESULTS

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client: Vertex
700 Turner Way Suite 105
Aston PA 19014
Client No.: VER100

Batch No.: 565658
Project: Only ES
Project No.: 51064
Philly Regs: Y
Turn-Around Time: 6 Hour Rush

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	(609) 929-4211
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:

Samples Taken in Field:	Client	Date:		Time:	
Samples Rec'd at Laboratory:		Date:		Time:	
Samples Analyzed:	R. Smith	Date:	6/9/2018	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

Client Sample ID #	IATL Sample ID #	Volume (L)	Comments	Results s/mm²	Results s/cc
01	6530010	1802	None Detected	< 15.4	< 0.0033
02	6530011	1802	None Detected	< 15.4	< 0.0033

AHERA Clearance Criteria is 70 s/mm².
Phila. Regulations Clearance Criteria is 0.00393 s/cc
Z Test Reults (see attached, if applicable)

Average (s/mm²) = 15.4
Gco = 0.0033

Grid Box #: 1013

Instrument (I, II, III) III

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificates of Analysis will follow these preliminary results. The signed COAs are to be considered the official results.

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name: Vertex
Client Project #: 51064
Sample Type: AHERA -Philly Regulations
QC Submittal

Analysis Date: 06/09/18

IATL Sample #: 6530010
Client Sample #: 01
IATL Grid Box #: 1013
Grid Archive ID #: R3R5

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20,000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 5 5
Total Area Analyzed: 0.0650 mm^2

Volume of Air Sampled: 1802 Liters
Analytical Sensitivity: 15.4 mm^2
Minimum Detection Limit: 0.0033 s/cc

Total **Asbestos** Structures: NSD
0.5µm - 5.0µm: NSD
>5.0µm:
Asbestos: < 15.4 s/mm^2
Asbestos: < 0.0033 s/cc

Non-Asbestos Structures: NSD
Non-Asbestos: < 15.4 s/mm^2
Non-Asbestos: < 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
R3 H6		NSD						
I6		NSD						
J6		NSD						
R5 H7		NSD						
I7		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N) Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	6%

Comments:

Analyzed By: R. Smith
Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name: Vertex
Client Project #: 51064
Sample Type: AHERA -Philly Regulations
QC Submittal

Analysis Date: 06/09/18

IATL Sample #: 6530011
Client Sample #: 02
IATL Grid Box #: 1013
Grid Archive ID #: R7R9

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20,000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 5 5
Total Area Analyzed: 0.0650 mm^2

Volume of Air Sampled: 1802 Liters
Analytical Sensitivity: 15.4 mm^2
Minimum Detection Limit: 0.0033 s/cc

Total **Asbestos** Structures: NSD
0.5µm - 5.0µm: NSD
>5.0µm:
Asbestos: < 15.4 s/mm^2
Asbestos: < 0.0033 s/cc

Non-Asbestos Structures: NSD
Non-Asbestos: < 15.4 s/mm^2
Non-Asbestos: < 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
R7 F7		NSD						
F6		NSD						
R9 D3		NSD						
D4		NSD						
D5		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	6%

Comments:

Analyzed By: R. Smith
Reviewed By:

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565658 - TEM AHERA
Project: Olney ES
Project No.: 51064

Appendix to Analytical Report:

Customer Contact: Don Heim
Method: 40 CFR 763 Final Rule

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

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iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Pete Lesniak
Sample Matrix: Air Cassettes

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iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by 40 CFR 763 Final Rule

Certifications:
- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021

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Disclaimers / Qualifiers:

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iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565658 - TEM AHERA
Project: Olney ES
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6530010
Client No.: 01

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent. In Women's Staff Restroom

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6530011
Client No.: 02

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent. In Women's Staff Restroom

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:41:54

INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565658 - TEM AHERA
Project: Olney ES
Project No.: 51064

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565658 - TEM AHERA
Project: Olney ES
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6530010
Client No.: 01

Volume: 1802.0 L
Location: Final-In Tent, In Women's Staff Restroom
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Lab No.: 6530011
Client No.: 02

Volume: 1802.0 L
Location: Final-In Tent, In Women's Staff Restroom
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:41:53

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565659 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6530012
Client No.: 03

Volume: 1802.0 L
Location: Final-In Tent In Hall Adjacent To Room #311
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Lab No.: 6530013
Client No.: 04

Volume: 1802.0 L
Location: Final-In Tent In Hall Adjacent To Room #311
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 7/13/2018 1:32:15

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ASBESTOS TESTING LABORATORIES

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Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565660 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6530014
Client No.: 05

Volume: 1802.0 L
Location: Final-In Tent In Hallway Adjacent To Room # 304
Date Sampled: 6/9/18

Density (s/mm²): 15.4
Concentration (s/cc): 0.0033
Asbestos Type(s): Chrysotile

Lab No.: 6530015
Client No.: 06

Volume: 1802.0 L
Location: Final-In Tent In Hallway Adjacent To Room # 304
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 7/13/2018 1:31:20

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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
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ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565659 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6530012
Client No.: 03

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hall Adjacent To Room #311

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6530013
Client No.: 04

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hall Adjacent To Room #311

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

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Date Received: 6/9/2018
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Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Client: VER100

Report Date: 6/9/2018
Report No.: 565659 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

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Client: VER100

Report Date: 6/9/2018
Report No.: 565659 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

Appendix to Analytical Report:

Customer Contact: Don Heim
Method: 40 CFR 763 Final Rule

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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
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ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565660 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

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700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565660 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6530014
Client No.: 05

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hallway Adjacent To Room # 304

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number: SAED 1
EDXA Spectrum ID:

Asbestos Structures: 1

Structures 0.5 µm to <5.0 µm: 1
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): 15.4
Structure Concentration (s/cc): 0.0033
Asbestos Type(s): Chrysotile

Non-Asbestos Structures: 1

Structure Density (s/mm²): 15.4
Structure Concentration (s/cc): 0.0033
Non-Asbestos Type(s): SiAl - Other Fiber

Lab No.: 6530015
Client No.: 06

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hallway Adjacent To Room # 304

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Geometric Mean = 0.0033 Structures/cc

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

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Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 7/13/2018 1:31:21

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	The Vertex Companies, Inc. 700 Turner Way, Suite 105 ASTON PA 19014	Report Date:	6/9/2018
		Report No.:	565660 - TEM AHERA
		Project:	Olney Elementary School
		Project No.:	51064
Client:	VER100		

Appendix to Analytical Report:

Customer Contact: Don Heim
Method: 40 CFR 763 Final Rule

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Analysis by 40 CFR 763 Final Rule

Certifications:
- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021

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ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client: Vertex
700 Turner Way Suite 105
Aston PA 19014
Client No.: VER100

Batch No.: 5656589
Project: Olny ES
Project No.: 51064
Philly Regs: Y
Turn-Around Time: 6 Hour Rush

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	(609) 929-4211
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:

Samples Taken in Field:	Client	Date:		Time:	
Samples Rec'd at Laboratory:		Date:		Time:	
Samples Analyzed:	R. Smith	Date:	6/9/2018	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

Client Sample ID #	IATL Sample ID #	Volume (L)	Comments	Results s/mm²	Results s/cc
03	6530012	1802	None Detected	< 15.4	< 0.0033
04	6530013	1802	None Detected	< 15.4	< 0.0033

AHERA Clearance Criteria is **70** s/mm².
Phila. Regulations Clearance Criteria is 0.00393 s/cc
Z Test Reults (see attached, if applicable)

Average (s/mm²) = 15.4
Geo = 0.0033

Grid Box #: 1013

Instrument (I, II, III): III

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificates of Analysis will follow these preliminary results. The signed COAs are to be considered the official results.

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name: Vertex
Client Project #: 51064
Sample Type: AHERA -Philly Regulations
QC Submittal

Analysis Date: 06/09/18

IATL Sample #: 6530012
Client Sample #: 03
IATL Grid Box #: 1013
Grid Archive ID #: S2S4

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20,000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 5 5
Total Area Analyzed: 0.0650 mm^2

Volume of Air Sampled: 1802 Liters
Analytical Sensitivity: 15.4 mm^2
Minimum Detection Limit: 0.0033 s/cc

Total **Asbestos** Structures: NSD
0.5µm - 5.0µm: NSD
>5.0µm:
Asbestos: < 15.4 s/mm^2
Asbestos: < 0.0033 s/cc

Non-Asbestos Structures: NSD
Non-Asbestos: < 15.4 s/mm^2
Non-Asbestos: < 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
S2 B5		NSD						
C5		NSD						
D5		NSD						
S4 D7		NSD						
D6		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments:

Analyzed By: R. Smith
Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name: Vertex
Client Project #: 51064
Sample Type: AHERA -Philly Regulations
QC Submittal

Analysis Date: 06/09/18

IATL Sample #: 6530013
Client Sample #: 04
IATL Grid Box #: 1013
Grid Archive ID #: S6S8

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20,000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 5 5
Total Area Analyzed: 0.0650 mm^2

Volume of Air Sampled: 1802 Liters
Analytical Sensitivity: 15.4 mm^2
Minimum Detection Limit: 0.0033 s/cc

Total **Asbestos** Structures: NSD
0.5µm - 5.0µm: NSD
>5.0µm:
Asbestos: < 15.4 s/mm^2
Asbestos: < 0.0033 s/cc

Non-Asbestos Structures: NSD
Non-Asbestos: < 15.4 s/mm^2
Non-Asbestos: < 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
S6 C4		NSD						
D4		NSD						
E4		NSD						
S8 H5		NSD						
H6		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	3%

Comments:

Analyzed By: R. Smith
Reviewed By:

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565659 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6530012
Client No.: 03

Volume: 1802.0 L
Location: Final-In Tent In Hall Adjacent To Room #311
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Lab No.: 6530013
Client No.: 04

Volume: 1802.0 L
Location: Final-In Tent In Hall Adjacent To Room #311
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:41:13

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ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565659 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

Appendix to Analytical Report:

Customer Contact: Don Heim
Method: 40 CFR 763 Final Rule

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Pete Lesniak
Sample Matrix: Air Cassettes

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by 40 CFR 763 Final Rule

Certifications:
- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Detection Limit (Reporting Limit) is dependent upon the volume of air sampled. AHERA guidelines recommend a minimum of 1200 L (0.0049 s/cc).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565659 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6530012
Client No.: 03

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hall Adjacent To Room #311

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6530013
Client No.: 04

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hall Adjacent To Room #311

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:41:13

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	The Vertex Companies, Inc. 700 Turner Way, Suite 105 ASTON PA 19014	Report Date:	6/9/2018
		Report No.:	565659 - TEM AHERA
		Project:	Olney Elementary School
		Project No.:	51064
Client:	VER100		

IATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client: Vertex
700 Turner Way Suite 105
Aston PA 19014
Client No.: VER100

Batch No.: 565660
Project: Olny ES
Project No.: 51064
Philly Regs: Y
Turn-Around Time: 6 Hour Rush

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	(609) 929-4211
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:

Samples Taken in Field:	Client	Date:		Time:	
Samples Rec'd at Laboratory:		Date:		Time:	
Samples Analyzed:	R. Smith	Date:	6/9/2018	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

Client Sample ID #	IATL Sample ID #	Volume (L)	Comments	Results s/mm²	Results s/cc
05	6530014	1802	Chrysotile	15.4	0.0033
06	6530015	1802	None Detected	< 15.4	< 0.0033

AHERA Clearance Criteria is 70 s/mm².
Phila. Regulations Clearance Criteria is 0.00393 s/cc
Z Test Reults (see attached, if applicable)

Average (s/mm²) = 15.4
Geo = 0.0033

Grid Box #: 1013

Instrument (I, II, III) III

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificates of Analysis will follow these preliminary results. The signed COAs are to be considered the official results.

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name: Vertex
Client Project #: 51064
Sample Type: AHERA -Philly Regulations
QC Submittal

Analysis Date: 06/09/18

IATL Sample #: 6530014
Client Sample #: 05
IATL Grid Box #: 1013
Grid Archive ID #: S10T1

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20,000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 5 5
Total Area Analyzed: 0.0650 mm^2

Volume of Air Sampled: 1802 Liters
Analytical Sensitivity: 15.4 mm^2
Minimum Detection Limit: 0.0033 s/cc

Total Asbestos Structures: 1
0.5µm - 5.0µm: 1
>5.0µm:
Asbestos: 15.4 s/mm^2
Asbestos: 0.0033 s/cc

Non-Asbestos Structures: 1
Non-Asbestos: 15.4 s/mm^2
Non-Asbestos: 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
S10 F4	1	M	1		CD			SAED 1
F3	1	NSD					SiAl - Other Fiber	
F2		NSD						
T1 B6		NSD						
A6		NSD						
Total:	2		1		1	0	1	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	3%

Comments:

Analyzed By: R. Smith
Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name: Vertex
Client Project #: 51064
Sample Type: AHERA -Philly Regulations
QC Submittal

Analysis Date: 06/09/18

IATL Sample #: 6530015
Client Sample #: 06
IATL Grid Box #: 1013
Grid Archive ID #: T3T5

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20,000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 5 5
Total Area Analyzed: 0.0650 mm^2

Volume of Air Sampled: 1802 Liters
Analytical Sensitivity: 15.4 mm^2
Minimum Detection Limit: 0.0033 s/cc

Total **Asbestos** Structures: NSD
0.5µm - 5.0µm: NSD
>5.0µm:
Asbestos: < 15.4 s/mm^2
Asbestos: < 0.0033 s/cc

Non-Asbestos Structures: NSD
Non-Asbestos: < 15.4 s/mm^2
Non-Asbestos: < 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
T3 E8		NSD						
E9		NSD						
E10		NSD						
T5 G8		NSD						
F8		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	5%

Comments:

Analyzed By: R. Smith
Reviewed By:

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565660 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6530014
Client No.: 05

Volume: 1802.0 L
Location: Final-In Tent In Hallway Adjacent To Room # 304
Date Sampled: 6/9/18

Density (s/mm²): 15.4
Concentration (s/cc): 0.0033
Asbestos Type(s): Chrysotile

Lab No.: 6530015
Client No.: 06

Volume: 1802.0 L
Location: Final-In Tent In Hallway Adjacent To Room # 304
Date Sampled: 6/9/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:22:44

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565660 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

Appendix to Analytical Report:

Customer Contact: Don Heim
Method: 40 CFR 763 Final Rule

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

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iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Pete Lesniak
Sample Matrix: Air Cassettes

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iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by 40 CFR 763 Final Rule

Certifications:
- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Detection Limit (Reporting Limit) is dependent upon the volume of air sampled. AHERA guidelines recommend a minimum of 1200 L (0.0049 s/cc).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565660 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6530014
Client No.: 05

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hallway Adjacent To Room # 304

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number: SAED 1
EDXA Spectrum ID:

Asbestos Structures: 1

Structures 0.5 µm to <5.0 µm: 1
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): 15.4
Structure Concentration (s/cc): 0.0033
Asbestos Type(s): Chrysotile

Non-Asbestos Structures: 1

Structure Density (s/mm²): 15.4
Structure Concentration (s/cc): 0.0033
Non-Asbestos Type(s): SiAl - Other Fiber

Lab No.: 6530015
Client No.: 06

Volume (L): 1802.0 L
Date Sampled: 6/9/18
Location: Final-In Tent In Hallway Adjacent To Room # 304

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Geometric Mean = 0.0033 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/09/2018
Signature:
Analyst: Rebecca Smith

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:22:44

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/9/2018
Report No.: 565660 - TEM AHERA
Project: Olney Elementary School
Project No.: 51064

IATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client:	Vertex	Batch No.:	566844
	700 Turner Way Suite 105	Project:	Psd-Olney ES
	Aston PA 19014	Project No.:	51064
Client No.:	VER100	Philly Regs:	Y
		Turn-Around Time:	1 Day

Client Contacts:		Laboratory Contacts:	
Contacts:	Don Heim	Contacts:	Frank E. Ehrenfeld III
Phone:	610-558-8902	Phone:	(856) 231-9449
Fax:	610-558-8904	Fax:	(856) 231-9818
Cell/Pager:	610-787-0402	Cell/Pager:	(609) 929-4211
E-Mail:	dheim@vertexeng.com	E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:

Samples Taken in Field:	Client	Date:	6/25/2018	Time:	
Samples Rec'd at Laboratory:	L. D'Ornellas	Date:	6/26/2018	Time:	
Samples Analyzed:	J. Jeon	Date:	6/26/2018	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

Client Sample ID #	IATL Sample ID #	Volume (L)	Comments	Results s/mm²	Results s/cc
F-01	6543586	1802	None Detected	< 15.4	< 0.0033
F-02	6543587	1812	None Detected	< 15.4	< 0.0033
F-03	6543588	1812	None Detected	< 15.4	< 0.0033
F-04	6543589	1812	None Detected	< 15.4	< 0.0033
F-05	6543590	1802	None Detected	< 15.4	< 0.0033
F-06	6543591	1832	None Detected	< 15.4	< 0.0032
F-07	6543592	1822	None Detected	< 15.4	< 0.0033
F-08	6543593	1832	None Detected	< 15.4	< 0.0032
F-09	6543594	1832	None Detected	< 15.4	< 0.0032
F-10	6543595	1832	None Detected	< 15.4	< 0.0032

AHERA Clearance Criteria is 70 s/mm². Average (s/mm²) = 15.4
Phila. Regulations Clearance Criteria is 0.00554 s/cc based on 5 samples Geo = 0.00326
Z Test Reults (see attached. if applicable)

Grid Box #: 1049

Instrument (I, II, III) II

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificates of Analysis will follow these preliminary results. The signed COAs are to be considered the official results.

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543586
Client Project #:	51064		**Client Sample #:** F-01
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: F8F10

Electron Microscope ID:	Filter Dia. (mm): 25		Magnification: 20,000X
	Effective Area (mm): 385		
II Hitachi H600AB, 542-47-7	Filter Type: MCE		Accelerating Voltage: 100KeV
EVEX	Filter Pore Size (µm): 0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1802 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0033 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0033 s/cc	Non-Asbestos:	< 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
F8 D2		NSD						
E2		NSD						
F2		NSD						
F10 D7		NSD						
E7		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	1%

Comments:

Analyzed By: J. Jeon

Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543587
Client Project #:	51064		**Client Sample #:** F-02
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: G1G3

Electron Microscope ID:		Filter Dia. (mm):	25	Magnification:	20,000X
		Effective Area (mm):	385		
II	Hitachi H600AB. 542-47-7	Filter Type:	MCE	Accelerating Voltage:	100KeV
	EVEX	Filter Pore Size (µm):	0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1812 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0033 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0033 s/cc	Non-Asbestos:	< 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
G1 B4		NSD						
C4		NSD						
D4		NSD						
G3 C4		NSD						
D4		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments: _____

Analyzed By: J. Jeon

Reviewed By: _____

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543588
Client Project #:	51064		**Client Sample #:** F-03
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: G5G7

Electron Microscope ID:		Filter Dia. (mm):	25	Magnification:	20,000X
		Effective Area (mm):	385		
II Hitachi H600AB, 542-47-7		Filter Type:	MCE	Accelerating Voltage:	100KeV
EVEX		Filter Pore Size (µm):	0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1812 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0033 s/cc

Total Asbestos Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0033 s/cc	Non-Asbestos:	< 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
G5 B2		NSD						
C2		NSD						
D2		NSD						
G7 C7		NSD						
D7		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments: _____

Analyzed By: J. Jeon

Reviewed By: _____

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543589
Client Project #:	51064		**Client Sample #:** F-04
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: G9H2

Electron Microscope ID:	Filter Dia. (mm): 25		Magnification: 20,000X
	Effective Area (mm): 385		
II Hitachi H600AB, 542-47-7	Filter Type: MCE		Accelerating Voltage: 100KeV
EVEX	Filter Pore Size (µm): 0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1812 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0033 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0033 s/cc	Non-Asbestos:	< 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
G9 B3		NSD						
C3		NSD						
D3		NSD						
H2 B6		NSD						
C6		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	5%

Comments: _____

Analyzed By: J. Jeon

Reviewed By: _____

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543590
Client Project #:	51064		**Client Sample #:** F-05
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal	R		Grid Archive ID #: H4H6

Electron Microscope ID:		Filter Dia. (mm):	25	Magnification:	20,000X
		Effective Area (mm):	385		
II	Hitachi H600AB, 542-47-7	Filter Type:	MCE	Accelerating Voltage:	100KeV
	EVEX	Filter Pore Size (µm):	0.45		

Grid Opening:	0.115 mm		Volume of Air Sampled:	1802	Liters
Grid opening Area:	0.013 mm^2				
Grid Openings Read/Required:	5	4	Analytical Sensitivity:	15.4	mm^2
Total Area Analyzed:	0.0650 mm^2		Minimum Detection Limit:	0.0033	s/cc

Total **Asbestos** Structures:	NSD		Non-Asbestos Structures:	NSD	
0.5µm - 5.0µm:	NSD				
>5.0µm:					
Asbestos:	< 15.4	s/mm^2	Non-Asbestos:	< 15.4	s/mm^2
Asbestos:	< 0.0033	s/cc	Non-Asbestos:	< 0.0033	s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
H4 B5		NSD						
C5		NSD						
D5		NSD						
H6 C6		NSD						
D6		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 .004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments:

Analyzed By: J. Jeon

Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543591
Client Project #:	51064		**Client Sample #:** F-06
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: H8H10

Electron Microscope ID:		Filter Dia. (mm):	25	Magnification:	20.000X
		Effective Area (mm):	385		
II	Hitachi H600AB, 542-47-7	Filter Type:	MCE	Accelerating Voltage:	100KeV
	EVEX	Filter Pore Size (µm):	0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1832 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0032 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0032 s/cc	Non-Asbestos:	< 0.0032 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
H8 C2		NSD						
D2		NSD						
E2		NSD						
H10 H2		NSD						
I2		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments: _____

Analyzed By: J. Jeon

Reviewed By: _____

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543592
Client Project #:	51064		**Client Sample #:** F-07
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: 1113

Electron Microscope ID:		Filter Dia. (mm):	25	Magnification:	20,000X
		Effective Area (mm):	385		
II	Hitachi H600AB, 542-47-7	Filter Type:	MCE	Accelerating Voltage:	100KeV
	EVEX	Filter Pore Size (µm):	0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1822 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0033 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0033 s/cc	Non-Asbestos:	< 0.0033 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
I1 G2		NSD						
H2		NSD						
I2		NSD						
I3 F2		NSD						
G2		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	3%

Comments: _____

Analyzed By: J. Jeon

Reviewed By: _____

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543593
Client Project #:	51064		**Client Sample #:** F-08
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: 1517

Electron Microscope ID:	Filter Dia. (mm): 25	Magnification:	20.000X
	Effective Area (mm): 385		
II Hitachi H600AB, 542-47-7	Filter Type: MCE	Accelerating Voltage:	100KeV
EVEX	Filter Pore Size (µm): 0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1832 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0032 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0032 s/cc	Non-Asbestos:	< 0.0032 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
I5 D2		NSD						
E2		NSD						
F2		NSD						
I7 G7		NSD						
H7		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	4%

Comments:

Analyzed By: J. Jeon

Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543594
Client Project #:	51064		**Client Sample #:** F-09
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: I9J2

Electron Microscope ID:		Filter Dia. (mm):	25	Magnification:	20.000X
		Effective Area (mm):	385		
II Hitachi H600AB, 542-47-7		Filter Type:	MCE	Accelerating Voltage:	100KeV
EVEX		Filter Pore Size (µm):	0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1832 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0032 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0032 s/cc	Non-Asbestos:	< 0.0032 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
I9 A4		NSD						
B4		NSD						
C4		NSD						
J2 F4		NSD						
G4		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	6%

Comments:

Analyzed By: J. Jeon

Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 06/26/18	**IATL Sample #:** 6543595
Client Project #:	51064		**Client Sample #:** F-10
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1049
QC Submittal			Grid Archive ID #: J4J6

Electron Microscope ID:		Filter Dia. (mm):	25	Magnification:	20,000X
		Effective Area (mm):	385		
II	Hitachi H600AB, 542-47-7	Filter Type:	MCE	Accelerating Voltage:	100KeV
	EVEX	Filter Pore Size (µm):	0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1832 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	5 4	Analytical Sensitivity:	15.4 mm^2
Total Area Analyzed:	0.0650 mm^2	Minimum Detection Limit:	0.0032 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 15.4 s/mm^2	Non-Asbestos:	< 15.4 s/mm^2
Asbestos:	< 0.0032 s/cc	Non-Asbestos:	< 0.0032 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
J4 B4		NSD						
C4		NSD						
D4		NSD						
J6 B7		NSD						
C7		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	1%

Comments: _____

Analyzed By: J. Jeon

Reviewed By: _____

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6543586 **Client No.:** F-01	**Volume:** 1802.0 L **Location:** Outside Next To Kit. **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0033 **Asbestos Type(s):** None Detected
Lab No.: 6543587 **Client No.:** F-02	**Volume:** 1812.0 L **Location:** Outside Next To Decon **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0033 **Asbestos Type(s):** None Detected
Lab No.: 6543588 **Client No.:** F-03	**Volume:** 1812.0 L **Location:** Outside Front Of Cafe Door **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0033 **Asbestos Type(s):** None Detected
Lab No.: 6543589 **Client No.:** F-04	**Volume:** 1812.0 L **Location:** Outside Hallway Next To Cafe **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0033 **Asbestos Type(s):** None Detected
Lab No.: 6543590 **Client No.:** F-05	**Volume:** 1802.0 L **Location:** Outside Hallway Around Rm 107 **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0033 **Asbestos Type(s):** None Detected
Lab No.: 6543591 **Client No.:** F-06	**Volume:** 1832.0 L **Location:** Inside Containment Bathroom Ent. **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0032 **Asbestos Type(s):** None Detected
Lab No.: 6543592 **Client No.:** F-07	**Volume:** 1822.0 L **Location:** Inside Containment West **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0033 **Asbestos Type(s):** None Detected
Lab No.: 6543593 **Client No.:** F-08	**Volume:** 1832.0 L **Location:** Inside Containment Next To Decon **Date Sampled:** 6/25/18	**Density (s/mm²):** <15.4 **Concentration (s/cc):** <0.0032 **Asbestos Type(s):** None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/26/2018
Signature:
Analyst: Jhoon Jeon

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6543594
Client No.: F-09

Volume: 1832.0 L
Location: Inside Containment Center
Date Sampled: 6/25/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0032
Asbestos Type(s): None Detected

Lab No.: 6543595
Client No.: F-10

Volume: 1832.0 L
Location: Inside Containment East
Date Sampled: 6/25/18

Density (s/mm²): <15.4
Concentration (s/cc): <0.0032
Asbestos Type(s): None Detected

Geometric Mean = 0.00326 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/26/2018
Signature:
Analyst: Jhoon Jeon

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

Appendix to Analytical Report:

Customer Contact: Don Heim
Method: 40 CFR 763 Final Rule

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Pete Lesniak
Sample Matrix: Air Cassettes

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by 40 CFR 763 Final Rule

Certifications:
- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Detection Limit (Reporting Limit) is dependent upon the volume of air sampled. AHERA guidelines recommend a minimum of 1200 L (0.0049 s/cc).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6543586
Client No.: F-01

Volume (L): 1802.0 L
Date Sampled: 6/25/18
Location: Outside Next To Kit.

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6543587
Client No.: F-02

Volume (L): 1812.0 L
Date Sampled: 6/25/18
Location: Outside Next To Decon

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6543588
Client No.: F-03

Volume (L): 1812.0 L
Date Sampled: 6/25/18
Location: Outside Front Of Cafe Door

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/26/2018
Signature:
Analyst: Jhoon Jeon

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6543589
Client No.: F-04

Volume (L): 1812.0 L
Date Sampled: 6/25/18
Location: Outside Hallway Next To Cafe

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6543590
Client No.: F-05

Volume (L): 1802.0 L
Date Sampled: 6/25/18
Location: Outside Hallway Around Rm 107

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6543591
Client No.: F-06

Volume (L): 1832.0 L
Date Sampled: 6/25/18
Location: Inside Containment Bathroom Ent.

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0032

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0032
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0032
Non-Asbestos Type(s): None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/26/2018
Signature:
Analyst: Jhoon Jeon

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6543592
Client No.: F-07

Volume (L): 1822.0 L
Date Sampled: 6/25/18
Location: Inside Containment West

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0033

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0033
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0033
Non-Asbestos Type(s): None Detected

Lab No.: 6543593
Client No.: F-08

Volume (L): 1832.0 L
Date Sampled: 6/25/18
Location: Inside Containment Next To Decon

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0032

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0032
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0032
Non-Asbestos Type(s): None Detected

Lab No.: 6543594
Client No.: F-09

Volume (L): 1832.0 L
Date Sampled: 6/25/18
Location: Inside Containment Center

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0032

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0032
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0032
Non-Asbestos Type(s): None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/26/2018
Signature:
Analyst: Jhoon Jeon

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6543595
Client No.: F-10

Volume (L): 1832.0 L
Date Sampled: 6/25/18
Location: Inside Containment East

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cc): 0.0032

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cc): ≤0.0032
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cc): <0.0032
Non-Asbestos Type(s): None Detected

Geometric Mean = 0.00326 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/26/2018
Signature:
Analyst: Jhoon Jeon

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/27/2018 10:11:51

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ASBESTOS TESTING LABORATORIES

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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 6/26/2018
Report No.: 566844 - TEM AHERA
Project: PSD-Olney ES,Rm 108 Containment
Project No.: 51064

IATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client:	Vertex	Batch No.:	567664
	700 Turner Way Suite 105	Project:	Olney E. School
	Aston PA 19014	Project No.:	51064
Client No.:	VER100	Philly Regs:	Y
		Turn-Around Time:	1 Day

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	(609) 929-4211
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:

Samples Taken in Field:		Date:		Time:	
Samples Rec'd at Laboratory:	TM	Date:	7/6/2018	Time:	
Samples Analyzed:	K. Goedde	Date:	7/8/2018	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

Client Sample ID #	IATL Sample ID #	Volume (L)	Comments	Results s/mm²	Results s/cc
01	6552826	1805	None Detected	< 19.2	< 0.0041
02	6552827	1805	None Detected	< 19.2	< 0.0041
03	6552828	1805	None Detected	< 19.2	< 0.0041
04	6552829	1805	None Detected	< 19.2	< 0.0041
05	6552830	1805	None Detected	< 19.2	< 0.0041

AHERA Clearance Criteria is 70 s/mm².
Phila. Regulations Clearance Criteria is 0.00554 s/cc
Z Test Reults (see attached, if applicable)

Average (s/mm²) = 19.2
Geo = 0.0041

Grid Box #: 1080

Instrument (I, II, III) III

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificates of Analysis will follow these preliminary results. The signed COAs are to be considered the official results.

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 07/08/18	**IATL Sample #:** 6552826
Client Project #:	51064		**Client Sample #:** 01
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1080
QC Submittal	R		Grid Archive ID #: G5G7

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20,000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 4 4
Total Area Analyzed: 0.0520 mm^2

Volume of Air Sampled: 1805 Liters
Analytical Sensitivity: 19.2 mm^2
Minimum Detection Limit: 0.0041 s/cc

Total **Asbestos** Structures: NSD
0.5µm - 5.0µm: NSD
>5.0µm:

Non-Asbestos Structures: NSD

Asbestos: < 19.2 s/mm^2
Asbestos: < 0.0041 s/cc

Non-Asbestos: < 19.2 s/mm^2
Non-Asbestos: < 0.0041 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
G5 I3		NSD						
I2		NSD						
G7 I3		NSD						
I2		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments:

Analyzed By: K. Goedde
Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 07/08/18	**IATL Sample #:** 6552827
Client Project #:	51064		**Client Sample #:** 02
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1080
QC Submittal			Grid Archive ID #: G9H2

Electron Microscope ID:	Filter Dia. (mm): 25	Magnification:	20,000X
	Effective Area (mm): 385		
III JEOL, JEM-1230, EM18440033	Filter Type: MCE	Accelerating Voltage:	100KeV
EVEX	Filter Pore Size (µm): 0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1805 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	4 4	Analytical Sensitivity:	19.2 mm^2
Total Area Analyzed:	0.0520 mm^2	Minimum Detection Limit:	0.0041 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 19.2 s/mm^2	Non-Asbestos:	< 19.2 s/mm^2
Asbestos:	< 0.0041 s/cc	Non-Asbestos:	< 0.0041 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
G9 G9		NSD						
H9		NSD						
H2 B8		NSD						
B9		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

SEE REVERSE: FIBER ORIENTATION MAP

Comments:

Analyzed By: K. Goedde

Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 07/08/18	**IATL Sample #:** 6552828
Client Project #:	51064		**Client Sample #:** 03
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1080
QC Submittal			Grid Archive ID #: H4H6

Electron Microscope ID:	Filter Dia. (mm): 25	Magnification:	20,000X
	Effective Area (mm): 385		
III JEOL, JEM-1230, EM18440033	Filter Type: MCE	Accelerating Voltage:	100KeV
EVEX	Filter Pore Size (µm): 0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1805 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	4 4	Analytical Sensitivity:	19.2 mm^2
Total Area Analyzed:	0.0520 mm^2	Minimum Detection Limit:	0.0041 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 19.2 s/mm^2	Non-Asbestos:	< 19.2 s/mm^2
Asbestos:	< 0.0041 s/cc	Non-Asbestos:	< 0.0041 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
H4 H4		NSD						
H3		NSD						
H6 I4		NSD						
I3		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments:

Analyzed By: K. Goedde

Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 07/08/18	**IATL Sample #:** 6552829
Client Project #:	51064		**Client Sample #:** 04
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1080
QC Submittal			Grid Archive ID #: H10

Electron Microscope ID:
III JEOL, JEM-1230, EM18440033
EVEX

Filter Dia. (mm): 25
Effective Area (mm): 385
Filter Type: MCE
Filter Pore Size (µm): 0.45

Magnification: 20.000X
Accelerating Voltage: 100KeV

Grid Opening: 0.115 mm
Grid opening Area: 0.013 mm^2
Grid Openings Read/Required: 4 4
Total Area Analyzed: 0.0520 mm^2

Volume of Air Sampled: 1805 Liters
Analytical Sensitivity: 19.2 mm^2
Minimum Detection Limit: 0.0041 s/cc

Total Asbestos Structures: NSD
0.5µm - 5.0µm: NSD
>5.0µm:
Asbestos: < 19.2 s/mm^2
Asbestos: < 0.0041 s/cc

Non-Asbestos Structures: NSD
Non-Asbestos: < 19.2 s/mm^2
Non-Asbestos: < 0.0041 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
H10 H4		NSD						
H3		NSD						
H2		NSD						
H1		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 .004, 110, 130, 220, 200)
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.
*** Characterize by EDS
1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments: GRID H8 BLOWN OUT

Analyzed By: K. Goedde

Reviewed By:

IATL International Asbestos Testing Laboratories

TEM Air Sample Worksheet

Client Name:	Vertex	**Analysis Date:** 07/08/18	**IATL Sample #:** 6552830
Client Project #:	51064		**Client Sample #:** 05
Sample Type:	**AHERA -Philly Regulations**		IATL Grid Box #: 1080
QC Submittal			Grid Archive ID #: 1113

Electron Microscope ID:	Filter Dia. (mm): 25	Magnification:	20.000X
	Effective Area (mm): 385		
III JEOL, JEM-1230, EM18440033	Filter Type: MCE	Accelerating Voltage:	100KeV
EVEX	Filter Pore Size (µm): 0.45		

Grid Opening:	0.115 mm	Volume of Air Sampled:	1805 Liters
Grid opening Area:	0.013 mm^2		
Grid Openings Read/Required:	4 4	Analytical Sensitivity:	19.2 mm^2
Total Area Analyzed:	0.0520 mm^2	Minimum Detection Limit:	0.0041 s/cc

Total **Asbestos** Structures:	NSD	Non-Asbestos Structures:	NSD
0.5µm - 5.0µm:	NSD		
>5.0µm:			
Asbestos:	< 19.2 s/mm^2	Non-Asbestos:	< 19.2 s/mm^2
Asbestos:	< 0.0041 s/cc	Non-Asbestos:	< 0.0041 s/cc

Analysis Data:

Grid Opening ID	Structure Number	Structure Type F/B/C/M	[1] Length 0.5 -5.0 µm	[2] Length > 5.0 µm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID
I1 C8		NSD						
C9		NSD						
I3 C1		NSD						
C2		NSD						
Total:	NSD	NSD	0	0	0	0	0	

* Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber
Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)

** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.

*** Characterize by EDS

1, 2 Record Structure Length & Width (µm)

SEE REVERSE: FIBER ORIENTATION MAP

Prep Quality:	
Dissolution	Good
Carbon Film	Good
Loading	2%

Comments:

Analyzed By: K. Goedde

Reviewed By:

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 7/8/2018
Report No.: 567664 - TEM AHERA
Project: Olney E. School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6552826
Client No.: -01
Volume: 1805.0 L
Location: In Bathroom 108 1st Floor
Date Sampled: 7/6/18
Density (s/mm²): <19.2
Concentration (s/cc): <0.0041
Asbestos Type(s): None Detected

Lab No.: 6552827
Client No.: -02
Volume: 1805.0 L
Location: In Entrance Bathroom 108 1st Floor
Date Sampled: 7/6/18
Density (s/mm²): <19.2
Concentration (s/cc): <0.0041
Asbestos Type(s): None Detected

Lab No.: 6552828
Client No.: -03
Volume: 1805.0 L
Location: In Room 108 By Window 1st Floor
Date Sampled: 7/6/18
Density (s/mm²): <19.2
Concentration (s/cc): <0.0041
Asbestos Type(s): None Detected

Lab No.: 6552829
Client No.: -04
Volume: 1805.0 L
Location: In Room 108 By View Port
Date Sampled: 7/6/18
Density (s/mm²): <19.2
Concentration (s/cc): <0.0041
Asbestos Type(s): None Detected

Lab No.: 6552830
Client No.: -05
Volume: 1805.0 L
Location: In Room 108 By Column 1st Floor
Date Sampled: 7/6/18
Density (s/mm²): <19.2
Concentration (s/cc): <0.0041
Asbestos Type(s): None Detected

Geometric Mean = 0.0041 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/6/2018
Date Analyzed: 07/08/2018
Signature:
Analyst: Kristen Goedde

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 7/9/2018 11:51:31

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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 7/8/2018
Report No.: 567664 - TEM AHERA
Project: Olney E. School
Project No.: 51064

Appendix to Analytical Report:

Customer Contact: Don Heim
Method: 40 CFR 763 Final Rule

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Pete Lesniak
Sample Matrix: Air Cassettes

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by 40 CFR 763 Final Rule

Certifications:
- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Detection Limit (Reporting Limit) is dependent upon the volume of air sampled. AHERA guidelines recommend a minimum of 1200 L (0.0049 s/cc).

Disclaimers / Qualifiers:

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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 7/8/2018
Report No.: 567664 - TEM AHERA
Project: Olney E. School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6552826
Client No.: -01

Volume (L): 1805.0 L
Date Sampled: 7/6/18
Location: In Bathroom 108 1st Floor

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cc): 0.0041

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cc): ≤0.0041
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cc): <0.0041
Non-Asbestos Type(s): None Detected

Lab No.: 6552827
Client No.: -02

Volume (L): 1805.0 L
Date Sampled: 7/6/18
Location: In Entrance Bathroom 108 1st Floor

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cc): 0.0041

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cc): ≤0.0041
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cc): <0.0041
Non-Asbestos Type(s): None Detected

Lab No.: 6552828
Client No.: -03

Volume (L): 1805.0 L
Date Sampled: 7/6/18
Location: In Room 108 By Window 1st Floor

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cc): 0.0041

Micrograph Number:
EDXA Spectrum ID:

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cc): ≤0.0041
Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cc): <0.0041
Non-Asbestos Type(s): None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/6/2018
Date Analyzed: 07/08/2018
Signature: Kristen Goedde
Analyst: Kristen Goedde

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON PA 19014

Client: VER100

Report Date: 7/8/2018
Report No.: 567664 - TEM AHERA
Project: Olney E. School
Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6552829
Client No.: -04

Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cc): 0.0041

Micrograph Number:
EDXA Spectrum ID:

Volume (L): 1805.0 L
Date Sampled: 7/6/18
Location: In Room 108 By View Port

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cc): ≤0.0041
Asbestos Type(s): None Detected

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cc): <0.0041
Non-Asbestos Type(s): None Detected

Lab No.: 6552830
Client No.: -05

Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cc): 0.0041

Micrograph Number:
EDXA Spectrum ID:

Volume (L): 1805.0 L
Date Sampled: 7/6/18
Location: In Room 108 By Column 1st Floor

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected
Structures ≥ 5.0 µm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cc): ≤0.0041
Asbestos Type(s): None Detected

Filter Type: MCE
Filter Size (mm²): 385
Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cc): <0.0041
Non-Asbestos Type(s): None Detected

Geometric Mean = 0.0041 Structures/cc

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/6/2018
Date Analyzed: 07/08/2018
Signature:
Analyst: Kristen Goedde

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Client: VER100

Report Date: 7/8/2018
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Project: Olney E. School
Project No.: 51064

8.0 SUMMARY OF ANALYTICAL SAMPLING RESULTS PERFOMRED BY OHCS

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CERTIFICATE OF ANALYSIS

Client: OHCS Inc.
209 Catharine St.
Philadelphia PA 19147
Client: OHC164

Report Date: 6/14/2018
Report No.: 565663 - TEM Dust Microvac
Project: Olney ES
Project No.:

TEM DUST SAMPLE ANALYSIS SUMMARY

Lab No.:6530033
Client No.:OL-ES-0609-2018MV-01
Asbestos Type(s):
None Detected

Area (cm²):100
Location: Near Pipe And Window Center Room 108

Density (s/mm²):<9.62
Concentration (s/cm²):<925

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/14/2018
Signature: Craig Liske

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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209 Catharine St.
Philadelphia PA 19147

Client: OHC164

Report Date: 6/14/2018
Report No.: 565663 - TEM Dust Microvac
Project: Olney ES
Project No.:

Appendix to Analytical Report:

Customer Contact: Jerry - Alia Roseman
Analysis: ASTM D5755-09

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communic the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your custome Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Cassettes
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.cor our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround tir sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, resul reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose fo the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be ch without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by ASTM D5755-09

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these resu based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.
(2)Note: Sample not analyzed at request of client.
(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm^2). Set fails by AHERA 40 CFR 763.
(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. T

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CERTIFICATE OF ANALYSIS

Client: OHCS Inc.
209 Catharine St.
Philadelphia PA 19147

Client: OHC164

Report Date: 6/14/2018
Report No.: 565663 - TEM Dust Microvac
Project: Olney ES
Project No.:

CFR 763.
(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIC 7402.
(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
(9)Note: Void - overloaded, unable to prep.
(10)Note: Void - filter damaged.
(11)Note: No volume supplied.
(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
(13A)Note: Volume does not meet AHERA requirements.(<1188 L)
(14)Note: Geometric Mean = 0.xxxx Structures/cc
(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained c 0.45um cassette.

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CERTIFICATE OF ANALYSIS

Client:	OHCS Inc.	Report Date:	6/14/2018
	209 Catharine St.	Report No.:	565663 - TEM Dust Microvac
	Philadelphia PA 19147	Project:	Olney ES
Client:	OHC164	Project No.:	

TEM DUST SAMPLE ANALYSIS DETAILS

Lab No.:6530033
Client No.:OL-ES-0609-2018MV-01

Volume Filtered (mL):5
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):925
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location: Near Pipe And Window Center Room 108
Asbestos Structures: None Detected
Structures < 5 µm: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<925
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Dete
Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<9
Non-Asbestos Type(s):
None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/14/2018
Signature: Craig Lisko

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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CERTIFICATE OF ANALYSIS

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209 Catharine St.
Philadelphia PA 19147

Client: OHC164

Report Date: 6/14/2018
Report No.: 565663 - TEM Dust Microvac
Project: Olney ES
Project No.:

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CERTIFICATE OF ANALYSIS

Client: OHCS Inc.
209 Catharine St.
Philadelphia PA 19147
Client: OHC164

Report Date: 6/15/2018
Report No.: 565662 - TEM Dust Wipe
Project: Olney ES
Project No.:

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6530034
Client No.:OL-ES-0609-2018DW1
Location: Near Pipe And Window Center Room 108
Area (cm²): 100
Density (s/mm²): <8.55
Concentration (s/cm²): <587
Asbestos Type(s): None Detected

Lab No.:6530035
Client No.:OL-ES-0609-2018DW2
Location: Room 107 Stall 2 On Floor Tile
Area (cm²): 100
Density (s/mm²): <8.55
Concentration (s/cm²): <343
Asbestos Type(s): None Detected

Lab No.:6530036
Client No.:OL-ES-0609-2018DW3
Location: 3rd Floor Outside Tent Room 311
Area (cm²): 100
Density (s/mm²): <9.62
Concentration (s/cm²): <463
Asbestos Type(s): None Detected

Lab No.:6530037
Client No.:OL-ES-0609-2018DW4
Location: 3rd Floor Outside Tent Room 304
Area (cm²): 100
Density (s/mm²): 8.55
Concentration (s/cm²): 587
Asbestos Type(s): Chrysotile

Lab No.:6530038
Client No.:OL-ES-0609-2018DW5
Location: 303 Center Of TAE Room Desk
Area (cm²): 100
Density (s/mm²): <12.8
Concentration (s/cm²): <514
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/15/2018
Signature: Craig Lisko

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: OHCS Inc.
209 Catharine St.
Philadelphia PA 19147

Client: OHC164

Report Date: 6/15/2018
Report No.: 565662 - TEM Dust Wipe
Project: Olney ES
Project No.:

Appendix to Analytical Report:

Customer Contact: Jerry - Alia Roseman
Analysis: ASTM D6480 - 05(2010)

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iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Air Cassettes
Exceptions Noted: See Following Pages

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

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Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com.**

(1)Note: Sample not analyzed.
(2)Note: Sample not analyzed at request of client.
(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.
(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. T absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

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Client: OHC164

Report Date: 6/15/2018
Report No.: 565662 - TEM Dust Wipe
Project: Olney ES
Project No.:

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIC 7402.
(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
(9)Note: Void - overloaded, unable to prep.
(10)Note: Void - filter damaged.
(11)Note: No volume supplied.
(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
(13A)Note: Volume does not meet AHERA requirements.(<1188 L)
(14)Note: Geometric Mean = 0.xxxx Structures/cc
(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained 0.45um cassette.

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ASBESTOS TESTING LABORATORIES

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CERTIFICATE OF ANALYSIS

Client: OHCS Inc.
209 Catharine St.
Philadelphia PA 19147
Client: OHC164

Report Date: 6/15/2018
Report No.: 565662 - TEM Dust Wipe
Project: Olney ES
Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6530034
Client No.:OL-ES-0609-2018DW1

Volume Filtered (mL):7
Dilution Factor (mL):50
Grid Openings:9
Opening Area (mm²):0.013
Area Analyzed (mm²):0.117
Sensitivity (s/mm²):8.55
Detection Limit (s/cm²):587

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location: Near Pipe And Window Center Room 108
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <8.55
Structure Concentration (s/cm²): <587
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Dete

Structure Density (s/mm²):<8.55
Structure Concentration (s/cm²):<5
Non-Asbestos Type(s):
None Detected

Lab No.:6530035
Client No.:OL-ES-0609-2018DW2

Volume Filtered (mL):12
Dilution Factor (mL):50
Grid Openings:9
Opening Area (mm²):0.013
Area Analyzed (mm²):0.117
Sensitivity (s/mm²):8.55
Detection Limit (s/cm²):343

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location: Room 107 Stall 2 On Floor Tile

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <8.55
Structure Concentration (s/cm²): <343
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Dete

Structure Density (s/mm²):<8.55
Structure Concentration (s/cm²):<3
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/15/2018
Signature: Craig Liske

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway S
Mt. Laurel, New Jersey
Telephone: 856-23
Email: customerservice@ia

CERTIFICATE OF ANALYSIS

Client: OHCS Inc.
209 Catharine St.
Philadelphia PA 19147
Client: OHC164

Report Date: 6/15/2018
Report No.: 565662 - TEM Dust Wipe
Project: Olney ES
Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6530036
Client No.:OL-ES-0609-2018DW3

Volume Filtered (mL):10
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):463

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:3rd Floor Outside Tent Room 311

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <463
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Dete

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<4
Non-Asbestos Type(s):
None Detected

Lab No.:6530037
Client No.:OL-ES-0609-2018DW4

Volume Filtered (mL):7
Dilution Factor (mL):50
Grid Openings:9
Opening Area (mm²):0.013
Area Analyzed (mm²):0.117
Sensitivity (s/mm²):8.55
Detection Limit (s/cm²):587

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:3rd Floor Outside Tent Room 304

Asbestos Structures: 1

Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 8.55
Structure Concentration (s/cm²): 587
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Dete

Structure Density (s/mm²):<8.55
Structure Concentration (s/cm²):<5
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/15/2018
Signature: Craig Liske

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway S
Mt. Laurel, New Jersey
Telephone: 856-23
Email: customerservice@ia

CERTIFICATE OF ANALYSIS

Client:	OHCS Inc.	Report Date:	6/15/2018
	209 Catharine St.	Report No.:	565662 - TEM Dust Wipe
	Philadelphia PA 19147	Project:	Olney ES
Client:	OHC164	Project No.:	

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6530038
Client No.:OL-ES-0609-2018DW5

Volume Filtered (mL):12
Dilution Factor (mL):50
Grid Openings:6
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0780
Sensitivity (s/mm²):12.8
Detection Limit (s/cm²):514

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:303 Center Of TAE Room Desk

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <12.8
Structure Concentration (s/cm²): <514
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Dete

Structure Density (s/mm²):<12.8
Structure Concentration (s/cm²):<5
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/9/2018
Date Analyzed: 06/15/2018

Signature: Craig Liske

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

iATL
INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway S
Mt. Laurel, New Jersey
Telephone: 856-23
Email: customerservice@ia

CERTIFICATE OF ANALYSIS

Client: OHCS Inc.
209 Catharine St.
Philadelphia PA 19147

Client: OHC164

Report Date: 6/15/2018
Report No.: 565662 - TEM Dust Wipe
Project: Olney ES
Project No.:

IATL
INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B Mt. Laurel, NJ 0805
Telephone: 856-231-9449 Fax: 856-231-981

PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client:	OHCS Inc.	Batch No.:	56767(
	209 Catharine St.	Project:	Olney Elementary
	Philadelphia, PA 19147	Project No.:	Rooms 201-310
Client No.:	OHC164	Philly Regs:	Y
		Turn-Around Time:	1 Day

Client Contacts:		**Laboratory Contacts:**	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	(609) 929-4211
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:

Samples Taken in Field:		Date:		Time:	
Samples Rec'd at Laboratory:	PW	Date:	7/6/2018	Time:	
Samples Analyzed:	K. Goedde	Date:	7/8/2018	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

Client Sample ID #	IATL Sample ID #	Volume (L)	Comments	Results s/mm²	Results s/cc
070618OLN11	6552883	1800	None Detected	< 19.2	< 0.0041
070618OLN12	6552884	1800	Chrysotile	19.2	0.0041
070618OLN13	6552885	1800	Chrysotile	19.2	0.0041
070618OLN14	6552886	1800	None Detected	< 19.2	< 0.0041
070618OLN15	6552887	1800	None Detected	< 19.2	< 0.0041
070618OLN16	6552888	1800	None Detected	< 19.2	< 0.0041
070618OLN17	6552889	1820	None Detected	< 19.2	< 0.0041
070618OLN18	6552890	1820	None Detected	< 19.2	< 0.0041
070618OLN19	6552891	1820	None Detected	< 19.2	< 0.0041
070618OLN20	6552892	1820	None Detected	< 19.2	< 0.0041

AHERA Clerance Criteria is **70** s/mm². Average (s/mm²) = 19.2
Phila. Regulations Clearance Criteria is 0.00554 s/cc based on 5 samples Geo = 0.0041
Z Test Reults (see attached, if applicable)

Grid Box #: 1080

Instrument (I, II, III **III**

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificates of Analysis will follow these preliminary results. The signed COAs are to be considered the official results.

Occupational Health Consultation Services
209 Catharine Street; Philadelphia, PA 19147
Cell: 215-407-3900 Office: 215-925-3870 Fax: 215-925-3872
JRoseman@dca.net

(2)

CHAIN OF CUSTODY--Air Samples

CLIENT: PFT.	SITE: OLNEY ELEMENTARY
PROJECT #: ROOMS 201 - 310	PAGE #: 1 OF 1
SAMPLED BY: TIM DALEY	DATE: 7.6.18
CONTAMINANTS: ASBESTOS	ANALYSIS NEEDED BY: MONDAY 7AM 24 @ HOUR.

1 AFO EACH MINOR

	SAMPLE #	VOLUME	TYPE	COMMENTS	
1102	1 070618 OLN 11	1800	TEM	OUTSIDE ROOM 107 @ DECON 6552883	14/
1102	2 070618 OLN 12	1800	TEM	OUTSIDE ROOM 107 ENTRANCE 6552884	14/
1112	3 070618 OLN 13	1800	TEM	INSIDE ROOM 201 TENT 6552885	14/
1112	4 070618 OLN 14	1800	TEM	INSIDE ROOM 201 TENT 6552886	14/
1114	5 070618 OLN 15	1800	TEM	OUTSIDE ROOM 201 DECON. 6552887	14/
1114	6 070618 OLN 16	1800	TEM	OUTSIDE ROOM 201 ENTRANCE 6552888	14/
1133	7 070618 OLN 17	1820	TEM	INSIDE ROOM 310 6552889	14/
1133	8 070618 OLN 18	1820	TEM	INSIDE ROOM 310 (2) 6552890	14/
1135	9 070618 OLN 19	1820	TEM	OUTSIDE ROOM 310 DECON 6552891	14/
1135	10 070618 OLN 20	1820	TEM	OUTSIDE ROOM 310 ENTRANCE 6552892	14/

SAMPLE PACKAGED AND SEALED BY: Tim Daley DATE: 7.6.18 TIME:

SENT TO: EATL

CONDITION UPON RECEIPT (DAMAGED / UNDAMAGED)

070818

RECEIVED
JUL - 6 2018
ATL - BY

IATL
INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B Mt. Laurel, NJ 0805
Telephone: 856-231-9449 Fax: 856-231-981

PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client:	OHCS Inc.	Batch No.:	56767
	209 Catharine St.	Project:	Olney Elementary
	Philadelphia, PA 19147	Project No.:	Room 107 & 108
Client No.:	OHC164	Philly Regs:	Y
		Turn-Around Time:	1 Day

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	(609) 929-4211
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:

Samples Taken in Field:		Date:	7/6/2018	Time:	
Samples Rec'd at Laboratory:		Date:	7/6/2018	Time:	
Samples Analyzed:	J. Jeon	Date:	7/8/2018	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

Client Sample ID #	IATL Sample ID #	Volume (L)	Comments	Results s/mm²	Results s/cc
070618OLN01	6552902	1800	None Detected	< 15.4	< 0.0033
070618OLN02	6552903	1800	None Detected	< 15.4	< 0.0033
070618OLN03	6552904	1800	None Detected	< 15.4	< 0.0033
070618OLN04	6552905	1800	None Detected	< 15.4	< 0.0033
070618OLN05	6552906	1800	None Detected	< 15.4	< 0.0033
070618OLN06	6552907	1800	None Detected	< 15.4	< 0.0033
070618OLN07	6552908	1800	None Detected	< 15.4	< 0.0033
070618OLN08	6552909	1800	None Detected	< 15.4	< 0.0033
070618OLN09	6552910	1800	None Detected	< 15.4	< 0.0033
070618OLN10	6552911	1800	None Detected	< 15.4	< 0.0033

AHERA Clerance Criteria is **70** s/mm². Average (s/mm²) = 15.4
Phila. Regulations Clearance Criteria is 0.00554 s/cc based on 5 samples Geo = 0.0033
Z Test Reults (see attached, if applicable)

Grid Box #: 1079

Instrument (I, II, III) I

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the

OHCS Inc.

Occupational Health Consultation Services
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Cell: 215-407-3900 Office: 215-925-3870 Fax: 215-925-3872
JRoseman@dca.net

0710
0732
0740

(1)

CHAIN OF CUSTODY- Air Samples

CLIENT: PFT.	SITE: OLNEY ELEMENTARY
PROJECT #: ROOM 107 & ROOM 108	PAGE #: 1 OF 1
SAMPLED BY: TIM DALEY.	DATE: 7.6.18
CONTAMINANTS: ASBESTOS	ANALYSIS NEEDED BY: MONDAY 7AM 24/48 HOUR.

AGGRESSIVE LEAF BLOWN / AFD EACH / RM. 108

	SAMPLE #	VOLUME	TYPE	COMMENTS	
0720	1	070618OLN.01	1800	TEM	INSIDE CONTAINMENT ROOM 108 BATHROOM 6552902	107
0720	2	070618OLN 02	1800	TEM	INSIDE CONTAINMENT 6552903 ROOM 108 CENTER	107
0720	3	070618 OLN 03	1800	TEM	INSIDE CONTAINMENT 6552904 ROOM 108 (R)	107
0732	4	070618 OLN 04	1800	TEM	OUTSIDE BY SINK 6552905	107
0732	5	070618 OLN 05	1800	TEM	OUTSIDE BY ENTRANCE 6552906	107
0733	6	070618 OLN 06	1800	TEM	OUTSIDE HALLWAY 6552907 BETWEEN 107-108 6552908	107
0734	7	070618OLN.07	1800	TEM	OUTSIDE ROOM 107 CENTER BY DECON	
0740	8	070618 OLN 08	1800	TEM	ROOM 107 CLOSET INSIDE 6552909	107
0740	9	070618 OLN 09	1800	TEM	ROOM 107 CLOSET INSIDE 6552910	107
0740	10	070618 OLN 10	1800	TEM	ROOM 107 CLOSET INSIDE 6552911	107

SAMPLE PACKAGED AND SEALED BY: Tim Daley DATE: 7.6.18 TIME:

SENT TO: EMSL.

analyzed: JJ 7/8/18

CONDITION UPON RECEIPT (DAMAGED / UNDAMAGED)

RECEIVED
JUL - 6 2018

n1