



**HA Brown Elementary School**  
1946 East Sergeant Street  
Philadelphia, Pennsylvania

## **Asbestos Abatement Air Monitoring Report**

**AUGUST 22, 2018**

**PREPARED FOR:**

School District of Philadelphia  
440 North Broad Street, Room 3053  
Philadelphia, Pennsylvania  
Attn: Mr. Gerald Junod

**PREPARED BY:**

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**VERTEX Project No: 51212**

**Work Order Numbers:** 1759096, 1761483, 1761484, 1761485, 1761486, 1761487,  
1728008, 1727998, 1727944

**Control No: 2018521002.2**

**Encumbrance Number: 583018**

## **TABLE OF CONTENTS**

- 1.0 Executive Summary
- 2.0 Project Oversight
- 3.0 Results
- 4.0 Analytical / Air Monitoring Methodologies
- 5.0 Abatement Methodologies
- 6.0 Summary of PCM Air Sampling Results
- 7.0 Summary of TEM Air Sampling Results

## **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 HA Brown Elementary School located at 1946 East Sergeant Street in Philadelphia, PA. These services were performed under Encumbrance Number 583018, School District Control Number 2018521002.2 and Work Order Numbers 1759096, 1761483, 1761484, 1761485, 1761486, 1761487, 1728008, 1727998 and 1727944.

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 between Cafeteria and Gymnasium, Gymnasium (three samples), Second Floor Classroom, Third Floor Classroom, and Third Floor Hallway. The analytical results for the seven wipe samples collected ranged from a level of 64,800 F/cm<sup>2</sup> to 1,110,000 F/cm<sup>2</sup>.

Following the review of the article and the analytical results 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 directed one of its contracted consultants to inspect these areas for presence of asbestos containing materials and/or the potential source of the results reported.
2. In accordance with School District standard protocol, the building inspector prepared an Asbestos Design Data Collection (DDC).

### **Secondary Response**

1. The School District of Philadelphia retained The Vertex Companies, Inc. (VERTEX) to consult/oversee any resulting remediation or abatement to be performed.
2. VERTEX, in conjunction with a representative of the Philadelphia Federation of Teachers, Mr. Jerry Roseman of Occupational Health Consultation Services, Inc. (OHCS) performed a re-inspection of designated areas of the school which included: Classroom #211, Classroom #312, Classroom #314 and the 1<sup>st</sup> floor hallway/gymnasium.
3. The re-inspection confirmed that asbestos containing vinyl floor tile was identified in each area. In addition, specific areas were noted where floor tile had previously been removed, but not replaced in Classroom #211 (i.e., adjacent to windows/induction unit), Classroom #312 (i.e., below the front blackboard) and Classroom #314 (i.e., at threshold in doorway).
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:

### **Classroom #211**

- The removal of approximately 110 square feet of floor tile. In addition, the room was HEPA vacuumed/wet wiped clean.

### **Classroom #312**

- The removal of approximately 70 square feet of floor tile. In addition, the room was HEPA vacuumed/wet wiped clean.

### **Classroom #314**

- The removal of approximately 4 square feet of floor tile.

### **1<sup>st</sup> Floor Hallway/Gymnasium**

- The removal of approximately 45 square feet of floor tile outside the Nurse's Office.
- The removal of approximately 12 square feet of floor tile between the entrance to the Nurse's Office and women's restroom.
- The removal of approximately 18 square feet of floor tile at the kitchen entrance.
- The removal of approximately 36 square feet of floor tile outside the Teacher's Lounge.
- Approximately 24 square feet of floor tile outside the boy's/girl's restrooms.
- The hallway/gymnasium was HEPA vacuumed.

## **Abatement Redial Effort**

1. Work was performed between August 8, 2018 and August 18, 2018.
2. All work was performed in full accordance with the City of Philadelphia's Asbestos Control Regulations. Specifically, non-friable removal methodologies (i.e., dry ice) were employed.
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 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 collected five (5) samples within the Classroom #314 work area location to be analyzed by Phase Contrast Microscopy (PCM).
  - VERTEX and OHCS collected five (5) samples within the work areas in Classroom #211 and Classroom #312 to be analyzed by TEM.
  - VERTEX collected five (5) samples and OHCS collected eight (8) samples within the 1<sup>st</sup> Floor Hallway/Gymnasium work area to be analyzed by TEM.
7. Analytical results of clearance testing within all work areas for both VERTEX and OHCS yielded levels below the City of Philadelphia's clearance criteria and below the AHERA clearance criteria.

## 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), Jeff Forester (certification no. 981-2007), 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 Classroom #314 work area after abatement (final clearances) were below the City of Philadelphia's recommended clearance criteria of 0.01 F/cc, for non-friable projects.
2. Airborne concentrations (i.e., five TEM samples) collected in the Classroom #211, Classroom #312 and 1<sup>st</sup> Floor Hallway/Gymnasium work areas after abatement (final clearances) were below the City of Philadelphia's clearance criteria of 0.00554 AS/cc, and the AHERA clearance criteria <70 AS/mm<sup>2</sup>.
3. Airborne concentrations collected outside the regulated work areas during abatement activities (perimeters) yielded levels below 0.01 F/cc.
4. Airborne concentrations collected inside the regulated work areas during abatement activities also yielded levels below 0.01 F/cc.

Please refer to the attached PCM Air Sampling Results, for a summary of the air sample results.

## 4.0 ANALYTICAL / AIR MONITORING METHODOLOGIES

**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 ( $\mu\text{m}$ ) 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  $\mu\text{m}$ -effective pore size for PCM analysis.

Final clearance air samples were collected and analyzed by both Phase Contrast Microscopy (PCM) and Transmission Electron Microscopy (TEM). TEM analysis was performed by 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<sup>®</sup> suits and NIOSH approved half-face air purifying respirators.

### **Non-Friable**

Prior to removal, utilizing an approved Alternative Method (i.e. dry ice) asbestos warning signs were posted to demarcate the asbestos regulated work areas and asbestos warning tape was used for notification purposes. Access to the regulated areas was limited to authorized personnel only.

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. In addition, plastic sheeting was utilized to cover designated objects within each area. Microtraps were installed within each work area and a single stage decontamination unit was established at the entrance to each work area.

Abatement operations were performed utilizing non-friable removal methodologies (i.e., dry ice). At the completion of abatement operations, final air testing incorporated TEM (i.e., five samples) methodologies. Note: PCM final clearance (i.e., five samples) was performed at the Classroom #314 entrance work area.

Following the completion of the abatement operations, all waste generated as part of the removal project was double-bagged and labeled for proper disposal. 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

Brown Elementary School 1946 E. Sergeant Street Philadelphia, Pennsylvania				
Sample #	Sample Location/Activity	Volume (L)	Fibers per 100 Fields	Sample Result (F/cc)
<b>Date collected: 8/8/18</b>				
<b>Site Activity/Work Area: Classroom #211 – Baselines During Prep</b>				
8.8.01	Baseline: In Classroom #211	1395	2.5	<0.002
8.8.02	Baseline: In Classroom #211	1377	3	<0.002
8.8.03	Baseline: In Classroom #211	1377	2	<0.002
8.8.04	Perimeter: In hall at Classroom #211	582	1.5	<0.005
8.8.05	Perimeter: In hall adjacent to storage closet	582	0	<0.005
8.8.06	Blank	-	0	-
<b>Date collected: 8/9/18</b>				
<b>Site Activity/Work Area: Classroom #211 – Non-Friable Floor Tile Removal 100 SF</b>				
8.9.01	Inside classroom next to entrance	1260	8	0.003
8.9.02	Outside Classroom #211 hallway floor tile from work area	1260	11	0.004
8.9.03	Blank	-	0	-
<b>Date collected: 8/9/18</b>				
<b>Site Activity/Work Area: Classroom #312 – Baseline Samples</b>				
8.9.01	Inside Classroom #312 rear end	1218	15	0.006
8.9.02	Inside Classroom #312 next to entrance	1218	12	0.005
8.9.03	Outside Classroom #312 in hallway	1208	13	0.005
8.9.04	Blank	-	0	-
<b>Date collected: 8/10/18</b>				
<b>Site Activity/Work Area: Classrooms #211 &amp; 312 - Perimeter Prep for Floor Tile Abatement</b>				
8.10.01	Perimeter: 1 <sup>st</sup> floor, Sergeant Street entrance	910	2	<0.003
8.10.02	Perimeter: 2 <sup>nd</sup> floor hall, 15' from Classroom #211	910	1.5	<0.003
8.10.03	Perimeter: 3 <sup>rd</sup> floor hall, 12' from Classroom #312	895	4	<0.003
8.10.04	Work area: In Classroom #211	895	3.5	<0.003
8.10.05	Work area: In Classroom #312	920	4	<0.003
8.10.06	Blank	-	0	-

Brown Elementary School 1946 E. Sergeant Street Philadelphia, Pennsylvania				
Sample #	Sample Location/Activity	Volume (L)	Fibers per 100 Fields	Sample Result (F/cc)
<b>Date collected: 8/16/18</b>				
<b>Site Activity/Work Area: Classroom #211 &amp; #314 – Floor Tile Removal</b>				
8.16.01	Classroom #312 inside work area	1205	8	0.003
8.16.02	Hallway outside Classroom #312, 10ft	1205	10	0.004
8.16.03	Classroom #314 inside work area	1218	7	<0.002
8.16.04	Classroom #314 hallway, 15ft from work area	1208	11	0.004
8.16.05	Classroom #211 inside work area	1452	14	0.005
8.16.06	Hallway outside Classroom #211, 10ft	1452	12	0.004
8.16.07	Blank	-	0	-
<b>Date collected: 8/16/18</b>				
<b>Site Activity/Work Area: Classroom #314 – PCM Final/6 SF Non-Friable FT Removal</b>				
8.16.01	Classroom #314 north end	1218	4	<0.002
8.16.02	Classroom #314 east end	1208	9	0.004
8.16.03	Classroom #314 south end	1218	6	0.002
8.16.04	Classroom #314 west end	1208	14	0.006
8.16.05	Classroom #314 center	1218	10	0.004
8.16.06	Blank	-	0	-
<b>Date collected: 8/16/18</b>				
<b>Site Activity/Work Area: Gymnasium/Hallway – Baselines for FT Removal &amp; Cleaning</b>				
8.16.01	PCM sample gym hallway next to room	1218	16	0.006
8.16.02	PCM sample gym hallway outside teachers' lounge	1208	10	0.004
8.16.03	PCM sample next to café entrance	1218	13	0.005
8.16.04	PCM sample next to nurse's office	1208	11	0.004
8.16.05	PCM sample wall between gym and nurses' entrance	1218	9	0.004
8.16.06	Blank	-	0	-



<b>Brown Elementary School</b> <b>1946 E. Sergeant Street</b> <b>Philadelphia, Pennsylvania</b>				
Sample #	Sample Location/Activity	Volume (L)	Fibers per 100 Fields	Sample Result (F/cc)
<b>Date collected: 8/17/18</b>				
<b>Site Activity/Work Area: 1<sup>st</sup> Floor Hallway/Gymnasium – Non-Friable Floor Tile Removal</b>				
8.17.01	Perimeter: Entrance lobby	1308	3.5	<0.002
8.17.02	Perimeter: Hall ramp at decon	1293	5.5	0.002
8.17.03	Perimeter: Break room	1272	4	<0.002
8.17.04	Work area: 1 <sup>st</sup> floor hallway	1155	9	0.004
8.17.05	Work area: 1 <sup>st</sup> floor hall at restrooms	1152	7.5	0.003
8.17.06	Work area: Gym	1137	7	0.003
8.17.07	Blank	-	0	-

## 7.0 SUMMARY OF TEM AIR SAMPLING RESULTS