



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/cm².

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.
- 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 reinspection 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 recleaning, 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/mm².

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.
- 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/mm².
- 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/mm². 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 μ m-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 reencapsulated. 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	Sample Result							
		(-/	Fields	(F/cc)							
Date collected: 6/8/18											
	ity/Work Area: 3 rd Floor Women's Staff Restroom/Baseli										
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	-							
	ected: 6/8/18										
	ity/Work Area: 3 rd 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	-							
	ected: 6/8/18 ity/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 colle	ected: 6/8/18										
	ity/Work Area: 3 rd Floor Hallway & Women's Restrooms,	/Removal o	f 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 colle	ected: 6/8/18										
Site Activ	ity/Work Area: 3 rd 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												
6.9.01	ity/Work Area: Basement Room 108/Pre-Clean & Prep Perimeter: In hall 15' from room 108	1092	5.5	0.002								
6.9.01	Perimeter: In hall at panel box adjacent to room	1092	3.5 4	<0.002								
6.9.03	Perimeter: Outside room 108	1092	5	<0.002								
6.9.04	Perimeter: At stairs	1092	3.5	<0.002								
6.9.05	Blank	1000	0	<0.002								
	ected: 6/9/18		U									
	ity/Work Area: 3 rd Floor Hall Tent at Room #304/PCM Fir	nals										
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 colle	ected: 6/9/18											
Site Activ	ity/Work Area: 3 rd Floor Hall Tent at Room #311/PCM Fir	nals										
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	-								
	ected: 6/10/18											
Site Activ	ity/Work Area: Prep in Room 108/Demobilization 3rd Flo	or										
6.10.01	1 st floor hallway (basement) outside room 108	1267	7.5	0.003								
6.10.02	1 st floor hallway (basement) outside boy's lunch room	1274	9	0.003								
6.10.03	2 nd floor hallway above room 108 next to Kindergarten	1274	4	<0.002								
	class room across mech room											
6.10.04	3 rd floor hallway outside room	1274	6	0.002								
6.10.05	3 rd 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	Fibers	Sample
		(L)	per	Result
			100	(F/cc)
			Fields	
Date collected:	6/16/18 ork Area: Classroom 108/Prep Work Building Containm	nent		
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/W	ork Area: Prep for Pipe Insulation & Floor Tile Removal	under Con	tainment	
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:				
•	ork Area: Classroom 108/Prep Work for Removal of AP			
6.19.01	Perimeter: In parking lot, outside stairwell No. 5	705	6.5	0.005
C 10 02	(south) entrance	702		10.004
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: Site Activity/W	ork Area: Classroom 108/Prep Work for Removal of VA	T & 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	37.1	F*1	6 1.								
Sample #	Sample Location/Activity	Volume (L)	Fibers per	Sample Result								
		(-)	100	(F/cc)								
			Fields	(1700)								
Date collected: 6/20/18												
•	rk Area: Prep for Pipe Insulation & Floor Tile Removal	l under Con	tainment									
Classroom 108,		T										
6.20.01	Perimeter: In parking lot, outside stairwell No. 5	1113	1	<0.002								
	(south) entrance											
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	795	0	<0.003								
	(south) entrance											
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												
Site Activity/Wo	rk Area: Room 108 – Complete Area Prep/Removal of	ACPI & VA	T									
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	996	20.5	0.010								
	pipe riser											
6.21.06	Blank	-	0	-								
Date collected: 6	5/21/18 ork Area: Classroom 108/Removal ACPI & VAT											
0110	Perimeter: Hallway outside classroom 108	735	11	0.007								
0110	Perimeter: Classroom 108 shelf to right of entrance	735	6	0.007								
	Clean room 3 stage decon			0.004								
0130	Work area: Near AFD	735	6									
0132		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	7/2/18			
Site Activity/Wo	rk Area: Classroom 108 – Re-clean/Encapsulation			
7.2.01	Perimeter: 2 nd floor over Classroom #108	1800	3	<0.001
7.2.02	Perimeter: 1 st floor hallway outside Classroom #108	1800	4.5	<0.001
7.2.03	Blank	-	0	-



7.0 SUMMARY OF TEM AIR SAMPLING RESULTS





PRELIMINARY RESULTS Airborne Asbestos Analysis TEM AHERA

Client:	Vertex			Batch No.:	56565
	700 Turner Way	Suite 105	•	Project:	Only ES
	Aston PA 19	014	•	Project No.:	
Client No.:	VER100		•	Philly Regs:	51064 Y
GIL .				Turn-Around Time:	6 Hour Rush
Client Conta	cts:		Laborator	y Contacts:	
Contacts: Phone:			Contacts: Phone:	Frank E. Ehrenfeld III (856) 231-9449	
Fax: Cell/Pager:			Fax:	(856) 231-9818	
E-Mail:			Cell/Pager: E-Mail:	(609) 929-4211 frankehrenfeld@iatl.co	<u>om</u>
Chain of Cus	tody:				
Samples Taken	in Field:	Client	Date:		Time:
Samples Taken Samples Rec'd a	in Field: t Laboratory:	Client	Date:		Time:
Samples Taken Samples Rec'd a Samples Analyz	in Field: t Laboratory: ed:	Client R. Smith	Date:	6/9/2018	Time:
Samples Taken Samples Rec'd a	in Field: t Laboratory: ed: ults Faxed:			6/9/2018	

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
					10.0055
					
				(d))	
					

AHERA Clerance Criteria is 70 s/mm ² .	Average (s/mm²) =	15.4	l City "	
Phila. Regulations Clearance Criteria is 0.00393 s/cc	g- ()	Gco = 0.0033	Grid Box #:	1013
Z Test Reults (see attached, if applicable)		000 - 0.003	_	
, , , , , , , , , , , , , , , , , , ,			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.

TEM Air Sample Worksheet

III JEOL	ject #: pe: ttal icroscope ID: -, JEM-1230,	<u>Vertex</u> <u>51064</u> AHERA -Phi EM18440033	Filt Effectiv	er Dia. (mm) e Area (mm) Filter Type	385 MCE] -	IATL Sample # Client Sample # IATL Grid Box # Grid Archive ID # Magnification:		R3R5 20,000X 100KeV	530010 01 1013
EVE.	Grid Grid Openings	Grid Opening: d opening Area: Read/Required: Area Analyzed:	0.115	mm mm² 5 mm²	Volume	of Air Sampled tical Sensitivity: Detection Limit:	1802	Liters mm² s/cc		
		stos Structures: 0.5μm - 5.0μm: >5.0μm: Asbestos: Asbestos:	N	SD SD 15.4 0.0033	Non-Asbe - s/mm ² s/cc	estos Structures: Non-Asbestos: Non-Asbestos:	< 15.4	s/mm² s/cc		
Grid Opening ID	Structure Number	Structure Type F/B/C/M	¹ Length 0.5 -5.0 μm	² Length > 5.0 μm	Analysis Data: * Chrysotile	**Amphibole	***Non-Asbestos	Micro	ograph / E	DS
R3 H6 16 J6 R5 H7 17 Total:	NSD	NSD NSD NSD NSD NSD NSD	0	0	0	0	0			
Record vi ** Define An *** Characteri	sible prominen aphibole (DP o ze by EDS	ology, SAED, and t Chrysotile DP re btained Y/N) Pri & Width (μm)	eflections (002 int-out EDS an	,004, 110, 130 d attach.	estos fiber 0, 220, 200) E: FIBER ORIENTA	TION MAP	Prep Quality: Dissolution Carbon Film Loading Analyzed By: Reviewed By:	/) /R	Good Good 6%	

TEM Air Sample Worksheet

Client Name: Vertex Client Project #: 51064 Sample Type: AHERA QC Submittal				illy Regulation	ons	Analysis Date: 06/09/18		IATL Sample # Client Sample # IATL Grid Box # Grid Archive ID #	: 0 : 101
Ele			EM18440033	Effectiv	ter Dia. (mm) ve Area (mm) Filter Type: ore Size (µm):	385 MCE	- - _ A	Magnification	•
	G	rid Openings	Grid Opening I opening Area Read/Required Area Analyzed	0.013	_mm _mm² 5 _mm²	Analy	of Air Sampled: tical Sensitivity: Detection Limit:	15.4	Liters mm² s/cc
			stos Structures: 0.5μm - 5.0μm: >5.0μm: Asbestos: Asbestos:	N	SD SD 15.4 0.0033	Non-Asbo s/mm ² s/cc	Non-Asbestos:	< 15.4	s/mm² s/cc
	Grid					Analysis Data:			
	ening 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						
B 0	F6		NSD						
R9	D3 D4		NSD						
	D5		NSD						
			NSD						
								- <u> </u>	
_									
						_			
T	otal:	NSD	NSD	0	0				
						0	0	0	
. I	Aust con	tirm by Morpho	ology, SAED, and	EDXA for each	ch suspect asbe	stos fiber		Prep Quality:	
* [Define A	nphibole (DP o	Chrysotile DP rebtained Y/N). Pri	nt-out EDS on	,004, 110, 130 diattach	, 220, 200)		Dissolution	Good
		ize by EDS		vw. 200 all	v 4114611.			Carbon Film	Good
, 2 F	lecord St	ructure Length	& Width (μm)	:	SEE REVERS	SE: FIBER ORIEN	TATION MAP	Loading	6%
Comi	nents:								D 0
		-						Analyzed By: _ Reviewed By:	R. Smith



Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc. Report Date: 6/9/2018

700 Turner Way, Suite 105 Report No.: 565658 - TEM AHERA

ASTON PA 19014 Project: Olney ES

Client: VER100 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:

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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.

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.

Dated: 6/11/2018 10:41:53 Page 2 of 2



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

Filter Type: MCE

Filter Size (mm²): 385

Project:

Olney ES

Project No.:

51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6530010 Client No.: 01

Volume (L): 1802.0 L

Location: Final-In Tent, In Women's Staff

Restroom

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:**

Date Sampled: 6/9/18

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

Pore Size (µm): 0.45 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

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

Volume (L): 1802.0 L Date Sampled: 6/9/18

Location: Final-In Tent. In Women's Staff

Restroom

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

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

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:

6/9/2018

Date Analyzed:

06/09/2018

Signature:

Analyst:

Rebecca Smith

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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

Page 1 of 2



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

Dated: 6/11/2018 10:41:54 Page 2 of 2



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 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

Geometric Mean = 0.0033 Structures/cc

Density (s/mm²): <15.4 Concentration (s/cc): <0.0033

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:

06/09/2018

Signature:

Analyst:

Rebecca Smith

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Dated: 6/11/2018 10:41:53 Page 1 of 2



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

Volume: 1802.0 L

Client No.: 03

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

Page 1 of 2



Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.

700 Turner Way, Suite 105 ASTON PA 19014

Report Date: Report No.:

565660 - TEM AHERA

Project:

Olney Elementary School

Project No.:

51064

6/9/2018

TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6530014 Client No.: 05

Client: VER100

Volume: 1802.0 L

Location: Final-In Tent In Hallway Adjacent To Concentration (s/cc): 0.0033

Asbestos Type(s): Chrysotile

Density (s/mm²): 15.4

Room # 304

Date Sampled: 6/9/18

Lab No.: 6530015

Client No.: 06

Volume: 1802.0 L

Location: Final-In Tent In Hallway Adjacent To Concentration (s/cc): <0.0033

Room # 304

Density (s/mm²): <15.4

Asbestos Type(s): None Detected

Date Sampled: 6/9/18

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:

Rebecca Smith Analyst:

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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

Page 1 of 2



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

Room #311

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:**

Volume (L): 1802.0 L Date Sampled: 6/9/18

Location: Final-In Tent In Hall Adjacent To

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

Filter Type: MCE

Filter Size (mm²): 385 **Pore Size (μm): 0.45**

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

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

Volume (L): 1802.0 L Date Sampled: 6/9/18

Location: Final-In Tent In Hall Adjacent To

Room #311

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

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

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:

6/9/2018

Date Analyzed:

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

06/09/2018

Signature:

Analyst:

Rebecca Smith

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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.: 565

565659 - TEM AHERA

Project:

Olney Elementary School

Project No.: 51064

Dated: 7/13/2018 1:32:15 Page 2 of 2



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.

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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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Dated: 7/13/2018 1:32:15 Page 2 of 2



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

Dated: 7/13/2018 1:31:21 Page 2 of 2



Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.

700 Turner Way, Suite 105 ASTON PA 19014

Report Date: Report No.:

6/9/2018 565660 - TEM AHERA

Project:

Olney Elementary School

Project No.: 51064

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6530014 Client No.: 05

Client: VER100

Volume (L): 1802.0 L Date Sampled: 6/9/18 Filter Type: MCE Filter Size (mm²): 385

Room # 304

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

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

Location: Final-In Tent In Hallway Adjacent To Pore Size (µm): 0.45

Non-Asbestos Structures: 1

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

EDXA Spectrum ID:

Lab No.: 6530015 Client No.: 06

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

Volume (L): 1802.0 L Date Sampled: 6/9/18

Location: Final-In Tent In Hallway Adjacent To Pore Size (µm): 0.45

Room # 304

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected Structures \geq 5.0 μ m: None Detected Structure Density (s/mm²): <15.4 Structure Concentration (s/cc): <0.0033

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²): 385

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:

6/9/2018

Date Analyzed:

06/09/2018

Signature:

Rebecca Smith Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 7/13/2018 1:31:21 Page 1 of 2



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:

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Project No.: 51064

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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

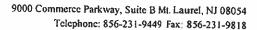
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Dated: 7/13/2018 1:31:20 Page 2 of 2





PRELIMINARY RESULTS Airborne Asbestos Analysis TEM AHERA

Chent.	vertex	·	_	Batch No.:		56565
	700 Turner Wa	y Suite 105	_	Project:		Olny ES
	Aston PA 1	9014	-	Project No.:		51064
Client No.:	VER100		-	Philly Regs:	Y	3100+
			-	Turn-Around Tim		6 Hour Rush
Client Contac	ets:		Laborator	y 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@iat	l.com	
Chain of Cust	ody:					
Samples Taken i	n Field:	Client	Date:		Tim	p.
Samples Rec'd a	t Laboratory:	-	Date:		— Tim	
Samples Analyzo	ed:	R. Smith	Date:	6/9/2018	— Time	
Preliminary Resi	ults Faxed:		Date:	01772010	— Time	
Preliminary Resu	alts E-Mail:		Date:		— Time	
		Su	mmary Data		=-	

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
ļ					
-					
<u> </u>					

AHERA Clerance Criteria is 70 s/mm².	Average (s/mm²) =	15.4	Grid Box #:	1013
Phila. Regulations Clearance Criteria is 0.00393 s/cc		Geo = 0.0033	-	1015
Z Test Reults (see attached, if applicable)			Instrument (I, II, III	Ш

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.

Revision Date: 10/04/17

TEM Air Sample Worksheet

						-				===	
_	ent Nar		<u>Vertex</u>			Analysis Date:	7	IATL Sample #	ł:	653	30012
	ent Pro	=	<u>51064</u>			06/09/18		Client Sample #			03
	nple Ty	-	AHERA -Ph	iliy Regulati	ons		-	IATL Grid Box #			1013
QC	Submi	ttai	·					Grid Archive ID#		S2S4	1010
Ele	ctron M	icroscope ID:	:	Filt	ter Dia. (mm):	25		Magnification	. 20	,000X	
					e Area (mm):	385	-	iviaginiicatioti	. 20	,000	
Ш	EVE		EM18440033	Eilten De	Filter Type:		A	ccelerating Voltage	: 10	0KeV	
<u> -</u>				ritter Po	ore Size (µm):	0.45	<u> </u>				
			Grid Opening	: 0.115	mm	Volume	of Air Sampled	: 1802	Liters		
		Grie	d opening Area	0.013	mm²		o- o moderni o de mario de la composición dela composición de la composición de la composición dela composición dela composición dela composición de la composición dela composición de la composición dela	1002	- Litters		
	G		Read/Required		5	Analy	tical Sensitivity:	15.4	mm²		
		Total	Area Analyzed	0.0650	_mm²	Minimum I	Detection Limit:		- s/cc		
									-		
		Total Asbe	stos Structures:	N	SD	Non-Asbe	estos Structures:	NSD			
		(0.5µm - 5.0µm։		SD			1132	-		
			>5.0μm:			_					
			Asbestos: Asbestos:			s/mm²	Non-Asbestos:		s/mm²		
			7/2002(02)		0.0033	s/cc	Non-Asbestos:	< 0.0033	s/cc		
						Analysis Data:					
	Grid	Structure	Structure	¹ Length	2 7						_
_	ening ID	Number	Type E/P/C/M	0.5 -5.0 μm	² Length > 5.0 μm	* Chrysotile	**Amphibole	***Non-Asbestos	-	aph / ED	'S
S2	B5		F/B/C/M NSD	<u> </u>						ID	
	C5		NSD								
	D5		NSD								
S4	D7		NSD								
	D6		NSD								
											\dashv
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				-							\blacksquare
											_
To	tal:	NSD	NSD	0	0	0	0	0			\dashv
N	lust conf	firm by Morpho	ology, SAED, and	EDXA for each	ch suspect asbes	stos fiher		Prep Quality:			=
R	ecord vi	sible prominent	Chrysotile DP n	effections (002	,004, 110, 130,	220, 200)		Dissolution	G,	ood	
• D	cfine An	nphibole (DP o	btained Y/N). Pr	nt-out EDS an	d attach.	·		Carbon Film		ood	\dashv
		ize by EDS ructure Length	R Width /		726			Loading		%	\dashv
		- action Cengin	∞ и (μm)	:	SEE REVERSE	FIBER ORIENTA	TION MAP				
omn	nents:	-						Analyzed By: _	, /k.s	mith	
								Reviewed By:	KATC		

TEM Air Sample Worksheet

Client Nat Client Pro Sample Ty QC Submi	ject #: /pe:	Vertex 51064 AHERA -Ph	illy Regulation	ons	Analysis Date: 06/09/18		IATL Sample # Client Sample # IATL Grid Box # Grid Archive ID #		53001: 04 101:
		EM18440033	Effectiv	rer Dia. (mm) re Area (mm) Filter Type ore Size (µm)	385 MCE	- - - A	Magnification	: 20,000X	
ti G	rid Openings	Grid Opening d opening Area Read/Required Area Analyzed	0.013	mm mm² 5 mm²	Analyt	of Air Sampled tical Sensitivity: Detection Limit:	15.4	Liters mm² s/cc	
		stos Structures: 0.5μm - 5.0μm: >5.0μm: Asbestos: Asbestos:	N	SD SD 15.4 0.0033	Non-Asbe	Non-Asbestos:	< 15.4	s/mm² 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 / E	DS
S6 C4		NSD							
D4		NSD							
E4		NSD				·			
S8 H5		NSD							
H6	,	NSD							
Total:	NSD	NSD	0	0	0	0	0		
Record v Define A Character	isible prominen mphibole (DP o	ology, SAED, and t Chrysotile DP re btained Y/N). Pri & Width (µm)	eflections (002 int-out EDS an	,004, 110, 130 d attach.	stos fiber , 220, 200) SE: FIBER ORIEN	TATION MAP	Prep Quality: Dissolution Carbon Film Loading	Good Good 3%	
Comments:	-						Analyzed By:	R. Smith	
							Reviewed By:		



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/mm^2) : ≤ 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

Geometric Mean = 0.0033 Structures/cc

Density (s/mm²): <15.4 Concentration (s/cc): <0.0033

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:

06/09/2018

Signature:

Analyst:

Rebecca Smith

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Dated: 6/11/2018 10:41:13 Page 1 of 2



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.: 5

565659 - TEM AHERA Olney Elementary School

Project No.: 5

Project:

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.

Dated: 6/11/2018 10:41:13 Page 2 of 2



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 Olney Elementary School Project:

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

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:**

Room #311 Asbestos Structures: None Detected

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

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

Asbestos Type(s): None Detected

Lab No.: 6530013

Client No.: 04

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

Volume (L): 1802.0 L Date Sampled: 6/9/18

Location: Final-In Tent In Hall Adjacent To

Room #311

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

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

Filter Type: MCE

Filter Size (mm²): 385

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Non-Asbestos Structures: None Detected

Non-Asbestos Type(s): 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:

6/9/2018

Date Analyzed:

06/09/2018

Signature:

Rebecca Smith Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/11/2018 10:41:13 Page 1 of 2



Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc.

700 Turner Way, Suite 105

ASTON PA 19014

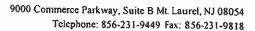
Client: VER100

Report Date: 6/9/2018

Report No.: 565659 - TEM AHERA
Project: Olney Elementary School

Project No.: 51064

Dated: 6/11/2018 10:41:13 Page 2 of 2





PRELIMINARY RESULTS Airborne Asbestos Analysis TEM AHERA

Client:	Vertex		_	Batch No.:	565660	
	700 Turner Way	Suite 105	_	Project:	Olny ES	
	Aston PA 190	14	_	Project No.:	51064	
Client No.:	VER100		-	Philly Regs:	Υ Υ	
				Turn-Around Time	6 Hour Rush	
Client Contac	ets:		Laborator	y Contacts:		
Contacts:			Contacts:	Frank E. Ehrenfeld III	<u> </u>	
Phone:			Phone:	(856) 231-9449		
Fax:			Fax:	(856) 231-9818		
Cell/Pager:			Cell/Pager:	(609) 929-4211		
E-Mail:			E-Mail: <u>frankehrenfeld@iatl.com</u>			
Chain of Cust	ody:					
Samples Taken i	n Field:	Client	Date:		Time:	
Samples Rec'd as	t Laboratory:		Date:		Time:	
Samples Analyze	ed:	R. Smith	Date:	6/9/2018	Time:	
Preliminary Rest	ults Faxed:		Date:	5.772010	Time:	
Preliminary Resu	ults E-Mail:		Date:		Time:	
		Su	mmary Data			

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 Clerance Criteria is 70 s/mm ² .	Average (s/mm²) =	15.4	Grid Box #:	1013
Phila. Regulations Clearance Criteria is 0.00393 s/cc		Geo = 0.0033		1015
Z Test Reults (see attached, if applicable)			Instrument (I, II, III	Ш
	* * * * * * * * * * * * * * * * * * * *		1.130 dilloint (1, 11, 111	111

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.

Revision Date: 10/04/17

Client Nar Client Pro Sample Ty QC Submi	ject #: pe:	Vertex 51064 AHERA -Ph	illy Regulati	ons	Analysis Date: 06/09/18		IATL Sample # Client Sample # IATL Grid Box # Grid Archive ID #	:	653001 0: 101:
		EM18440033	Effectiv	ter Dia. (mm): ve Area (mm): Filter Type: ore Size (µm):	385 MCE	- - - A	Magnification	: 20,000X	
G	rid Openings	Grid Opening d opening Area Read/Required Area Analyzed	0.013	mm mm² 5 mm²	Analy	of Air Sampled tical Sensitivity Detection Limit	:15.4	Liters mm² s/cc	
		stos Structures 0.5μm - 5.0μm: >5.0μm: Asbestos: Asbestos:			Non-Asbe s/mm ² s/cc	Non-Asbestos:	15.4	s/mm² s/cc	
Grid Opening ID	Structure Number	Structure Type F/B/C/M	¹ Length 0.5 -5.0 μm	2 Length >	Analysis Data: * Chrysotile	**Amphibole	***Non-Asbestos	Micrograph /	EDS
S10 F4 F3 F2 T1 B6 A6	1	M NSD NSD NSD NSD			CD		SiAl - Other Fiber	SAED I	
Record vi ** Define Ar *** Character	sible prominen nphibole (DP o ize by EDS	ology, SAED, and 1 Chrysotile DP robtained Y/N). Pro & Width (µm)	eflections (002 int-out EDS an	,004, 110, 130, d attach	stos fiber 220, 200) : FIBER ORIENTA	0 TION MAP	Prep Quality: Dissolution Carbon Film Loading Analyzed By: Reviewed By:	Good Good 3%	

Cliei Sam	nt Nan nt Pro ple Ty Submi	ject #: pe:	Vertex 51064 AHERA -Ph	illy Regulatio	ons	Analysis Date: 06/09/18		IATL Sample # Client Sample # IATL Grid Box # Grid Archive ID #	:	6530 T3T5	001:	
Elect			EM18440033	Effectiv	cr Dia. (mm): e Area (mm): Filter Type: ore Size (µm):	385 MCE	- - - A	Magnification		20,000X 100KeV		
	Grid Opening: 0.115 mm Volume of Air Sampled: Grid Opening Area: 0.013 mm² Grid Openings Read/Required: 5 5 Analytical Sensitivity: Total Area Analyzed: 0.0650 mm² Minimum Detection Limit:								Liters mm² s/cc			
			stos Structures: 0.5μm - 5.0μm: >5.0μm: Asbestos: Asbestos:	N <	SD SD 15.4 0.0033	Non-Asbo s/mm ² s/cc	Non-Asbestos:	< 15.4	s/mm² s/cc			
	Analysis Data:											
1	rid ning D	Structure Number	Structure Type F/B/C/M	Length 0.5 -5.0 μm	² Length > 5.0 μm	* Chrysotile	**Amphibole	***Non-Asbestos	Micro	graph / EDS	=== S	
Т3	E8		NSD			-						
	E9		NSD									
	E10		NSD			<u> </u>						
	G8 F8		NSD NSD									
	1.0		เหรอ									
											-	
											_	
											\neg	
									<u> </u>		_	
			·									
											-1	
Tot	al:	NSD	NSD	0	0	0	0	0			\dashv	
Re * De ** Ch	cord vi fine Ar aracter	sible prominen nphibole (DP o ize by EDS	ology, SAED, and t Chrysotile DP r obtained Y/N). Pr & Width (µm)	eflections (002 int-out EDS an	,004, 110, 130 d attach.	stos fiber , 220, 200) SE: FIBER ORIEN	NTATION MAP	Prep Quality: Dissolution Carbon Film Loading		Good Good 5%		
Comm	ents:	-			Analyzed By: _	R	. Smith					



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 Concentration (s/cc): 0.0033

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 Concentration (s/cc): <0.0033

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:

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

06/09/2018

Signature:

Analyst:

Rebecca Smith

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 2



Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc. Report Date: 6/9/2018

700 Turner Way, Suite 105 Report No.: 565660 - TEM AHERA
ASTON PA 19014 Project: Olney Elementary School

Client: VER100 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 a 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 it 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.

Dated: 6/11/2018 10:22:44 Page 2 of 2



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

Filter Type: MCE Filter Size (mm²): 385 Location: Final-In Tent In Hallway Adjacent To Pore Size (µm): 0.45

Room # 304

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:

Date Sampled: 6/9/18

Asbestos Structures: 1

Structures 0.5 µm to <5.0 µm: 1 Structures \geq 5.0 μ m: None Detected Structure Density (s/mm²): 15.4 Structure Concentration (s/cc): 0.0033

Non-Asbestos Structures: 1

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

Asbestos Type(s): Chrysotile

Lab No.: 6530015

Client No.: 06

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 1D:**

Geometric Mean = 0.0033 Structures/cc

Volume (L): 1802.0 L Date Sampled: 6/9/18

Location: Final-In Tent In Hallway Adjacent To Pore Size (µm): 0.45

Room # 304

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

Filter Type: MCE Filter Size (mm²): 385

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:

6/9/2018

Date Analyzed:

06/09/2018

Signature:

Analyst:

Rebecca Smith

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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

Dated: 6/11/2018 10:22:44 Page 2 of 2

< 15.4

< 15.4

< 15.4

< 15.4

< 0.0033

< 0.0032

< 0.0032

< 0.0032



F-07

F-08

F-09

F-10

6543592

6543593

6543594

6543595

1822

1832

1832

1832

PRELIMINARY RESULTS Airborne Asbestos Analysis TEM AHERA

Client:	Vertex				Batch No.:		566844	
	700 Turner Wa	y Suite 105			Project:	Psd-	-Olney ES	
•	Aston PA 1	9014			Project No.:		51064	
Client No.:	VER100				Philly Regs:	Y		
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Turn-Around T	ime:	1 Day	
Client Contact	ts:			Laboratory	Contacts:		<del></del>	
Contacts:	Don Heim			Contacts:	Frank E. Ehrenfel	ld III		
Phone:	610-558-890	2		Phone:	(856) 231-9449			
Fax:	610-558-8904	4		Fax:	(856) 231-9818			
Cell/Pager:	610-787-040	2		Cell/Pager:	(609) 929-4211			
E-Mail:	E-Mail: dheim@vertexeng.com				frankehrenfeld@i	atl.com		
Chain of Cust	ody:							
Samples Taken ii	n Field:	Client		Date:	6/25/2018	Time:		
Samples Rec'd at	Laboratory:	L. D'Ornella	as	Date:	6/26/2018	Time:		
Samples Analyze	:d:	J. Jeon		Date:	6/26/2018	Time:		
Preliminary Resu	ilts Faxed:			Date:	Time:			
Preliminary Resu	ılts E-Mail:			Date:	Time:			
		<del>1,1.1.1.1.</del>	Summar	v Data		······································		
		Trar		tron Microsco	DV			
			AHERA 40	CFR 763	•			
Client	IATL	Volume				Results	Results	
Sample ID#	Sample ID #	(L)		Comments		s/mm²	s/cc	
F-01	6543586	1802		None Detecte	ed .	< 15.4	< 0.0033	
F-02	6543587	1812		None Detecte		< 15.4	< 0.0033	
F-03	6543588	1812		None Detected			< 0.0033	
F-04	6543589	1812		None Detected			< 0.0033	
F-05	6543590	1802		None Detecte				
F-06	6543591	1832				< 15.4	< 0.0032	

AHE	RA Clerance Criteria is 70 s/mm².	Average (s/mm²) =	15.4	Grid Box #:	1049
Phila	. Regulations Clearance Criteria is 0.00554 s	/cc based on 5 samples	Geo = 0.00326		
Z Te	st Reults (see attached, if applicable)			Instrument (I, II, III	П

None Detected

None Detected

None Detected

None Detected

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.

TEMAHERA 001

Revision Date 06/22/18

Client Name	:	Vertex			Analysis Date:		IATL Sample #:		6543586			
Client Proje	et #:	51064			06/26/18		Client Sample #:		F-01			
Sample Type	e:	AHERA -Phill	y Regulation	ıs			IATL Grid Box #:		1049			
QC Submitt							Grid Archive ID #:	F	8F10			
			F70.	D* ( )			Magnification:	20	0.000X			
Electron Mic	roscope ID:			r Dia. (mm): Area (mm):			Magnification:	20	.000			
II Hitach	i H600AB, 5	42-47-7	Litecure	Filter Type:		Ac	celerating Voltage:	10	00KeV			
EVEX			Filter Por	e Size (µm):		•			]			
						· · · · · · · · · · · · · · · · · · ·						
ŀ		Grid Opening:		mm	Volume	of Air Sampled:	1802	Liters				
	Grid	opening Area:	0.013	mm²				•				
Gri	d Openings f	Read/Required:		4		ical Sensitivity:		mm²	[			
	Total A	Area Analyzed:	0.0650	mm ²	Minimum I	Detection Limit:	0.0033	s/cc				
•	Total Asbes	stos Structures:	NS	SD	Non-Asbe	estos Structures:	NSD					
		).5µm - 3.0µm:			. 22		1.1	•				
		· · · · · · · · · · · · · · · · · · ·	<del></del>		•							
				15.4	s/mm²	Non-Asbestos:	< 15.4	s/mm²				
		Ashestos:	<	0.0033	s/cc	Non-Asbestos:	< 0.0033	s/cc	1			
L	Analysis Data:											
Grid		Structure	<del></del>					T	1 (550			
Opening	Structure	Туре	1 Length	Length >	* Chrysotile	**Amphibole	***Non-Asbestos	Micro	graph / EDS ID			
ID	Number	F/B/C/M	0.5 -5.0 μm	5.0 μm					10			
F8 D2		NSD										
E2		NSD				]						
F2	<del></del>	NSD										
F10 D7		NSD										
E7		NSD										
ļ												
ļ					-							
<del> </del>						1						
		-		<u> </u>			<u> </u>					
<del> </del>						-	-	<del>                                     </del>	-			
<u> </u>		1		<u> </u>	<del></del>	-	<u> </u>					
<u> </u>							<u> </u>	<del> </del>				
701.	NED	NCD			0	0	0					
Total:	NSD	NSD	0	0	<u> </u>	1 0						
* Must co	nfirm by Morp	hology, SAED, ai	nd EDXA for e	ach suspect as	bestos liber		Prep Quality:					
Record	risible promine	ent Chrysotile DP	reflections (00	2 ,004, 110, 13	30, 220, 200)		Dissolution	-	Good			
** Define A	amphibole (DP	obtained Y/N). F	rint-out EDS a	nd attach.			Carbon Film		Good			
	rize by EDS						Loading		1%			
1, 2 Record S	Structure Lengi	th & Width (µm)		SEE REVER	SE: FIBER ORIENT	ATION MAP						
Comments:	Comments:  Analyzed By: J. Jeon  Reviewed By:											

Client Name Client Proje Sample Typ QC Submitt	ect#: oe:	Vertex 51064 AHERA -Phil	ly Regulatio	ns	Analysis Date: 06/26/18		IATL Sample #: Client Sample #: IATL Grid Box #: Grid Archive ID #:		F-02
Electron Mic	croscope ID:	642-47-7	Effective	er Dia. (mm): e Area (mm): Filter Type: re Size (µm):	385 MCE	-	Magnification:		20,000X 100KeV
Gr	Grid id Openings I Total A	15.4	Liters mm² s/cc						
	Total Asbestos Structures: NSD Non-Asbestos Structures: 0.5μm - 5.0μm; NSD >5.0μm; Asbestos: < 15.4 s/mm² Non-Asbestos: Asbestos: < 0.0033 s/cc Non-Asbestos:								
					Analysis Data:				
Grid Opening ID	Structure Number	Structure Type F/B/C/M	^l Length 0.5 -5.0 μm	² Length > 5.0 μm	* Chrysotile	**Amphibole	***Non-Asbestos	Micr	ograph / EDS ID
G1 B4		NSD							
C4		NSD							
D4		NSD							
G3 C4 D4		NSD NSD							
Total:	NSD	NSD	0	0	0	0	0		
** Define A	Define I tripinose (D) Columns 1714/, I tim-out EDO and adden.								Good Good 2%
Comments:							Analyzed By: Reviewed By:		J. Jeon

TEM AHERA WS 002 3 of 12

Client N		<u>Vertex</u> 51064			Analysis Date: 06/26/18		IATL Sample #: Client Sample #:		
Sample		AHERA -Phi	lly Regulatio	ns			IATL Grid Box #:		1049
QC Sub	65		107.00	75 55			Grid Archive ID #:		G5G7
Electron	Microscope ID	:		er Dia. (mm):		-	Magnification:	2	0,000X
	itachi H600AB, VEX	542-47-7		e Area (mm): Filter Type: rc Size (µm):	MCE	- . Ac	celerating Voltage:	1	00KeV
				re onze (pin).					
	Gr	Grid Opening: id opening Area:		mm mm²	Volume	of Air Sampled:	1812	Liters	
		Read/Required:		4	Analy	tical Sensitivity:	15.4	mm ²	
	Tota	Area Analyzed:	0.0650	mm ²		Detection Limit:		s/cc	
	Total Asb	estos Structures:	N	\$D	Non-Asbe	estos Structures:	NSD	,	
		0.5μm - 5.0μm:		SD	. 22			•	,
								2	
		Asbestos: Asbestos:	******	0.0033	s/mm ² s/cc	Non-Asbestos: Non-Asbestos:		s/mm ² s/cc	
	<del>.</del>	Asucstos,		0.0033	•		< 0.0033	s/ce	
Grid	<u> </u>		<u> </u>	T	Analysis Data:	<u> </u>		1	
Openir 1D		Structure Type F/B/C/M	Length 0.5 -5.0 μm	² Length > 5.0 μm	* Chrysotile	**Amphibole	***Non-Asbestos	Micros	graph / EDS ID
G5 B2	2	NSD							
C:	2	NSD							
D:		NSD							
G7 C		NSD							
D'	7	NSD							
		+							
<b>-</b>	<u> </u>	<del>                                     </del>					-		
	1	-							
<u> </u>									
Total:	NSD	NSD	0	0	0	0	0		
* Must	confirm by Mos	ohology, SAED, an	d EDXA for or	ich susneet ach	estes fiber		Prep Quality:		
		ent Chrysotile DP					Dissolution	(	Good
		obtained Y/N), P			,		Carbon Film		Good
	*** Characterize by EDS						Loading		2%
1, 2 Reco	rd Structure Leng	th & Width (µm)		SEE REVER	RSE: FIBER ORIE	NTATION MA	P		
Commen	ts:						Analyzed By:	J	. Jeon
_									

<del></del>								
Client Name	e:	Vertex			Analysis Date:		IATL Sample #:	6543589
Client Proje	ect #:	51064			06/26/18		Client Sample #:	F-04
Sample Typ	e:	AHERA -Phil	ly Regulation	ns			IATL Grid Box #:	1049
QC Submit	tal						Grid Archive ID #:	G9H2
Electron Mi	croscope ID:			er Dia. (mm):			Magnification:	20,000X
			Effective	Area (mm):				
II Hitacl	ni H600AB, 5	642-47-7	Filter Por	Filter Type: re Size (µm):		. Ac	ecclerating Voltage:	100KeV
EVEZ			•					
	Grid	Grid Opening:		mm mm²	Volume	of Air Sampled:	1812	Liters
Grid Opening Area: 0.013 mm ² Grid Openings Read/Required: 5 4 Analytic							15.4	mm ²
Total Arca Analyzed: 0.0650 mm²					= -	Detection Limit:		s/cc
				<u>-</u>		·····		·
		stos Structures:		SD	Non-Asbe	estos Structures:	NSD	
	(	0.5μm - 5.0μm:		SD				
		>5.0µm: Asbestos:		15.4	s/mm²	Non-Asbestos:	< 15.4	s/mm²
}		Asbestos:		0,0033	s/cc	Non-Asbestos:	·	s/cc
		<u> </u>			Analysis Data:			·
Grid		Structure	<u> </u>	<u> </u>	I		<u> </u>	
Opening ID	Structure Number	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						
						[ :		
						:		
<u> </u>								
Total:	NSD	NSD	0	0	0	0	0	
		hology, SAED, an		•			Prep Quality:	
	-	nt Chrysotile DP			0, 220, 200)		Dissolution	Good
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.  *** Characterize by EDS							Carbon Film	Good 5%
		h & Width (µm)		SEE REVE	RSE: FIBER ORIE	ENTATION MA	Loading P	370
Comments:		45						J. Jeon
Comments:							•	
							Reviewed By:	

Client Name	e:	<u>Vertex</u>			Analysis Date:		IATL Sample #:		6543	3590
Client Proje		<u>51064</u>			06/26/18		Client Sample #:			F-05
Sample Typ	e:	AHERA -Phil	ly Regulation	ıs		•	IATL Grid Box #:			1049
QC Submitt	tal	R					Grid Archive ID #:		Н4Н6	
Electron Mic	croscope ID:			r Dia. (mm):			Magnification:	8	X000,00	
II Hitacl	hi H600AB, 5	42-47-7		Area (mm): Filter Type: e Size (µm):	MCE	MCE Accelerating Voltage			100KeV	
EVEX			7 11101 1 01	C Size (μiii).	0.45	•				
		Grid Opening: opening Area:		mm mm²	Volume	of Air Sampled:	1802	Liters		
Gri		Read/Required:		4	Analy	tical Sensitivity:	15.4	mm²		
	Total A	Arca Analyzcd:	0.0650	mm ²	Minimum I	Detection Limit:	0.0033	s/cc		
		stos Structures:		***************************************	Non-Asb	estos Structures;	NSD			
	(	).5µm - 5.0µm: >5 0um:	NS							
		Asbestos:		15.4	s/mm²	Non-Asbestos:	< 15.4	s/mm²		
		Asbestos:		0.0033	s/cc	Non-Asbestos:		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	Micro	ograph / ÉE ID	os
H4 B5		NSD								
C5		NSD								
Ds		ĭ								
D5		NSD			<u></u>					_
H6 C6		NSD NSD								
H6 C6		NSD								
H6 C6		NSD								
H6 C6		NSD								
H6 C6		NSD								
H6 C6		NSD								
H6 C6		NSD								
H6 C6		NSD								
H6 C6		NSD								
HI6 C6		NSD NSD								
FIG C6 D6 Total:	NSD	NSD NSD	0	0	0	0	0			
FIG C6 D6 Total:	nfirm by Morpi	NSD NSD NSD	nd EDXA for ea	ich suspect asb	estos fiber	0	Prep Quality:			
Total:	nfirm by Morph visible promine	NSD NSD NSD nology, SAED, and Chrysotile DP	nd EDXA for eareflections (002	ich suspect asb 2 ,004, 110, 13	estos fiber	. 0	Prep Quality: Dissolution		Good	
Total:  * Must counter the cou	nfirm by Morph visible promine Amphibole (DP	NSD NSD NSD	nd EDXA for eareflections (002	ich suspect asb 2 ,004, 110, 13	estos fiber	0	Prep Quality: Dissolution Carbon Film		Good	
Total:  * Must con Record v** Character ************************************	nfirm by Morph visible promine Amphibole (DP erize by EDS	NSD NSD NSD nology, SAED, and Chrysotile DP	nd EDXA for eareflections (002	ich suspect asb 2 ,004, 110, 13 nd attach.	estos fiber		Prep Quality: Dissolution Carbon Film Loading			
Total:  * Must con Record v** Character ************************************	nfirm by Morph visible promine Amphibole (DP erize by EDS Structure Lengt	NSD NSD NSD nology, SAED, art Chrysotile DP obtained Y/N). F	nd EDXA for eareflections (002	ich suspect asb 2 ,004, 110, 13 nd attach.	oestos fiber 0, 220, 200)		Prep Quality: Dissolution Carbon Film Loading		Good	

			<del></del>			<del></del>			
Client Name	e:	Vertex			Analysis Date:		IATL Sample #:	6;	543591
Client Proje	ect #:	<u>51064</u>			06/26/18		Client Sample #:		F-06
Sample Typ	e:	AHERA -Phil	ly Regulation	ns			IATL Grid Box #:		1049
QC Submitt	tal						Grid Archive ID #:	H8H10	
Electron Mic	croscope ID:		Filte	r Dia. (mm):	25		Magnification:	20.000X	
]			Effective	Area (mm):		•			
	ni H600AB, 5	42-47-7	ests by	Filter Type:		. Ac	celerating Voltage:	100KeV	
EVEX	<u> </u>		Filter Por	e Size (μm):	0.45		<del></del>		
	Grid	Grid Opening: l opening Area:		mm mm²	Volume	of Air Sampled:	1832	Liters	
Gr		Read/Required:		4	Analyt	tical Sensitivity:	15.4	mm²	
		٠ ٨rca Analyzed:		mm²		Detection Limit:		s/cc	
	Total Asbe	stos Structures:	N:	SD	Non-Asbe	estos Structures:	NSD		
		).5µm - 5.0µm:		SD				•	
				15.4	s/mm²	Non-Asbestos:		s/mm²	
		Asbestos:		0.0032	s/cc	Non-Asbestos:	< 0.0032	s/cc	
					Analysis Data:				
Grid Opening	Structure Number	Structure Type	¹ Length 0.5 -5.0 μm	² Length > 5.0 μm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / I	EDS
ID		F/B/C/M					<u>                                     </u>		_
H8 C2 D2		NSD NSD					<u> </u>		=
E2		NSD							-
H10 H2		NSD							$\neg \neg$
12		NSD							
								<u> </u>	
<u> </u>								<u></u>	
									——[
Total:	NSD	NSD	0	0	0	0	0		
			_			<u> </u>			
		hology, SAED, ar		•			Prep Quality:	<u> </u>	
		nt Chrysotile DP			0, 220, 200)		Dissolution	Good	
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.  *** Characterize by EDS							Carbon Film Loading	2%	
	-	h & Width (µm)		SEE REVE	RSE: FIBER ORIE	NTATION MA		270	
Comments:		· ·						J. Jeon	
Comments.			Reviewed By:						



Client Name Client Proje Sample Typ QC Submitt	ect #: e: tal	<u>Vertex</u> 51064 AHERA -Phil			Analysis Date: 06/26/18		IATL Sample #: Client Sample #: IATL Grid Box #: Grid Archive ID #:	F-07 1049 I113		
Electron Mid II Hitach EVEX	ni H600AB, 5	42-47-7	Effective	r Dia. (mm): : Area (mm): Filter Type: :e Size (μm):	385 MCE	. Ac	Magnification:			
Gr	Grid Opening: 0.115 mm Volume of Air Sampled: 1822  Grid Opening Area: 0.013 mm²  Grid Openings Read/Required: 5 4 Analytical Sensitivity: 15.4  Total Area Analyzed: 0.0650 mm² Minimum Detection Limit: 0.0033									
	Total Asbestos Structures: NSD Non-Asbestos Structures: NSD  0.5μm - 5.0μm: NSD  >5.0μm: NSD  Asbestos: < 15.4 s/mm² Non-Asbestos: < 15.4 Non-Asbestos: < 0.0033 s/cc Non-Asbestos: < 0.0033									
					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								
12 13 F2		NSD NSD			!					
G2		NSD								
ļ								<u>()</u>		
					<u> </u>					
								<u> </u>		
Total:	NSD	NSD	0	0	0	0	0			
* Must cor	ifirm by Morph	nology, SAED, an	d EDXA for ea	ich suspect ast	estos fiber		Prep Quality:			
	· ·	nt Chrysotile DP			0, 220, 200)		Dissolution Carbon Film	Good		
	** Define Amphibole (DP obtained Y/N), Print-out EDS and attach.  *** Characterize by EDS							Good 3%		
	-	h & Width (um)		SEE REVE	RSE: FIBER ORIF	ENTATION MA	Loading P	370		
Comments:	. 2 Record Structure Length & Width (μm) SEE REVERSE: FIBER ORIENTATION MAP  Comments: Analyzed B									

Client Name: Vertex Client Project #: 51064 Sample Type: AHERA -Philly Regulations QC Submittal					Analysis Date: 06/26/18		IATL Sample #: Client Sample #: IATL Grid Box #: Grid Archive ID #:	F-08 1049	
Electron Mic II Hitacl EVEX	i H600AB, 5	42-47-7	Effective	er Dia. (mm): e Area (mm): Filter Type: re Size (µm):	385 MCE	- - - Ac	Magnification:	20.000X 100KeV	
Gri	Grid d Openings I	Grid Opening: opening Area: Read/Required: Area Analyzed:		Liters mm² s/cc					
Total Asbestos Structures:   NSD   Non-Asbestos Structures:   NSD									
					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	
15 D2	· <u>·</u>	NSD							
E2		NSD							
F2 17 G7	<u> </u>	NSD NSD		-					
117		NSD							
<b></b>		7.00							
					ļ				
ļ									
-									
					·				
Total:	NSD	NSD	0	0	0	0	0		
Record v  ** Define A  *** Characte	risible promine imphibole (DP rize by EDS	nology, SAED, an nt Chrysotile DP obtained Y/N), P h & Width (µm)	reflections (00)	2 ,004, 110, 13 nd attach		ENT'ATION MA	Prep Quality: Dissolution Carbon Film Loading	Good Good 4%	
Comments:			Analyzed By: Reviewed By:	<del></del>					

	<u> </u>									
Clie	nt Name	e:	<u>Vertex</u>			Analysis Date:		IATL Sample #:		6543594
Clie	nt Proje	ect #:	<u>51064</u>			06/26/18		Client Sample #:		F-09
Sam	ıple Typ	e:	AHERA -Phil	ly Regulation	ns			IATL Grid Box #:		1049
QC	Submitt	tal						Grid Archive ID #:	19J2	
Elec	tron Mid	croscope ID:		Filte	r Dia. (mm):	25	•	Magnification:	20,000	X
	Effective Area (mm): 385								200000	•
п	Hitacl	ni H600AB. 5	42-47-7		Filter Type: re Size (µm):		. Ac	celerating Voltage:	100Ke	✓
	EVEX	(								
			Grid Opening:	0.115	mm	Volume	of Air Sampled:	1832	Liters	
		Grid	ond Opening. opening Area:		mm²	Volutile	or Air Sampicu.	1632	Liters	
	Gr		Read/Required:		4	Analy	tical Sensitivity:	15.4	mm ²	
	-		Area Analyzed:		mm²	-	Detection Limit:		s/cc	
			· · · · · •		•				,	
		Total Acho	stos Structures:	N	SD	Non-Achi	estos Structures:	NSD	· · · · · · · · · · · · · · · · · · ·	
]			),5µm - 5.0µm:		SD SD		sios Siructures.	113D	•	
l						•				
			Asbestos:		15.4	s/mm²	Non-Asbestos:	< 15.4	s/mm²	
			Asbestos:	<	0.0032	s/cc	Non-Asbestos:	< 0.0032	s/ec	
						Analysis Data:				
	Grid		Structure	I .		1				
	pening	Structure Number	Туре	Length	Length >	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph ID	/ EDS
L	ID	Mumber	F/B/C/M	0.5 -5.0 μm	5.0 µm					
19	A4		NSD							
<u> </u>	B4		NSD							
<b> </b> -	C4		NSD				_			
J2	F4		NSD			<u> </u>				
<u> </u> -	G4		NSĐ							
⊩										
<b> </b>				<u> </u>	<u> </u>					
$\vdash$				<u> </u>						
-										
	-			<del></del>	<u> </u>					
							]			
17.7	l'otal:	NSD	NSD	0	0	0	0	0		
*	Must cor	nfirm by Morol	hology, SAED, ar	nd EDXA for ea	ach suspect asb	estos fiber		Prep Quality:		
	Record visible prominent Chrysotile DP reflections (002,004, 110, 130, 220, 200)								Good	
** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.							Carbon Film	Good		
***		rize by EDS					Special	Loading	6%	
1, 2	Record S	Structure Lengt	h & Width (µm)		SEE REVE	RSE: FIBER ORIE	AM KOITATKE	P		
Con	nments:			<del> </del>				Analyzed By:	J. Jeor	1
								Reviewed By:		

Client Nan	1e:	Vertex			Analysis Date:	]	IATL Sample #:	(	543595	
Client Proj	ject #:	51064			06/26/18		Client Sample #:		F-10	
Sample Type: AHERA -Philly Regulations					•	1ATL Grid Box #:		1049		
QC Submi	ttał						Grid Archive ID #:	J4J6		
Electron M	icroscope ID:		Filte	er Dia. (mm):	25		Magnification:	20,000X		
			Effective	Area (mm):		- -				
II Hitac	chi H600AB, 5	542-47-7	Piles De	Filter Type:		_ A(	celerating Voltage:	100KeV		
EVE	^		riller Pol	re Size (µm):	0.45	-				
:	Gric	1832	Liters							
G		I opening Area: Read/Required:		mm² 4	Analy	tical Sensitivity:	15.4	mm ²		
		Area Analyzed:		mm²		Detection Limit:		s/cc		
				•				•		
	Total Asbe	stos Structures:	N:	SD	Non-Asbe	estos Structures:	NSD			
	(	0,5μm - 5.0μm:		SD				•		
		Asbestos:		15.4	s/mm²	Non-Asbestos:		s/mm²		
L		Asbestos:		0.0032	s/cc	Non-Asbestos:	< 0.0032	s/ec		
					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 /	ED\$	
J4 B4	<del>                                     </del>	NSD	i							
C4		NSD								
D4		NSD								
J6 B7		NSD								
C7		NSD								
	<u> </u>	<u> </u>								
	<del> </del>									
	1									
Total:	Nen	NCD								
Total:	NSD	NSD	0	0	0	0	0			
	nfirm by Morpl	Prep Quality:	_							
Record visible prominent Chrysotile DP reflections (002,004, 110, 130, 220, 200)  ** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.							Dissolution Carbon Film	Good Good		
	erize by EDS	common 1719). f	Loading	1%						
1. 2 Record Structure Length & Width (µm) SEE REVERSE: FIBER ORIENTATION MAP										
Comments:	Comments: Analyzed By: J. Jeon									
Reviewed By:									*****	



CERTIFICATE OF ANALYSIS

Report Date: 6/26/2018

Client: The Vertex Companies, Inc.

700 Turner Way, Suite 105 Report No.: 566844 - TEM AHERA

ASTON PA 19014 Project: PSD-Olney ES,Rm 108 Containment

Project No.: Client: VER100

### TEM AIR SAMPLE ANALYSIS SUMMARY

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

Dated: 6/27/2018 10:11:50

06/26/2018

Signature:

Lec-

Analyst:

Jhoon Jeon

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



#### **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.:

### TEM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6543594

Volume: 1832.0 L

**Density (s/mm²): <15.4** 

Client No.: F-09

Location: Inside Containment Center

Concentration (s/cc): <0.0032

Date Sampled: 6/25/18

Asbestos Type(s): None Detected

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

Volume: 1832.0 L

Density (s/mm²): <15.4 Location: Inside Containment East

**Date Sampled:** 6/25/18

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

Lece -

Signature: Analyst:

Jhoon Jeon

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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#### CERTIFICATE OF ANALYSIS

Client: The Vertex Companies, Inc. Report Date: 6/26/2018

700 Turner Way, Suite 105 Report No.: 566844 - TEM AHERA

ASTON PA 19014 Project: PSD-Olney ES,Rm 108 Containment

Client: VER100 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 it 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, AHIA 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.

Dated: 6/27/2018 10:11:50 Page 3 of 3



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.:

TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6543586

Client No.: F-01

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:

Volume (L): 1802.0 L Date Sampled: 6/25/18

Location: Outside Next To Kit.

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected Structures  $\geq$  5.0  $\mu$ m: None Detected

Structure Density (s/mm²): <15.4 Structure Concentration (s/cc): <0.0033

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

**EDXA Spectrum ID:** 

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

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:

Volume (L): 1812.0 L Date Sampled: 6/25/18

Location: Outside Next To Decon

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):  $\leq 0.0033$ 

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Type: MCE Filter Size (mm²): 385

Pore Size (µm): 0.45

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

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

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:

Volume (L): 1812.0 L Date Sampled: 6/25/18

Location: Outside Front Of Cafe Door

Ashestos 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

Structure Density (s/mm²): <15.4

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

Non-Asbestos Structures: None Detected

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

Date Received: Date Analyzed: 6/25/2018

06/26/2018

Signature: Analyst:

Jhoon Jeon

Elle-

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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

Filter Type: MCE

Filter Size (mm²): 385

Pore Size (µm): 0.45

Project:

PSD-Olney ES,Rm 108 Containment

Project No.:

### TEM AIR SAMPLE ANALYSIS DETAILS

Lab No.: 6543589

Client No.: F-04

**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:

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

**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:

Volume (L): 1812.0 L

Date Sampled: 6/25/18

Location: Outside Hallway Next To Cafe

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected Structures  $\geq$  5.0  $\mu$ m: None Detected

Structure Density (s/mm²): <15.4 Structure Concentration (s/cc): <0.0033

Asbestos Type(s): None Detected

Structure Density (s/mm²): <15.4 Structure Concentration (s/cc): <0.0033

Non-Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

Volume (L): 1802.0 L Date Sampled: 6/25/18

Location: Outside Hallway Around Rm 107

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

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

Non-Asbestos Structures: None Detected

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

EDXA Spectrum ID:

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

**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:

Volume (L): 1832.0 L **Date Sampled:** 6/25/18

Location: Inside Containment Bathroom Ent.

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

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

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

Lee-

Signature: Analyst:

Jhoon Jeon

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/27/2018 10:11:51 Page 2 of 5



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.: 56

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

**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:

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

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:

Volume (L): 1822.0 L Date Sampled: 6/25/18

Location: Inside Containment West

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

Filter Type: MCE
Filter Size (mm²): 385

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

Non-Asbestos Structures: None Detected

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

Volume (L): 1832.0 L Date Sampled: 6/25/18

Location: Inside Containment Next To Decon

Asbestos Structures: None Detected

Structures 0.5 µm to <5.0 µm: None Detected

Structures 0.5 µm: None Detected

Structure Density (s/mm²): ≤15.4

Structure Concentration (s/cc): ≤0.0032

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Type: MCE Filter Size (mm²): 385

Pore Size (µm): 0.45

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

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

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: Volume (L): 1832.0 L Date Sampled: 6/25/18

Location: Inside Containment Center

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 Structure Density (s/mm²): <15.4 Structure Concentration (s/cc): <0.0032

Non-Asbestos Type(s): None Detected

Non-Asbestos Structures: None Detected

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

Date Received: Date Analyzed: 6/25/2018 06/26/2018

06/26/2018

Signature: Analyst: Jhoon Jeon

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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.: 5100

### TEM AIR SAMPLE ANALYSIS DETAILS

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

**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:

Geometric Mean = 0.00326 Structures/cc

Volume (L): 1832.0 L Date Sampled: 6/25/18

Location: Inside Containment East

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

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

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:

Signature:

Analyst:

06/26/2018

flee

Jhoon Jeon

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



Email: customerservice@iatl.com

### **CERTIFICATE OF ANALYSIS**

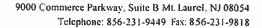
Client: The Vertex Companies, Inc. Report Date: 6/26/2018

700 Turner Way, Suite 105 Report No.: 566844 - TEM AHERA

ASTON PA 19014 Project: PSD-Olney ES,Rm 108 Containment

Client: VER100 Project No.: 510

Dated: 6/27/2018 10:11:51 Page 5 of 5



Instrument (I, II, III

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Z Test Reults (see attached, if applicable)

# PRELIMINARY RESULTS Airborne Asbestos Analysis TEM AHERA

Client:	V					
Chent:	Vertex			Batch No.:	-	567664
	700 Turner Wa	· · · · · · · · · · · · · · · · · · ·		Project:		y E. School
		19014		Project No.:		51064
Client No.:	VERI00		<u>-</u>	Philly Regs:	Y	
				Turn-Around 1	ime:	1 Day
Client Contac	ts:		Laborator	y Contacts:		
Contacts:			Contacts:	Frank E. Ehrenfe	eld III	
Phone:			Phone:	(856) 231-9449		
Fax:			Fax:	(856) 231-9818		
Ccll/Pager:			Cell/Pager:	(609) 929-4211		
E-Mail:			E-Mail:	frankehrenfeld@	iatl.com	
Chain of Cust						
Samples Taken i	n Field:		Date:		Time:	
Samples Rec'd at		TM	Date:	7/6/2018	Time:	
Samples Analyzo	the state of the s	K. Goedde	Date:	7/8/2018	Time:	
Preliminary Rest	ilts Faxed:		Date:		Time:	
Preliminary Rest	ılts E-Mail:		Date:		Time:	
		Trans	Summary Data mission Electron Microsco AHERA 40CFR 763	ру		
Client	IATL	Volume			Results	Results
Sample ID #	Sample ID #	(L)	Comments		s/mm²	s/cc
01	6552826	1805	None Detecte	ed	< 19.2	< 0.0041
02	6552827	1805	None Detecte		< 19.2	< 0.0041
03	6552828	1805	None Detecte	ed	< 19.2	< 0.0041
04	6552829	1805	None Detecte	ed	< 19.2	< 0.0041
05	6552830	1805	None Detecte	ed	< 19.2	< 0.0041
						l .
<u> </u>			·····			
				<u></u>		
		<del></del>	<u>.</u>			
	Criteria is 70 s/mm Clearance Criteria		rage (s/mm²) = 19.2 Geo = 0.0041		Grid Box	#:

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.

Revision Date: 06/22/18

Client Nam	16.	Vertex			A polysis Data	]	IATE Committee	(55000)
Client Proj		<u>51064</u>			Analysis Date: 07/08/18		IATL Sample #: Client Sample #:	
Sample Ty		AHERA -Phi	llv Reculatio	ns	07708/18	1	IATL Grid Box #:	
QC Submit	-	R	,				Grid Archive ID #:	
Electron Mi	icroscope ID:		Filo	er Dia. (mm):	25		Magnification:	20,000X
	•			c Area (mm):	_	•	magnification.	20,0007
		EM18440033	5374 PA	Filter Type:		A	ccelerating Voltage:	100KeV
EVE:	X		Filter Po	re Size (µm):	0.45	<u></u>		
İ		Grid Opening:	0.115	mm	Volume	of Air Sampled:	1805	Liters
		d opening Area:		_mm²				
Gr		Read/Required:		- 4		tical Sensitivity:		mm²
	Total	Area Analyzed:	0.0520	_mm²	Minimum I	Detection Limit:	0.0041	s/cc
		<u> </u>						
		stos Structures:		SD	Non-Asbo	estos Structures:	NSD	_
	(	0.5μm - 5.0μm։ >5.0μm:		SD				
		Asbestos:		19.2	s/mm²	Non-Asbestos:	- 102	s/mm²
		Asbestos:		0.0041	s/cc	Non-Asbestos:		s/cc
					Analysis Data:			
Grid		Structure	<u> </u>	r	Allalysis Data.	<u> </u>	1	
Opening ID	Structure Number	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 13		NSD						
12		NSD						
G7 13		NSD						
I2		NSD						
		-						
<u> </u>								
Total:	NSD	NSD	0	0	0	0	0	
* Musicon		ology, SAED, an						
		it Chrysotile DP i					Prep Quality: Dissolution	Good
		obtained Y/N). Pr			,,		Carbon Film	Good
*** Character	=						Loading	2%
	tructure Lengtl	ı & Width (μm)		SEE REVERS	E: FIBER ORIENTA	ATION MAP		
Comments:					<del></del>	<del></del>		///k. Goedde
							Reviewed By:	X/V-C

	ect #:  oe:  tal  croscope ID:	Vertex 51064 AHERA -Phil	Filte Effectiv	ns er Dia. (mm): e Area (mm): Filter Type: re Size (µm):	385 MCE	] 	IATL Sample #: Client Sample #: IATL Grid Box #: Grid Archive ID #: Magnification:		6552827 02 1080 G9H2 20,000X 100KeV
Grid Opening: 0.115 mm Volume of Air Sampled: 1805 Liters  Grid opening Area: 0.013 mm²  Grid Openings Read/Required: 4 4 Analytical Sensitivity: 19.2 mm²  Total Area Analyzed: 0.0520 mm² Minimum Detection Limit: 0.0041 s/cc									
Total Asbestos Structures: NSD Non-Asbestos Structures: NSD  0.5 μm - 5.0 μm: NSD  >5.0 μm:  Asbestos: < 19.2 s/mm² Non-Asbestos: < 19.2 s/mm² Asbestos: < 0.0041 s/cc Non-Asbestos: < 0.0041 s/cc									
Grid Opening ID	Structure Number	Structure Type F/B/C/M	¹ Length 0.5 -5.0 μm	² Length > 5.0 μm	Analysis Data:  * Chrysotile	**Amphibole	***Non-Asbestos	Micr	ograph / EDS ID
G9 G9 H19 H2 B8 B9  Total:	NSD	NSD NSD NSD NSD	0	0	0	0	0		
Record v  ** Define Ar  *** Character	Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)  Define Amphibole (DP obtained Y/N). Print-out EDS and attach,  Carbon Film Good  Loading 2%  Record Structure Length & Width (µm)  SEE REVERSE: FIBER ORIENTATION MAP								

Sample Type:	Client		Vertex			Analysis Date:	]	IATL Sample #:		65	52828
Companies   Comp		*				07/08/18	_	•			03
Electron Microscope ID:			AHERA -Phi	lly Regulatio	ins						1080
Bit   JEOL, JEM-1230, EM18440033   Effective Area (imm):   385   MiCE   Filter Prore Size (jum):   0.43   MCE	QC Sui	omittai					·	Grid Archive ID #:	3	H4H6	
Structure   Opening   Structure   Opening   Structure   Opening   Structure   Opening   Number   Type   PBIC/M	Electroi	n Microscope ID:					-	Magnification:		20,000X	
Grid Opening Read/Required:   4	1		EM18440033	celerating Voltage:	99	100KeV					
Grid Openings Read/Required:   4		Grie				Volume	of Air Sampled:	1805	Liters		
Total Asbestos Structures   NSD   Non-Asbestos   NSD				_	Analy	tical Sensitivity:	19.2	$nm^2$			
NSD		Total	Area Analyzed:	0.0520	mm²		-		s/cc		
Asbestos:			0.5µm - 5.0µm։	N	<del></del>	Non-Asbo	estos Structures:	NSD	•	<u></u>	
Structure   Structure   Type   F/B/C/M   0.5 - 5.0 μm   S.0 μm			Asbestos:	<		. 753			0.000		
Opening   Downward   Type   F/B/C/M   O.5 - 5.0 μm   S.0 μm   S						Analysis Data:					
H3	Openi	no Structure	Type			* Chrysotile	**Amphibole	***Non-Asbestos	Mier		DS
H6 14 NSD NSD SD SEE REVERSE: FIBER ORIENTATION MAP	H4 H	14	NSD						·		
13 NSD NSD NSD O O O O O  * 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	H	13	NSD								
** Must confirm by Morphology, SAED, and EDXA for each suspect asbestos fiber Record visible prominent Chrysotile DP reflections (002 ,004, 110, 130, 220, 200)  * 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											
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* 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											
* 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											
* 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)  **EXERVERSE: FIBER ORIENTATION MAP	Total	: NSD	NSD	0	0	0	0	0			
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			<u> </u>				<u> </u>	1			
1, 2 Record Structure Length & Width (µm) SEE REVERSE: FIBER ORIENTATION MAP	Rece ** Defi	ord visible promine ne Amphibole (DP	nt Chrysotile DP	reflections (00)	2,004, 110, 130			Dissolution Carbon Film		Good	
		•	h & Width (μm)		SEE REVER	SE: FIBER ORIE	ΝΤΑΤΙΟΝ ΜΛΙ			£70	
Comments: Analyzed By: K. Goedde Reviewed By:	Commer	nts:				<del></del>		Analyzed By:	K	Goedde	

			····						
Client Nar	me:	Vertex			Analysis Date:	]	IATL Sample #:	:	6552829
Client Pro	ject#:	<u>51064</u>			07/08/18		Client Sample #:		
Sample Ty	/pe:	AHERA -Phi	lly Regulatio	ns		-	IATL Grid Box #:		
QC Submi	ittal						Grid Archive ID #:		H10
Electron M	licroscope ID:		Filt	er Dia. (mm):	25		Magnification:	: :	20.000X
111 120	1 1514 1020	E1410440022	Effectiv	e Area (mm):		-			
III JEO		EM18440033	Filter Po	Filter Type: re Size (µm):		_ A	celerating Voltage:		100KeV
				te Size (µiii).	0.43	-			
		Grid Opening:		mm	Volume	of Air Sampled:	1805	Liters	
		d opening Area:		_mm²					
G		Read/Required:		- , 4		tical Sensitivity:		_mm²	
	Total	Area Analyzed:	0.0520	mm ²	Minimum I	Detection Limit:	0.0041	_s/cc	
<u> </u>									
		stos Structures:		SD	Non-Asbo	estos Structures:	NSD	_	
	•	0.5μm - 5.0μm; >5.0μm;		SD	-				
		Asbestos:		19.2	s/mm²	Non-Asbestos:	- 100	s/mm²	
		Asbestos:		0.0041	s/cc	Non-Asbestos:		s/mm s/cc	
L			-		<u> </u>		0.0011		
	<del></del>			<u> </u>	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	Micro	ograph / EDS ID
H10 H4		NSD							
H3		NSD							
1-12		NSD							
HI		NSD							
ļ		<u> </u>							
<u> </u>									
	<u> </u>								
(D 1	1100								
Total:	NSD	NSD	0	0	0	0	0		
		iology. SAED, an					Prep Quality:		
Record visible prominent Chrysotile DP reflections (002 .004, 110, 130, 220, 200)  ** Define Amphibole (DP obtained Y/N). Print-out EDS and attach.							Dissolution		Good
*** Characte		ootanicu Y/N), Pi	mt-out EDS at	ia attach.			Carbon Film		Good
		n & Width (µm)		SEE REVER	SE: FIBER ORIE	NTATION MAI	Loading		2%_
Comments:		GRID H8 BLO					Analyzed By:	ľ	Coodda
	Comments: GRID H8 BLOWN OUT							Κ.	Goedde
							Reviewed By:		

Client Nam Client Proj Sample Ty QC Submit	ect #: pe:	Vertex 51064 AHERA -Phi	· · · · · · · · · · · · · · · · · · ·	ns er Dia, (mm):	Analysis Date: 07/08/18		IATL Sample #: Client Sample #: IATL Grid Box #: Grid Archive ID #: Magnification:	05 1080 1113		
	., JEM-1230.	ccelerating Voltage:								
Grid Opening: 0.115 mm Volume of Air Sampled: 1805 Liters  Grid opening Area: 0.013 mm²  Grid Openings Read/Required: 4 4 Analytical Sensitivity: 19.2 mm²  Total Area Analyzed: 0.0520 mm² Minimum Detection Limit: 0.0041 s/cc										
	Total Asbestos Structures:         NSD         Non-Asbestos Structures:         NSD           0.5μm - 5.0μm:         NSD         NSD           >5.0μm:         Non-Asbestos:         19.2         s/mm²           Asbestos:         40.0041         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	Length > 5.0 μm	* Chrysotile	**Amphibole	***Non-Asbestos	Micrograph / EDS ID		
11 C8		NSD								
C9		NSD	-							
13 C1		NSD								
C2		NSD								
			<del></del>			-				
					- "					
ļ	-									
					*****					
Total:	NSD	NSD	0	0		-				
				<u></u> _	0	0	0			
Record v  ** Define A  *** Character	isible prominer mphibole (DP e rize by EDS	ology, SAED, and the Chrysotile DP reputation of the Properties of	effections (002 int-out EDS ar	2,004, 110, 136 nd attach.		NTATION MAI	Prep Quality: Dissolution Carbon Film Loading	Good Good 2%		
Comments:								K. Goedde		



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  $(s/mm^2)$ :  $\leq 19.2$ 

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

Page I of 2



Email: customerservice@iatl.com

#### **CERTIFICATE OF ANALYSIS**

Client: The Vertex Companies, Inc. Report Date: 7/8/2018

700 Turner Way, Suite 105 Report No.: 567664 - TEM AHERA

ASTON PA 19014 Project: Olney E. School

Client: VER100 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 it 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 1. (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.

Dated: 7/9/2018 11:51:32 Page 2 of 2



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 DETAILS

Lab No.: 6552826

Client No.: -01

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 Bathroom 108 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

Lab No.: 6552827

Client No.: -02

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:** Lab No.: 6552828

Client No.: -03

**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 Entrance Bathroom 108 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

Volume (L): 1805.0 L Date Sampled: 7/6/18

Location: In Room 108 By Window 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

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

Date Received:

7/6/2018 07/08/2018

Date Analyzed:

Dated: 7/9/2018 11:51:32

Signature: Analyst:

Kristen Goedde

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 3



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 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

Structure Density (s/mm²): <19.2 Structure Concentration (s/cc): <0.0041 Filter Type: MCE

Filter Size (mm²): 385 **Pore Size (μm):** 0.45

Non-Asbestos Structures: None Detected

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

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:** 

Geometric Mean = 0.0041 Structures/cc

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

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 11:51:32

Page 2 of 3



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

Dated: 7/9/2018 11:51:32 Page 3 of 3





9000 Commerce Parkway § 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: 6/14/2018

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 Concentration (s/cm²):<925

Density (s/mm²):<9.62

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:

Approved By:



Email: customerservice@ia

#### 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.:

## 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 communicate 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 tire sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, result 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 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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This report shall not be reproduced except in full, without written approval of the laboratory.

#### **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/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



Email: customerservice@ia

#### 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.:

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 a

0.45um cassette.



Email: customerservice@ia

#### CERTIFICATE OF ANALYSIS

Client: OHCS Inc.

209 Catharine St.

Philadelphia PA 19147

Report Date:

6/14/2018

Report No.:

565663 - TEM Dust

Microvac

Project:

Olney ES

Project No.:

#### TEM DUST SAMPLE ANALYSIS DETAILS

Lab No.: 6530033

Client: OHC164

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  $< 5 \mu m$ : None Detected Structures  $\ge 5 \mu m$ : None Detected Structure Density (s/mm²):  $\le 9.62$ 

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:

Croix Lieles

Approved By:



Email: customerservice@ia

#### 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.:



9000 Commerce Parkway 5 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 SUMMARY

Lab No.:6530034

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

Location: Near Pipe And Window Center Room Concentration (s/cm²): <587

Area (cm²): 100

Density (s/mm²): <8.55

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

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:

Approved By:



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.:

# Appendix to Analytical Report:

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

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate 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: Air 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 times sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, result 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 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.

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 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 ASTM D6480 - 05(2010)

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/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

aheence of acheetos on the cannile can not be concluded. Analysis for informational nurnoses only



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

Project:

Olney ES

Client: OHC164

Project No.:

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIC

(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"

19147

(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.



Email: customerservice@ia

#### CERTIFICATE OF ANALYSIS

OHCS Inc. Client:

209 Catharine St.

Philadelphia 19147 PA

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: OHC164

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: 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: Near Pipe And Window Center Room Filter Size (mm²):962

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

Area Sampled (cm²):100

Location: Room 107 Stall 2 On Floor Tile

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures  $\geq 5 \mu m$ : None Detected Structure Density (s/mm²):  $\leq 8.55$ Structure Concentration (s/cm²): <343

Asbestos Type(s): None Detected

Filter Type: MCE 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

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:

rain Lielen

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



Email: customerservice@ia

#### CERTIFICATE OF ANALYSIS

OHCS Inc. Client:

209 Catharine St.

Philadelphia PA

19147

Report Date:

Report No.:

565662 - TEM Dust

Wipe

Project:

Olney ES

6/15/2018

Project No.:

### TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6530036

Client: OHC164

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:** 

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 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

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):<9.62 Structure Concentration (s/cm²):<4

Non-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

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:

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



Email: customerservice@ia

#### CERTIFICATE OF ANALYSIS

Client: OHCS Inc.

209 Catharine St.

Philadelphia PA 19147

Report Date:

Report No.:

6/15/2018

lo.: 565662 - TEM Dust

Wipe

Project:

Olney ES

Project No.:

#### TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6530038

Client: OHC164

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  $\ge 5$   $\mu$ m: None Detected Structure Density (s/mm²):  $\le 12.8$  Structure Concentration (s/cm²):  $\le 514$ 

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:

Craia Tialra

Approved By:

Fra Francisco



Email: customerservice@ia

#### CERTIFICATE OF ANALYSIS

Client: OHCS Inc.

209 Catharine St.

Philadelphia PA 19147

Client: OHC164

Report Date: 6/15/2018

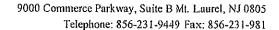
Report No.:

565662 - TEM Dust Wipe

Project:

Olney ES

Project No.:





# PRELIMINARY RESULTS Airborne Asbestos Analysis TEM AHERA

Client:	OHCS Inc.			Batch No.:		567670
	209 Catharine S	St.		Project:	Olney	Elementary
	Philadelphia, P.	A 19147	··········	Project No.:		ns 201-310
Client No.:	OHC164		<del></del>	Philly Regs:	Y	
				Turn-Around T	ime:	1 Day
Client Contac	ets:		Laboratory	Contacts:		
Contacts:			Contacts:	Frank E. Ehrenfe	ld 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 Cust	ndv:					
Samples Taken i			Date:		Time:	
Samples Rec'd at	t Laboratory:	PW	Date:	7/6/2018	Time:	
Samples Analyze	· -	K. Goedde	Date:	7/8/2018	Time:	
Preliminary Resu	_		Date:		Time;	
Preliminary Resu	ılts E-Mail:		Date:		Time:	
		Trai	Summary Data smission Electron Microsco AHERA 40CFR 763	ру		
Client	IATL	Volume			Results	Results
Sample ID #	Sample ID #	(L)	Comments		s/mm²	s/cc
0706180LN11	6552883	1800	None Detecte	d	< 19.2	< 0.0041
070618OLN12	6552884	1800	Chrysotile		19.2	0.0041
070618OLN13	6552885	1800	Chrysotile		19.2	0.0041
070618OLN14	6552886	1800	None Detecte	d	< 19.2	< 0.0041
070618OLN15	6552887	1800	None Detecte	d	< 19.2	< 0.0041
070618OLN16	6552888	1800	None Detecte	d	< 19.2	< 0.0041
070618OLN17	6552889	1820	None Detecte		< 19.2	< 0.0041
070618OLN18	6552890	1820	None Detecte		< 19.2	< 0.0041
070618OLN19	6552891	1820	None Detecte	d	< 19.2	< 0.0041
070618OLN20	6552892	1820	None Detecte	d	< 19.2	< 0.0041
	Criteria is <b>70</b> s/mm². Clearance Criteria is		rage $(s/mm^2) = 19.2$ 1 on 5 samples Geo = 0.0041	7	Grid Box	#: 1080
_	attached, if applicab		1 011 3 Samples   Geo - 0.0041		Instrument (1,	II, III <u>III</u>

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.

Revision TEM.AHERA.001

Revision Date: 06/22/18

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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



## CHAIN OF CUSTODY-Air Samples

CLIENT: PFT.	SITE: OLNEY ELEMENTARY
PROJECT#: TLOOMS 201 - 310.	PAGE #: 10 F /
SAMPLED BY:	DATE: 7. Ce. 18
CONTAMINANTS:	ANALYSIS NEEDED BY: MONDAY TAM
	LAFO GACK

I AFO EACHMING

1	<del></del>	CALADIE#	VOLUME	TYPE	COMMENTS	
		SAMPLE#			octside Room 107 2 Vicen	1-16
1102	1	0706BOLN 11	1800	TEN.	<u> 6552883</u>	
1102	2	070418 DLN 12	1-800	TEN	00TSIDE 1700M 107 EVIGANCE 6552884	
1112	3	070618 OLN 13	1800	TEN	1NSDE ROOM 201 TENT 6552885:	141
1112	4	070618 OLNIY	1800	TELL	INSIDE ROOM 201 TENT 6552886	141
1114	5	0706180W15	1800	TEN	DECON. 6552887	141
114	6	070G18 OWKe	1200	1	ENTRANCE 6552838	141
1133	7		1820	•	10510t Rocm 36552899	14/2
1133	.8	070618 OLN TT	18Z0	Fil	1200m 315,28,90.	12/
1/35	9	070418 OW 19	1820	TEN	001510+ 120cm 310 Decon 6552891	14"
1135	10	07041801N20	1820	TEN	OUTSIDE ROOM 310 ENTRANCE 6552892	14

SAMPLE PACKAGED AND SEALED BY:

DATE: TO COUSE

SENT TO: LATC

CONDITION UPON RECEIPT (DAMAGED / UNDAMAGED)

D2W070818

JUL - 6 2018

1



# PRELIMINARY RESULTS Airborne Asbestos Analysis TEM AHERA

Client:	OHCS Inc.		E	Batch No.:		56767
	209 Catharine S	St.		Project:	Olney	Elementary
	Philadelphia, PA	A 19147	P	roject No.:	Room	107 & 108
Client No.:	OHC164		 P	hilly Regs:	Y	
				urn-Around Time		1 Day
Client Contac	ts:		Laboratory Co	ontacts:		
Contacts:			***************************************	rank E. Ehrenfeld II	I	
Phone:			Phone: (8	856) 231-9449		
Fax:				856) 231-9818		
Cell/Pager:				509) 929-4211		
E-Mail:			<del></del>	ankehrenfeld@iatl.c	om	
Chain of Cust	ody:					
Samples Taken i			Date:	7/6/2018	Time:	
Samples Ree'd at	t Laboratory:		Date:	7/6/2018	Time:	
Samples Analyze	ed:	J. Jeon	Date:	7/8/2018	Time:	
Preliminary Resu	ılts Faxed:		Date:		Time:	
Preliminary Resu	ılts E-Mail:		Date:		Time:	
		ı raı	nission Electron Microscopy AHERA 40CFR 763			
Client	IATL	Volume	Community		Results	Results
Sample ID #	Sample ID #	(L)	Comments		s/mm²	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
						•
	Criteria is <b>70</b> s/mm².		ge (s/mm²) = 15.4		Grid Box	#: 1079
	Clearance Criteria is attached, if applicab		on 5 samples Geo = 0.0033	•	rument (I, I	

CLIENT:

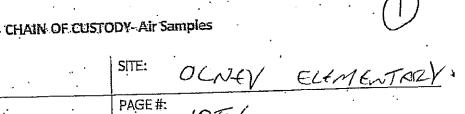
PROJECT #:

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



TOOM DATE:

ROOM. 108

ANALYSIS NEEDED BY: CONTAMINANTS:

100 HOUR ASBESTOS

FOIN). 105 FACIA PELOU AGGRESSIVE CEAF COMMENTS TYPE VOLUME SAMPLE# CONTAINMENT INSIDE BATHRO6552902 0720 TEM 1200 TLOON 070480LN 01 CONTAIN MEST 655290352 INSIDE TEM 0720 2706140LN 0Z 1500 120001 COSTAINMENTO5529040 INSIDE TEN 100 0770 1500 ZOOM 070618 OLN 03 BV EM OTOGIS OLN OL 1500 0732 TEN 070618 OW 05 1800 0732 NALLWAY 65529102 EN 070G18 OLD OG 15600 0733 OUTSIDE T+N 0734 1800 070GKBOLN.07 TEM 1800 0740 CLOSET EN 1800 070612 OW O1 OND CLOSET INSIGE ROOM 107 10 1800 0706RS OW 10 0760

SAMPLE PACKAGED AND SEALED BY

SENT TO:

analyzed: 55 7/8/18

CONDITION UPON RECEIPT (DAMAGED / UNDAMAGED)

JUL - 6 2018