INDOOR AIR QUALITY REPORT
FOR
HOWARD COUNTY PUBLIC SCHOOLS

WILDE LAKE HIGH SCHOOL
5460 TRUMPETER ROAD
COLUMBIA, MD 21044

PREPARED FOR:

MR. JEFF KLENK
ENVIRONMENTAL SAFETY SPECIALIST
HOWARD COUNTY PUBLIC SCHOOL SYSTEMS
10910 ROUTE 108
ELLICOTT CITY, MD 21043

PREPARED BY:

ARIA ENVIRONMENTAL, INC.
PO BOX 286
WOODBINE, MD 21797

JANUARY 3, 2018

J17-1031

INDOOR AIR QUALITY REPORT
HCPSS WILDE LAKE HIGH SCHOOL

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EXECUTIVE SUMMARY

Aria Environmental, Inc. (AE) was contracted by Mr. Jeff Klenk, Environmental Safety Specialist, to perform an indoor air quality assessment at Wilde Lake High School on July 21 and August 22, 2017 as a proactive response to the delamination of non-asbestos fireproofing material caused by roofing activities. AE made real time measurements for particulate matter and performed air sampling for respirable dust, total dust and fiber concentrations. This report presents the results of the assessment.

Real time particulate matter measurements were taken in several indoor locations on July 21, 2017 and August 7, 10, 14, 16, 18 and 22, 2017, before, during and after fireproofing installation and cleanup activities. Results were found to be within the established guidelines for good indoor air quality in all areas measured at the end of the project when all areas were cleaned. Some particle measurements were above the guidelines in areas where fireproofing and cleaning activities were actively taking place. Bulk sampling and material characterization of the fireproofing revealed that the material was mostly mineral wool and did not contain asbestos. Samples for respirable dust, total dust and fiber concentrations were below the limits of detection and/or below established guidelines in all locations sampled on both days. Only one sample had a detectable concentration of respirable or total dust or fibers: Room 333 on July 21, 2017 (0.35 mg/m^3) which is below occupational health standards and guidelines for respirable dust. No further action is recommended.

INDOOR AIR QUALITY REPORT
HCPSS WILDE LAKE HIGH SCHOOL
JULY 21 AND AUGUST 7, 10, 14, 16, 18 & 22, 2017

I. BACKGROUND

Representatives from Aria Environmental, Inc. (AE) visited Wilde Lake High School on July 21 and August 22, 2017 to perform air monitoring and sampling. AE made real time measurements for particulate matter on July 21, 2017 and August 7, 10, 14, 16, 18 and 22, 2017 before, during and after fireproofing installation and cleanup activities. Air sampling for respirable dust, total dust and fibers was performed on July 21 and August 22, 2017, before and after fireproofing installation and cleanup activities. This monitoring was performed in response to non-asbestos ceiling fireproofing being delaminated during roofing activities at the school.

II. OBSERVATIONS AND MEASUREMENTS

A. Observations and Measurements

Real time measurements for particles and air sampling for respirable dust, total dust and fiber concentrations were performed on July 21, 2017 at Wilde Lake High School when the delaminated fireproofing was first discovered in select areas of the school. Areas where the fireproofing had not been delaminated were added to the sampling strategy for comparison. The areas with widespread delamination of fireproofing were on the third floor in Classrooms 321, 325, 327, 331, 333, 339, 340, the southeast stairwell and the 3rd floor landing. Sampling was performed during fireproofing installation and cleaning activities on August 7, 10, 14, 16 and 18, 2017, and follow up sampling was then performed on August 22, 2017 after the fireproofing was replaced and cleanup of the school had been completed and prior to the return of faculty. This sampling was performed in order to document the conditions for summer employees (administration and custodial staff), visitors or contractors working in the school at the time that the dislodged fireproofing was discovered, repaired and cleaned up. A floor plan of the school is included as Attachment A.

Particulate matter or PM is the term for a mixture of solid particles and liquid droplets found in the air. It does not distinguish between the types of particles in the air (e.g., pollen, skin cells, mold spores, soil, etc.). Particulate matter includes "coarse particles" with diameters larger than 2.5 micrometers and smaller than 10 micrometers (PM 10) and "fine particles" with diameters that are 2.5 micrometers and smaller (PM 2.5). Particle loads expected to be a part of the school environment include carpet and clothing fiber, soil tracked from outside, paper dust, and dust and fibers from building materials. ASHRAE Standard 62.1–2016 suggests target indoor concentrations for PM 2.5 and PM 10 of 15 µg/m^3 and 50 µg/m^3, respectively. These concentrations are taken from the EPA's National Ambient Air Quality Standards (NAAQS) based on annual arithmetic means deemed acceptable for outdoor air quality.

Particle measurements were taken with an Aerocet 531 particulate monitor. The particle monitor takes a two-minute averaged sample of particle concentrations in 5 size fractions (PM 1, PM 2.5, PM 7, PM 10 and total suspended particles (TSP)). Results of particulate monitoring, presented in Tables 1 to 7, revealed that PM 2.5 and PM 10 particle concentrations were well below the ASHRAE target concentrations in all areas monitored (before and after fireproofing clean up); however, results of monitoring during active fireproofing installation and cleaning activities were occasionally high in the immediate areas of the activities. Results in bold type indicate measurements above the particle guidelines.

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Table 1: Particle Measurements Collected on July 21, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Classroom 333	1:50 PM	0	0	6	7	11
Classroom 333	1:54 PM	0	0	2	4	6
3rd Floor Hall Near Auditorium	2:00 PM	0	1	10	13	16
3rd Floor Hall Near Auditorium	2:03 PM	0	1	8	11	16
3rd Floor Corridor at Classroom 325	2:32 PM	0	1	2	4	8
3rd Floor Corridor at Classroom 329	2:35 PM	0	1	4	5	9
3rd Floor Corridor at Classroom 311	2:38 PM	0	1	4	5	8
3rd Floor Corridor at Atrium Overlooking Library	2:41 PM	0	1	6	7	9
3rd Floor Corridor at Classroom 318	2:44 PM	0	1	6	6	10
3rd Floor Corridor at Classroom 322	2:47 PM	0	1	3	4	7
3rd Floor Corridor at Classroom 330	2:50 PM	0	0	2	3	5
3rd Floor Hall Near Atrium	2:55 PM	0	4	8	10	14
Classroom 232	3:01 PM	0	0	0	0	0
Classroom 235	3:04 PM	0	0	1	1	16
1st Floor at Bridge	3:09 PM	0	0	1	1	5
Classroom 136	3:13 PM	0	0	1	1	4
Classroom 222	3:27 PM	0	0	0	0	9
Classroom 136	3:49 PM	0	0	2	3	8
Gym	5:07 PM	0	0	3	3	5
Outside	6:51 PM	0	1	5	6	7

Table 2: Particle Measurements Collected on August 7, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Main Hall at Front Office		0	0	7	10	25
2nd Floor Center Stairwell Landing		0	0	6	8	13
3rd Floor Center Stairwell Landing		0	0	12	20	36
Room 333 - In Negative Air Containment where Fireproofing Panels Installed but no Active Work		2	**33**	400	**670**	1,074
Hall at Room 131		0	1	31	44	67
Classroom 321 - Workers Installing Fireproofing Panels		1	**39**	175	**175**	2,142

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Table 2: Particle Measurements Collected on August 7, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Main Hallway at Rm 121		0	0	5	3	20
Rm 222		0	0	0	0	1
Rm 136		0	0	3	4	7

Bold type represents results over the guidelines: PM2.5 – 15 µg/m³ and PM10 – 50 µg/m³

Table 3: Particle Measurements Collected on August 10, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Main Hall at Front Office	4:17 PM	0	0	5	8	12
2nd Floor Landing outside containment	4:21 PM	0	3	12	15	16
Rm 220	4:25 PM	0	0	15	19	33
3rd Floor Landing at Elevator	4:30 PM	4	**37**	362	**577**	1,134
Rm 333 Fireproofing Installation, Dust and Debris	4:34 PM	8	**373**	5,618	**8,450**	9,999 (Max)
Science Prep – Fireproofing Installation	4:36 PM	15	**212**	1,452	**2,063**	3,207
Hallway at Rm 331	4:39 PM	4	**54**	518	**843**	1,365
Hallway at Rm 325	4:43 PM	3	**32**	320	**457**	602
Rm 321 – cleaning, sweeping after fireproofing installation	4:46 PM	2	**30**	198	**417**	811
3rd Floor Hallway at Rm 319 inside containment with no active work	4:48 PM	0	1	4	5	6
Main Hallway at Rm 121	4:54 PM	0	1	12	17	26

Bold type represents results over the guidelines: PM2.5 – 15 µg/m³ and PM10 – 50 µg/m³

Table 4: Particle Measurements Collected on August 14, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Main Hallway at Front Office (active cleaning here)	11:19 AM	0	8	9	**111**	321
2nd Floor Center Stairwell Landing	11:22 AM	0	1	22	48	129
Rm 220	11:25 AM	1	4	10	11	12
3rd Floor Center Stairwell Landing	11:30 AM	6	**81**	906	**1,406**	1,982
3rd Floor Hallway	11:37 AM	3	**52**	592	**864**	1,193
Rm 321	11:41 AM	0	2	17	24	28
Hallway at Rm 325	11:44 AM	4	**76**	794	**1,129**	1,605
3rd Floor at Rm 319	11:47 AM	2	**62**	670	**1,032**	1,465
Main Hallway at Rm 121 (after cleaning)	11:51 AM	0	2	16	20	30

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Table 4: Particle Measurements Collected on August 14, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Rm 136	11:57 AM	0	0	1	1	1

Bold type represents results over the guidelines: PM2.5 – 15 µg/m³ and PM10 – 50 µg/m³

Table 5: Particle Measurements Collected on August 16, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Main Hallway at Front Office	10:11 AM	0	1	11	14	28
2nd Floor Center Stairwell Landing	10:14 AM	0	1	8	11	19
Rm 220	10:17 AM	0	0	11	19	33
3rd Floor Center Stairwell Landing (active cleaning)	10:20 AM	4	**103**	2,832	**4,365**	7,224
3rd Floor Hallway at Rm 333 (active cleaning nearby)	10:23 AM	0	4	27	44	105
Rm 327 (after cleaning)	10:26 AM	0	2	313	**455**	815
Rm 321 (cleaned)	10:30 AM	0	1	22	36	58
3rd Floor Balcony at Rm 319	10:32 AM	0	4	22	30	33
1st Floor at Rm 123	10:39 AM	0	1	18	28	66

Bold type represents results over the guidelines: PM2.5 – 15 µg/m³ and PM10 – 50 µg/m³

Table 6: Particle Measurements Collected on August 18, 2017 at Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
3rd Floor Stairwell	8:20 AM	0	5	13	13	108
3rd Floor Hall near Rm 333 (active cleaning)	9:07 AM	1	13	181	**278**	468
3rd Floor near Rm 331 (active cleaning)	9:11 AM	0	5	98	**172**	284
3rd Floor end of Hall near Rm 325 (active cleaning)	9:14 AM	0	2	8	8	54
3rd Floor Hall at Stairwell and Rm 325 (active cleaning)	9:16 AM	1	3	56	**109**	216
3rd Floor at main overlook and Rm 319	9:18 AM	0	3	24	40	61
2nd Floor at overlook and ramp	9:22 AM	0	0	2	3	5
2nd Floor at overlook and media center	9:24 AM	0	0	4	6	12
2nd Floor in Media Center	10:12 AM	0	0	1	2	3
1st Floor Main Hall near Rm C151	10:47 AM	0	1	5	7	17
1st Floor Main Hall - center	10:50 AM	0	0	2	2	3
Outside	10:53 AM	3	5	9	11	12

Bold type represents results over the guidelines: PM2.5 – 15 µg/m³ and PM10 – 50 µg/m³

Table 7: Particle Measurements Collected on August 22, 2017 at the Wilde Lake High School

Location	Time	PM1 (µg/m³)	PM2.5 (µg/m³)	PM7 (µg/m³)	PM10 (µg/m³)	TSP (µg/m³)
Room 222	8:40 AM	0	0	0	2	3
Room 136	8:59 AM	0	0	2	2	5
Room 333	9:18 AM	0	0	11	16	32
Room 222	11:16 AM	0	0	0	0	0
3rd Floor Center Hall at Overlook	11:30 AM	0	1	3	3	5
Room 136	11:36 AM	0	0	3	3	6
Gym	12:07 PM	0	1	4	4	7
Gym	12:15 PM	0	1	4	5	10
Room 333	12:20 PM	0	0	2	2	4
3rd Floor Hall	2:01 PM	0	0	0	0	1
Gym	2:45 PM	0	1	3	6	11
Gym	5:15 PM	0	1	4	5	6
Outside	5:30 PM	0	1	7	8	12

B. Bulk sampling of Fireproofing Material

A bulk sample was collected of the fireproofing material on July 17, 2017 and submitted to International Asbestos Testing Laboratories (IATL), an AIHA-accredited laboratory, for material characterization including asbestos analysis, consistent with EPA methods 600/R93/116. A material is considered to be asbestos-containing if it contains one percent (1%) or more asbestos by polarized light microscopy. The laboratory characterized the fireproofing as follows: "The sample is a grey spray-on fireproofing that is comprised of 40% mineral wool by visual area estimation (VAE) with the remaining sample observed to be a carbonate binder. No asbestos detected. No other fibrous or elongated mineral component detected." A carbonate is a carbonic salt, in this case, it is most likely a carbonic salt of calcium (calcium carbonate). The certificate of analysis is included as Attachment B.

C. Air Monitoring for Respirable Dust on July 21 and August 22, 2017

Respirable and Total Dust Exposure Monitoring

Air sampling for respirable and total dust took place on July 21 and August 22, 2017. Five area samples were collected at Wilde Lake High School during the summer when no activities were going on in the school and the school had few occupants. Respirable and total dust samples were collected on pre-weighed PVC following NIOSH Methods 0600/0500. Aluminum cyclones were used for the respirable dust samples. Samples were collected at 2 (total) and 2.5 (respirable) liters per minute (LPM) for approximately 1.5 to 2.5 hours from Room 222 (01), Room 136 (02), Room 333 (03), the 3rd Floor Hallway near the atrium overlook (04) and the Gym (05) on both days of sampling. Samples were analyzed by Galson Labs, an AIHA-accredited laboratory, for respirable and total dust.

Regulations and Guidelines

Results of monitoring are compared to occupational exposure regulations and guidelines. Occupational health standards and guidelines for respirable and total dust are presented in Table 8. The Occupational Safety and Health Administration (OSHA) has established mandatory occupational exposure standards called permissible exposure limits (PELs). Recommended occupational exposure guidelines are published by the National Institute for Occupational

Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH). NIOSH and ACGIH publish recommended exposure limits (RELs) and threshold limit values (TLVs), respectively. PELs, RELs and TLVs all represent the limits on the amount or concentration of substances as 8 hour time-weighted averages (TWA).

Table 8 – Occupational Exposure Limits and Guidelines for Respirable and Total Dust

Chemical	OSHA PEL mg/m³	NIOSH REL mg/m³	ACGIH TLV mg/m³
Respirable Dust	5	None Established	3
Total Dust	15	None Established	10 (Inhalable)

Respirable and Total Dust Results

There were no detected concentrations of respirable or total dust in the five areas sampled on July 21 and August 22, 2017 except for 0.35 mg/m³ respirable dust detected in Room 333 on July 21, 2017. The detected dust concentration and the limits of detection for the analytical methods were well below occupational standards and guidelines. Analytical results are listed in Tables 9 and 10 and certificates of analysis are included as Attachment B.

Table 9 – Air Sampling for Respirable Dust on July 21 and August 22, 2017 at Wilde Lake High School

Location	Respirable Dust July 21, 2017 (mg/m³)	Respirable Dust August 22, 2017 (mg/m³)
Room 333	0.35	<0.12
3rd Floor Hall	<0.21	<0.13
Room 222	<0.22	<0.13
Room 136	<0.22	<0.13
Gym	<0.23	<0.13

Table 10 – Air Sampling for Total Dust on July 21 and August 22, 2017 at Wilde Lake High School

Location	Total Dust July 21, 2017 (mg/m³)	Total Dust August 22, 2017 (mg/m³)
Room 333	<0.28	<0.12
3rd Floor Hall	<0.26	<0.13
Room 222	<0.27	<0.13
Room 136	<0.28	<0.13
Gym	<0.29	<0.13

D. Air Monitoring for Fiber Concentrations on July 21 and August 22, 2017

Air sampling for fiber concentrations took place for approximately 2 hours on July 21 and August 22, 2017. Five area samples were collected for approximately 1.5 to 2.5 hours at 10 liters per minute at Wilde Lake High School during the summer when no activities were going on in the school and the school had few occupants. Fiber samples were collected on 25 millimeter (mm) mixed-cellulose ester (MCE) filters with extension cowls, following NIOSH Method 7400. Samples were collected from Room 222 (01), Room 136 (02), Room 333 (03), the 3rd Floor Hallway near the atrium overlook (04) and the Gym (05) on both days of sampling and a blank was submitted for

each day of sampling. Samples were analyzed by International Asbestos Testing Laboratories (IATL), an AIHA-accredited laboratory, for fiber analysis.

Regulations and Guidelines

Occupational health standards and guidelines for fibers are presented in Table 11 including asbestos and synthetic mineral fibers. The main component of the fire-proofing at WLHS is mineral wool. Mineral wool is a generic term for fiber materials that are formed by spinning or drawing molten minerals. It would fall into several of the fiber categories such as glass wool, rock wool, slag wool and refractory ceramic fibers.

Table 11 – Occupational Exposure Limits and Guidelines for Various Types of Fibers

Chemical	OSHA PEL Fibers/cc	NIOSH REL Fibers/cc	ACGIH TLV Fibers/cc
Asbestos Fibers (all types)	0.1 (1 fiber/cc - 30 minute excursion)	0.1 or Lowest Feasible Concentration (LFC)	0.1
Continuous filament glass fibers	Regulated as Nuisance Dust Respirable fraction: 5 mg/m^3 Total dust: 15 mg/m^3	Fibrous Glass Dust as Total dust: 5 mg/m^3 (Fibers with diameter equal or less than 3.5 µm;, and length equal to or greater than 10 µm: 3 f/cc)	1 fibers/cc or 5 mg/m^3 (Inhalable)
Glass wool fibers	Regulated as Nuisance Dust Respirable fraction: 5 mg/m^3 Total dust: 15 mg/m^3	Fibrous Glass Dust as Total dust: 5 mg/m^3 (Fibers with diameter equal or less than 3.5 µm;, and length equal to or greater than 10 µm: 3 f/cc)	1
Rock wool fibers	Regulated as Nuisance Dust Respirable fraction: 5 mg/m^3 Total dust: 15 mg/m^3	None Established	1
Slag wool fibers	Regulated as Nuisance Dust Respirable fraction: 5 mg/m^3 Total dust: 15 mg/m^3	None Established	1
Special purpose glass fibers	Regulated as Nuisance Dust Respirable fraction: 5 mg/m^3 Total dust: 15 mg/m^3	None Established	1
Refractory ceramic fibers	Regulated as Nuisance Dust Respirable fraction: 5 mg/m^3 Total dust: 15 mg/m^3	None Established	0.2

Fiber exposure limits are based on length and width of fibers as well as carcinogenic status.

Fiber Analysis Results

There were no detected concentrations of fibers in the five areas sampled on July 21 and August 22, 2017. The limits of detection for the analytical methods were well below occupational standards and guidelines. Analytical results are listed in Table 12 and certificates of analysis are included as Attachment B.

Table 12 – Air Sampling for Fiber Concentrations on July 21 and August 22, 2017 at Wilde Lake High School

Location	Fibers July 21, 2017 (Fibers/cc)	Fibers August 22, 2017 (Fibers/cc)
Classroom 333	<0.0029	<0.0018
3rd Floor Hall at Atrium	<0.0030	<0.0018
Classroom 222	<0.0031	<0.0017
Classroom 136	<0.0031	<0.0019
Gym	<0.0031	<0.0018
Blank	N/A	N/A

III. CONCLUSIONS AND RECOMMENDATIONS

Aria Environmental, Inc. (AE) was contracted by Mr. Jeff Klenk, Environmental Safety Specialist, to perform air sampling for dust and fibers at Wilde Lake High School due to dust created by the delamination of non-asbestos fireproofing at the school. Roofing activities in July, 2017 dislodged large sections of fireproofing from the ceiling deck in several areas of the school. Bulk sampling and material characterization of the fireproofing revealed that the material was mostly mineral wool and did not contain asbestos. AE made real time measurements for particulate matter and performed air sampling for respirable dust, total dust and fiber concentrations on July 21 when the problem was discovered and then performed follow up monitoring on August 22, 2017 in the same areas after the fireproofing was replaced and the affected areas were cleaned.

Real time particulate concentrations were within acceptable ranges for good indoor air quality in all areas measured before and after fireproofing and cleaning activities. Some real time measurements were high in areas where active cleaning or fireproofing installation was occurring. Measures were in place to control dust during these activities such as negative pressure, poly-sheeting containment structures with air filtering devices. Air sampling for respirable and total dust took place in five areas on July 21 and follow up sampling took place in the same areas on August 22, 2017. No total or respirable dust was detected in any sample except for 0.35 mg/m^3 respirable dust in Room 333 on July 21, 2017. The detected concentration and the limits of detection were all well below occupational health standards and guidelines. Air sampling for fibers took place in the same five areas as the respirable and total dust on both days. Fibers were not detected in any sample. No further action is recommended.

IV. LIMITATIONS

This report has been prepared for the exclusive use of the Howard County Public School System and/or their agents. This service has been performed in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided to us by others, unless otherwise noted. Our observations and recommendations are based upon conditions readily visible at the site at the time of our site visit, and upon current industry standards. Destructive sampling was not performed as part of this survey. No observations were made behind solid walls, ceilings or in pipe chases that weren't already openly visible.

INDOOR AIR QUALITY REPORT
HCPSS WILDE LAKE HIGH SCHOOL
JULY 21 AND AUGUST 7, 10, 14, 16, 18 & 22, 2017

By virtue of providing the services described in this report, the preparer does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that my present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. Under this scope of services, the preparer assumes no responsibility regarding response actions (e.g. abatement, removal, etc.) initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements, and should be performed by appropriately licensed personnel as warranted.

Attachment A:

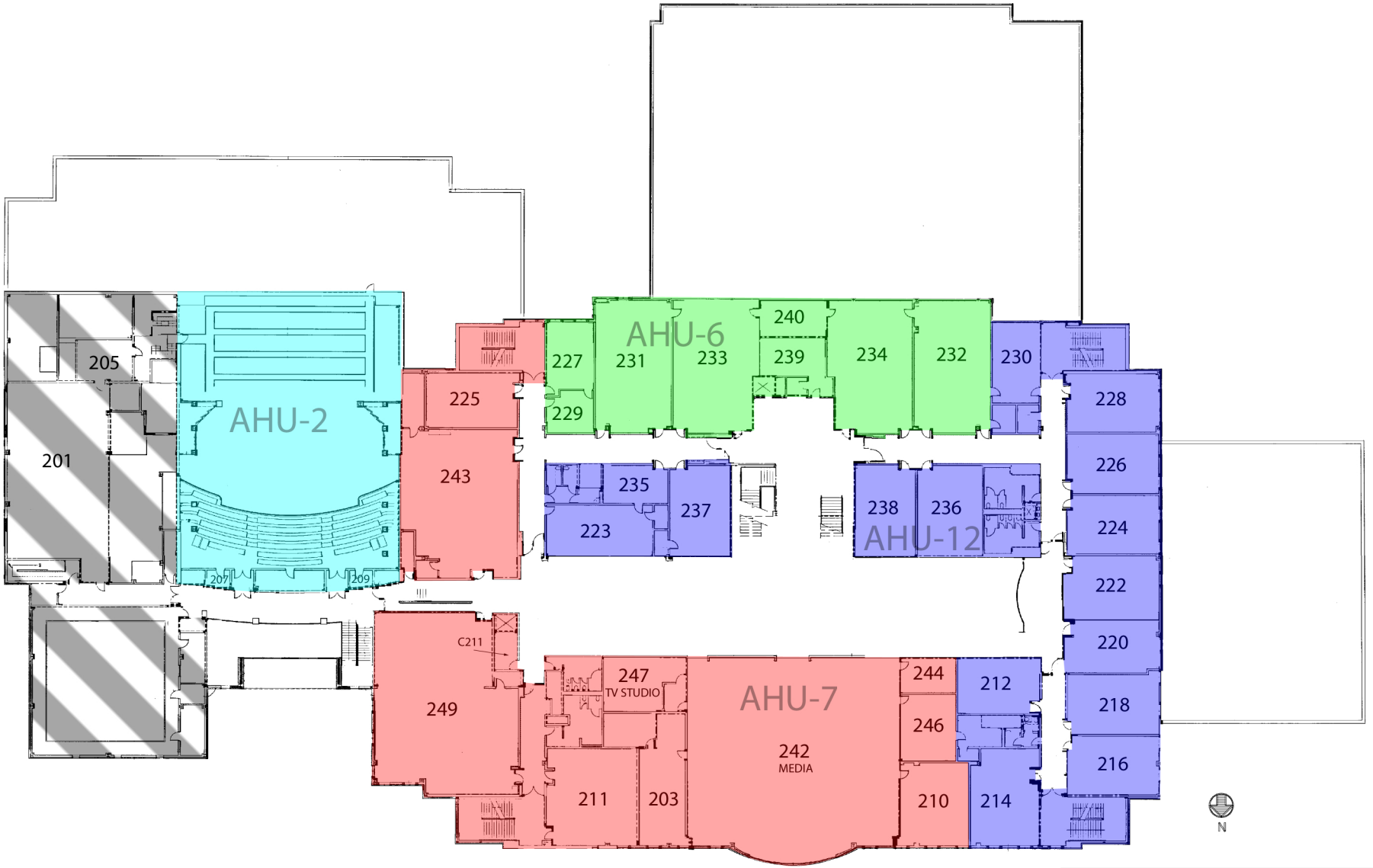
School Floor Plan

The Howard County Public School System
10910 Route 108 Ellicott City, Maryland 21042-6198 (410)313-6600

LEARNING FOR A LIFETIME

WILD LAKE HIGH 1st FLOOR PLAN

MODIFIED - 6/29/11



N/A = Not on EMS

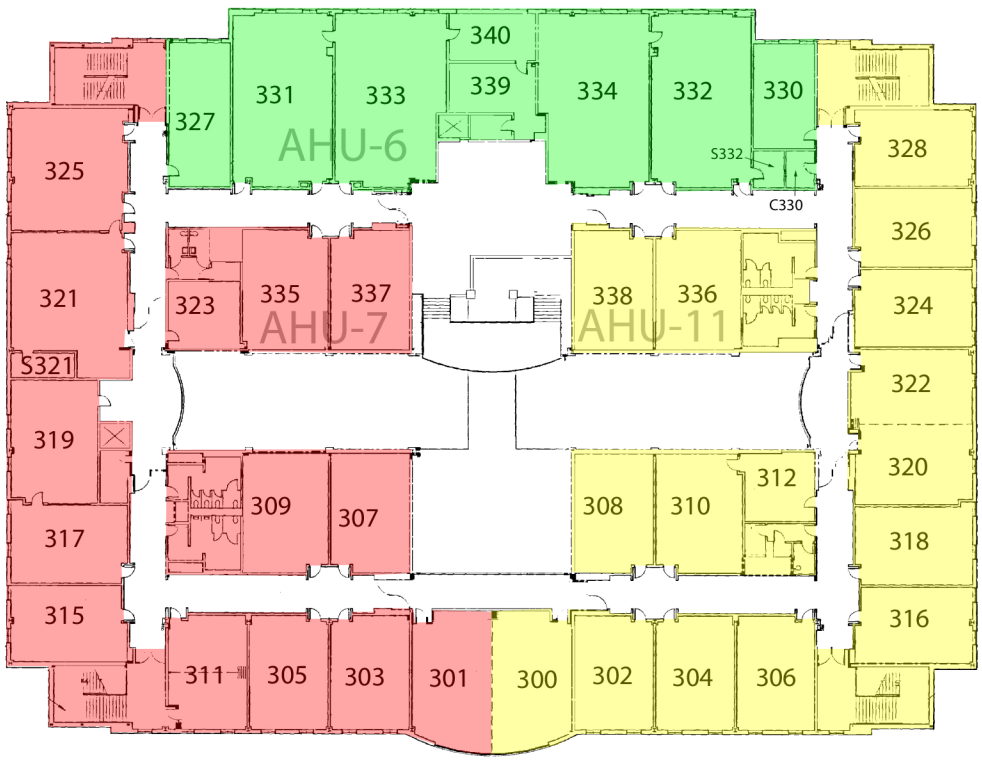
AHU-2 AHU-6 AHU-7 AHU-12

The Howard County Public School System
10910 Route 108 Ellicott City, Maryland 21042-6198 (410)313-6600

LEARNING FOR A LIFETIME

WILD LAKE HIGH 2nd FLOOR PLAN

MODIFIED - 6/29/11



N

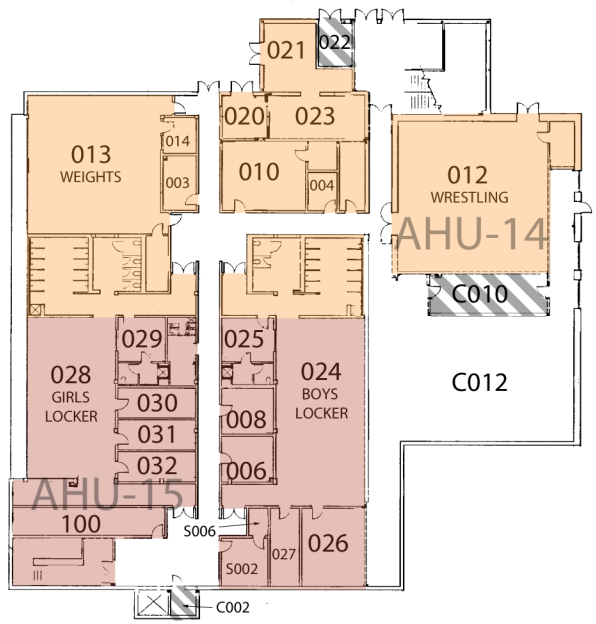
AHU-6 AHU-7 AHU-11

The Howard County Public School System
10910 Route 108 Ellicott City, Maryland 21042-6198 (410)313-6600

LEARNING FOR A LIFETIME

WILD LAKE HIGH 3rd FLOOR PLAN

MODIFIED - 6/29/11



N/A = Not on EMS

AHU-14 AHU-15

The Howard County Public School System
10910 Route 108 Ellicott City, Maryland 21042-6198 (410)313-6600

LEARNING FOR A LIFETIME

WILD LAKE HIGH BASEMENT

MODIFIED - 6/29/11

Attachment B:

Report of Analyses

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B
Mount Laurel, NJ 08054
Telephone: 856-231-9449
Fax: 856-231-9818
www.iatl.com

Materials Characterization Laboratory Report

ATTENTION: **Michele Twilley, DrPH, CIH**
Aria Environmental, Inc.
5292 Enterprise Street, Suite B
Sykesville, MD 21784

SUBJECT: Materials characterization analysis of bulk building material sample by Polarized Light Microscopy (PLM) for project name *Wilde Lake High School*, project # *171031*, iATL Batch # 541870.

Method and Sample Preparation:

PLM analysis was conducted on one fire proofing building material sample with techniques consistent with EPA 600/R93/116. Analysis utilizes refractive index liquids as well as stereomicroscope examination to differentiate between asbestos and non-asbestos components. For this analysis, optical microscopy techniques were used to identify the type and quantity of components that comprise the sample. This includes techniques such as central stop dispersion staining and becke lines to determine refractive index, as well as visual area estimation (VAE) for quantification. 1.550 refractive index liquid was used for this analysis.

PLM Analytical Results:

iATL #	Client #	Location/Description	Result
6292399	Wilde Lake	Fire proofing	The sample is a grey spray-on fireproofing that is comprised of 40% mineral wool by VAE with the remaining sample observed to be a carbonate binder. No asbestos detected. No other fibrous or elongated mineral component detected.

Report Prepared and Approved by:

Frank Ehrenfeld — Laboratory Director - Vice President
Toni Fisher — Senior Analyst
Thomas Barkley — Project Manager - Senior Analyst

Date: 7/20/17

iATL is value… one sample at a time!

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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

CERTIFICATE OF ANALYSIS

Client: Aria Environmental
PO Box 286
Woodbine MD 21797

Client: ARI436

Report Date: 7/20/2017
Report No.: 541870 - PLM
Project: Wilde Lake High School
Project No.: 171031

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6292399
Client No.: Wilde Lake

Description: Grey Spray-On Fireproofing
Facility:

Location:

Percent Asbestos:	Percent Non-Asbestos Fibrous Material:	Percent Non-Fibrous Material:
None Detected	40 Mineral Wool	60

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 7/20/2017
Date Analyzed: 07/20/2017
Signature:
Analyst: Toni Fisher

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Client: ARI436

Report Date: 7/20/2017
Report No.: 541870 - PLM
Project: Wilde Lake High School
Project No.: 171031

Appendix to Analytical Report

Customer Contact: Michele Twilley
Analysis: US EPA 600, R93-116

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 Login Notes: See Batch Sheet Attached
Sample Matrix: Bulk Building Materials
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.com and ir 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 US EPA 600 93-116: Determination of Asbestos in Bulk Building Materials by Polarized Light Microscopy (PLM).

Certifications:

- NIST-NVLAP No. 101165-0
- NY-DOH No. 11021
- AIHA-LAP, LLC No. 100188

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analytical Methodology Alternatives: Your initial request for analysis may not have accounted for recent advances in regulatory requirements or advances in technology that are routinely used in similar situations for other qualified projects. You may have the option to explore additional analysis for further information. Below are a few options, listed as the matrix followed by the appropriate methodology. Also included are links to more information on our website.

Bulk Building Materials that are Non-Friable Organically Bound (NOB) by Gravimetric Reduction techniques employing PLM and TEM: ELAP 198.6 (PLM-NOB), ELAP 198.4 (TEM-NOB)

Loose Fill Vermiculite Insulation, Attic Insulation, Zonolite (copyright), etc.: US EPA 600 R-4/004 (multi-tiered analytical process)
Sprayed On Insulation/Fireproofing with Vermiculite (SOF-V): ELAP 198.8 (PLM-SOF-V)>

Soil, sludge, sediment, aggregate, and like materials analyzed for asbestos or other elongated mineral particles (ex. erionite, etc.): ASTM D7521, CARB 435, and other options available

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

CERTIFICATE OF ANALYSIS

Client: Aria Environmental
PO Box 286
Woodbine MD 21797

Client: ARI436

Report Date: 7/20/2017
Report No.: 541870 - PLM
Project: Wilde Lake High School
Project No.: 171031

Asbestos in Surface Dust according to one of ASTM's Methods (very dependent on sampling collection technique – by TEM): ASTM D 5755, D5756, or D6480

Various other asbestos matrices (air, water, etc.) and analytical methods are available.

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 list with highlighted disclaimers that may be pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

1) Note: No mastic provided for analysis.
2) Note: Insufficient mastic provided for analysis.
3) Note: Insufficient material provided for analysis.
4) Note: Insufficient sample provided for QC reanalysis.
5) Note: Different material than indicated on Sample Log / Description.
6) Note: Sample not submitted.
7) Note: Attached to asbestos containing material.
8) Note: Received wet.
9) Note: Possible surface contamination.
10) Note: Not building material. 1% threshold may not apply.
11) Note: Recommend TEM-NOB analysis as per EPA recommendations.
12) Note: Asbestos detected but not quantifiable.
13) Note: Multiple identical samples submitted, only one analyzed.
14) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.080%.
15) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.125%.

Recommendations for Vermiculite Analysis:

Several analytical protocols exist for the analysis of asbestos in vermiculite. These analytical approaches vary depending upon the nature of the vermiculite mineral being tested (e.g. un-processed gange, homogeneous exfoliated books of mica, or mixed mineral composites).Please contact your client representative for pricing and turnaround time options available.

iATL recommends initial testing using the EPA 600/R-93/116 method. This method is specifically designed for the analysis of asbestos in bulk building materials. It provides an acceptable starting point for primary screening of vermiculite for possible asbestos.

Results from this testing may be inconclusive. EPA suggests proceeding to a multi-tiered analysis involving wet separation techniques in conjunction with PLM and TEM gravimetric analysis (EPA 600/R-04/004).

Further information on this method and other vermiculite and asbestos issues can be found at the following: Agency for Toxic Substances and Disease Registry (ATSDR) www.atsdr.cdc.gov, United States Geological Survey (USGS) www.minerals.usgs.gov/minerals/, US EPA www.epa.gov/asbestos. The USEPA also has an informative brochure "Current Best Practices for Vermiculite Attic Insulation" EPA 747F03001 May 2003, that may assist the health and remediation professional.

The following is a summary of the analytical process outlines in the EPA 600/R-04/004 Method:

1)**Analytical Step/Method:** Initial Screening by PLM, EPA 600R-93/116
Requirements/Comments: Minimum of 0.1 g of sample. ~0.25% LOQ for most samples.

2)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

3)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Floats" only.

4)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

5)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Suspension" only.

LOQ, Limit of Quantitation estimates for mass and volume analyses.
*With advance notice and confirmation by the laboratory.
**Approximately 1 Liter of sample in double-bagged container (~9x6 inch bag of sample).

SGS GALSON

Ms. Julie Barth
Aria Environmental , Inc.
PO Box 286
Woodbine, MD 21797

July 25, 2017

DOH ELAP #11626 Account# 16226 Login# L413465
AIHA-LAP #100324

Dear Ms. Barth:

Enclosed are the analytical results for the samples received by our laboratory on July 25, 2017. All test results meet the quality control requirements of AIHA-LAP and NELAC unless otherwise stated in this report. All samples on the chain of custody were received in good condition unless otherwise noted.

Results in this report are based on the sampling data provided by the client and refer only to the samples as they were received at the laboratory. When possible, non-IOM samples will be retained for 14 days following the date of this report (unless an extension is specifically requested). IOM samples are retained for 7 days.

Current Scopes of Accreditation can be viewed at www.galsonlabs.com in the accreditations section under the "about Galson" tab.

Please contact Joanne White at (888)-432-5227, if you would like any additional information regarding this report. Thank you for using SGS Galson Laboratories.

Sincerely,

SGS Galson Laboratories

Lisa Swab
Laboratory Director

Enclosure(s)

Galson Laboratories, Inc. is now a part of SGS, the world's leading inspection, verification, testing, and certification company. As part of our transition to SGS, you will begin to see some formatting changes with reports that will improve the presentation of data and allow for the transition to the new logo.

LABORATORY ANALYSIS REPORT

GALSON
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(315) 432-5227
FAX: (315) 437-0571
www.galsonlabs.com

Client : Aria Environmental , Inc.
Site : WLHS
Project No. : 17-1031 WLHS
Date Sampled : 21-JUL-17
Date Received : 25-JUL-17

Account No.: 16226
Login No. : L413465

Date Analyzed : 25-JUL-17
Report ID : 1009041

Respirable Dust

Sample ID	Lab ID	Air Vol liter	Total mg	Conc mg/m3
170721-1R	L413465-6	225	0.078	0.35
170721-2R	L413465-7	237.5	<0.050	<0.21
170721-3R	L413465-8	227.5	<0.050	<0.22
170721-4R	L413465-9	225	<0.050	<0.22
170721-5R	L413465-10	NA	<0.050	NA

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of quantitation: 0.050 mg
Analytical Method : mod. NIOSH 0600; Gravimetric
OSHA PEL : PNOR 5 mg/m3 (TWA)
Collection Media : PVC PW 37mm

Submitted by: HVN
Approved by : SPR
Date : 25-JUL-17
Supervisor: KRK

NYS DOH # : 11626
QC by: NDC

< -Less Than mg -Milligrams m3 -Cubic Meters kg -Kilograms NA -Not Applicable ND -Not Detected
> -Greater Than ug -Micrograms l -Liters NS -Not Specified ppm -Parts per Million

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LABORATORY ANALYSIS REPORT

Client : Aria Environmental , Inc.
Site : WLHS
Project No. : 17-1031 WLHS
Date Sampled : 21-JUL-17
Date Received : 25-JUL-17

Account No.: 16226
Login No. : L413465
Date Analyzed : 25-JUL-17
Report ID : 1009042

Total Dust

Sample ID	Lab ID	Air Vol liter	Total mg	Conc mg/m3
170721-1T	L413465-1	180	<0.050	<0.28
170721-2T	L413465-2	190	<0.050	<0.26
170721-3T	L413465-3	182	<0.050	<0.27
170721-4T	L413465-4	180	<0.050	<0.28
170721-5T	L413465-5	NA	<0.050	NA

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of quantitation: 0.050 mg
Analytical Method : mod. NIOSH 0500; Gravimetric
OSHA PEL : PNOR 15 mg/m3 (TWA)
Collection Media : PVC PW 37mm

Submitted by: HVN
Approved by : SPR
Date : 25-JUL-17
Supervisor: KRK

NYS DOH # : 11626
QC by: NDC

< -Less Than mg -Milligrams m3 -Cubic Meters kg -Kilograms NA -Not Applicable ND -Not Detected
> -Greater Than ug -Micrograms l -Liters NS -Not Specified ppm -Parts per Million

LABORATORY FOOTNOTE REPORT

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FAX: (315) 437-0571
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Client Name : Aria Environmental , Inc.
Site : WLHS
Project No. : 17-1031 WLHS

Date Sampled : 21-JUL-17 Account No.: 16226
Date Received: 25-JUL-17 Login No. : L413465
Date Analyzed: 25-JUL-17

Unless otherwise noted below, all quality control results associated with the samples were within established control limits or did not impact reported results.

Note: The findings recorded within this report were drawn from analysis of the sample(s) provided to the laboratory by the Client (or a third party acting at the Client's direction). The laboratory does not have control over the sampling process. The findings herein constitute no warranty of the samples' representativeness of any sampled environment and strictly relate to the samples as they were presented to the laboratory.

Unrounded results are carried through the calculations that yield the final result and the final result is rounded to the number of significant figures appropriate to the accuracy of the analytical method. Please note that results appearing in the columns preceeding the final result column may have been rounded and therefore, if carried through the calculations, may not yield an identical final result to the one reported.

The stated LOQs for each analyte represent the demonstrated LOQ concentrations prior to correction for desorption efficiency (if applicable).

Unless otherwise noted below, reported results have not been blank corrected for any field blank or method blank.

L413465 (Report ID: 1009041):
SOPs: GRAV-SOP-5(17), GRAV-SOP-6(16)
Gravimetric analytical accuracy of the sampling media is -0.001 +/- 0.006 mg (average blank weight change +/- 95% confidence interval or k=2). The estimated uncertainty applies to the media, technology, and SOP(s) referenced in this report and does not account for any uncertainty associated with the sampling process.
PNOR = Particulates Not Otherwise Regulated.

L413465 (Report ID: 1009042):
SOPs: GRAV-SOP-5(17), GRAV-SOP-6(16)
Gravimetric analytical accuracy of the sampling media is -0.001 +/- 0.006 mg (average blank weight change +/- 95% confidence interval or k=2). The estimated uncertainty applies to the media, technology, and SOP(s) referenced in this report and does not account for any uncertainty associated with the sampling process.
PNOR = Particulates Not Otherwise Regulated.

< -Less Than	mg -Milligrams	m3 -Cubic Meters	kg -Kilograms	ppm -Parts per Million		
> -Greater Than	ug -Micrograms	l -Liters	NS -Not Specified	ND -Not Detected	NA -Not Applicable	

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

CERTIFICATE OF ANALYSIS

Client: Aria Environmental
PO Box 286
Woodbine MD 21797

Client: ARI436

Report Date: 7/26/2017
Report No.: 542211 - PCM
Project: Wilde Lake HS
Project No.:

PCM AIR SAMPLE ANALYSIS SUMMARY

Lab No.: 6296409 **Client No.:** 170721-1	**Location:** PCM **Date Sampled:** 7/21/17	**Volume:** 980L **Density (fibers/mm^2):** 2.65 **Concentration (fibers/cc):** <0.0029
Lab No.: 6296410 **Client No.:** 170721-2	**Location:** PCM **Date Sampled:** 7/21/17	**Volume:** 930L **Density (fibers/mm^2):** 2.65 **Concentration (fibers/cc):** <0.0030
Lab No.: 6296411 **Client No.:** 170721-3	**Location:** PCM **Date Sampled:** 7/21/17	**Volume:** 910L **Density (fibers/mm^2):** 2.65 **Concentration (fibers/cc):** <0.0031
Lab No.: 6296412 **Client No.:** 170721-4	**Location:** PCM **Date Sampled:** 7/21/17	**Volume:** 900L **Density (fibers/mm^2):** 2.65 **Concentration (fibers/cc):** <0.0031
Lab No.: 6296413 **Client No.:** 170721-5	**Location:** PCM **Date Sampled:** 7/21/17	**Volume:** 910L **Density (fibers/mm^2):** 2.65 **Concentration (fibers/cc):** <0.0031
Lab No.: 6296414 **Client No.:** 170721-BK	**Location:** Blank **Date Sampled:** 7/21/17	**Volume:** Blank **Density (fibers/mm^2):** 1.33 **Concentration (fibers/cc):** NA

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

Date Received: 7/25/2017
Date Analyzed: 07/26/2017
Signature:
Analyst: Ben Reich

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: Aria Environmental
PO Box 286
Woodbine MD 21797

Client: ARI436

Report Date: 7/26/2017
Report No.: 542211 - PCM
Project: Wilde Lake HS
Project No.:

Appendix to Analytical Report:

Customer Contact: Michele Twilley
Analysis: NIOSH 7400

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

Project Summary:
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Air Cassette
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.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

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

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

Information Pertinent to this Report:

Analysis by NIOSH 7400

APPLICABILITY: The quantitative working range is 0.04 to 0.5 fiber/cc for a 1000L air sample. The LOD depends on sample volume and quantity of interfering dust, and is <0.01 fiber/cc for atmospheres free of interferences. The method gives an index of airborne fibers. It is primarily used for estimating asbestos concentrations, though PCM does not differentiate between asbestos and other fibers. Use this method in conjunction with electron microscopy (e.g., Method 7402) for assistance in identification of fibers. Fibers < 0.25 µm diameter will not be detected by this method.

Certification: AIHA Registry Program, LLC, AIHA-LAP, LLC No. 100188
NJ Department of Environmental Protection, No. 03863

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CERTIFICATE OF ANALYSIS

Client: Aria Environmental
PO Box 286
Woodbine MD 21797

Client: ARI436

Report Date: 7/26/2017
Report No.: 542211 - PCM
Project: Wilde Lake HS
Project No.:

A VOID concentration means that the sample has been overloaded with particulate matter and could not be reliably analyzed.

Method requires the submittal of 2 to 10 field blanks per set.

Method specifies volume of air to be sampled (step 4, NIOSH 7400) for clean conditions (3000 L to 10000 L) and dusty conditions (≤400 L)

These results are corrected for contamination by field or analytical blanks.

Reporting Limit based upon 7 f/mm².

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

Current annual Coefficient of Variation (CV) values from low to high fiber ranges are 0.25, 0.27, and 0.23 as required by NIOSH 7400.

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**.

Note: Sample integrity compromised. Received with portion of filter missing.

Minimum Sampling Volumes required to attain method sensitivity.

STEL, PEL, and other OSHA related samples may not meet method required minimum sample volumes.

SGS GALSON

Ms. Julie Barth
Aria Environmental , Inc.
PO Box 286
Woodbine, MD 21797

August 31, 2017

DOH ELAP #11626 Account# 16226 Login# L416606
AIHA-LAP #100324

Dear Ms. Barth:

Enclosed are the analytical results for the samples received by our laboratory on August 24, 2017. All test results meet the quality control requirements of AIHA-LAP and NELAC unless otherwise stated in this report. All samples on the chain of custody were received in good condition unless otherwise noted.

Please note that the sample ID's containing the extension "WL" are contained in this report. Per your request, the remaining samples on listed on the chain of custody have been reported separately.

Results in this report are based on the sampling data provided by the client and refer only to the samples as they were received at the laboratory. When possible, non-IOM samples will be retained for 14 days following the date of this report (unless an extension is specifically requested). IOM samples are retained for 7 days.

Current Scopes of Accreditation can be viewed at www.galsonlabs.com in the accreditations section under the "about Galson" tab.

Please contact Joanne White at (888)-432-5227, if you would like any additional information regarding this report. Thank you for using SGS Galson Laboratories.

Sincerely,

SGS Galson Laboratories

Lisa Swab
Laboratory Director

Enclosure(s)

Galson Laboratories, Inc. is now a part of SGS, the world's leading inspection, verification, testing, and certification company. As part of our transition to SGS, you will begin to see some formatting changes with reports that will improve the presentation of data and allow for the transition to the new logo.

SGS GALSON

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FAX: (315) 437-0571
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LABORATORY ANALYSIS REPORT

Client : Aria Environmental , Inc.
Site : NS
Project No. : WLHS RHHS
Date Sampled : 22-AUG-17
Date Received : 24-AUG-17

Account No.: 16226
Login No. : L416606

Date Analyzed : 30-AUG-17
Report ID : 1014808

Respirable Dust

	Sample ID	Lab ID	Air Vol liter	Total mg	Conc mg/m3
	01R-WL-222	L416606-1	387.5	<0.050	<0.13
	02R-WL-136	L416606-2	397.5	<0.050	<0.13
@	03R-WL-333	L416606-3	422.5	<0.050	<0.12
	04R-WL-HALL	L416606-4	377.5	<0.050	<0.13
	05R-WL-GYM	L416606-5	380	<0.050	<0.13

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of quantitation: 0.050 mg
Analytical Method : mod. NIOSH 0600; Gravimetric
OSHA PEL : PNOR 5 mg/m3 (TWA)
Collection Media : PVC PW 37mm

Submitted by: GMG
Approved by : SPR
Date : 31-AUG-17
Supervisor: KRK

NYS DOH # : 11626
QC by: NDC

< -Less Than mg -Milligrams m3 -Cubic Meters kg -Kilograms NA -Not Applicable ND -Not Detected
> -Greater Than ug -Micrograms l -Liters NS -Not Specified ppm -Parts per Million

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LABORATORY ANALYSIS REPORT

Client : Aria Environmental , Inc.
Site : NS
Project No. : WLHS RHHS
Date Sampled : 22-AUG-17
Date Received : 24-AUG-17

Account No.: 16226
Login No. : L416606

Date Analyzed : 29-AUG-17
Report ID : 1014809

Total Dust

Sample ID	Lab ID	Air Vol liter	Total mg	Conc mg/m3
01T-WL-222	L416606-6	387.5	<0.050	<0.13
02T-WL-136	L416606-7	397.5	<0.050	<0.13
03T-WL-333	L416606-8	422.5	<0.050	<0.12
04T-WL	L416606-9	377.5	<0.050	<0.13
05T-WL	L416606-10	380	<0.050	<0.13

COMMENTS: Please see attached lab footnote report for any applicable footnotes.

Level of quantitation: 0.050 mg
Analytical Method : mod. NIOSH 0500; Gravimetric
OSHA PEL : PNOR 15 mg/m3 (TWA)
Collection Media : PVC PW 37mm

Submitted by: KBD
Approved by : SPR
Date : 29-AUG-17
Supervisor: KRK

NYS DOH # : 11626
QC by: NDC

< -Less Than mg -Milligrams m3 -Cubic Meters kg -Kilograms NA -Not Applicable ND -Not Detected
> -Greater Than ug -Micrograms l -Liters NS -Not Specified ppm -Parts per Million

LABORATORY FOOTNOTE REPORT

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FAX: (315) 437-0571
www.galsonlabs.com

Client Name : Aria Environmental , Inc.
Site :
Project No. : WLHS/RHHS

Date Sampled : 22-AUG-17 Account No.: 16226
Date Received: 24-AUG-17 Login No. : L416606
Date Analyzed: 29-AUG-17 - 30-AUG-17

Unless otherwise noted below, all quality control results associated with the samples were within established control limits or did not impact reported results.

Note: The findings recorded within this report were drawn from analysis of the sample(s) provided to the laboratory by the Client (or a third party acting at the Client's direction). The laboratory does not have control over the sampling process. The findings herein constitute no warranty of the samples' representativeness of any sampled environment and strictly relate to the samples as they were presented to the laboratory.

Unrounded results are carried through the calculations that yield the final result and the final result is rounded to the number of significant figures appropriate to the accuracy of the analytical method. Please note that results appearing in the columns preceeding the final result column may have been rounded and therefore, if carried through the calculations, may not yield an identical final result to the one reported.

The stated LOQs for each analyte represent the demonstrated LOQ concentrations prior to correction for desorption efficiency (if applicable).

Unless otherwise noted below, reported results have not been blank corrected for any field blank or method blank.

L416606 (Report ID: 1014808):
SOPs: GRAV-SOP-5(18), GRAV-SOP-6(17)
Gravimetric analytical accuracy of the sampling media is 0.002 +/- 0.018 mg (average blank weight change +/- 95% confidence interval or k=2). The estimated uncertainty applies to the media, technology, and SOP(s) referenced in this report and does not account for any uncertainty associated with the sampling process.
PNOR = Particulates Not Otherwise Regulated.

@L416606-3 (Report ID: 1014808):
Filter adhered to the cassette causing it to be torn during analysis. Results may be biased low.

L416606 (Report ID: 1014809):
SOPs: GRAV-SOP-5(18), GRAV-SOP-6(17)
Gravimetric analytical accuracy of the sampling media is 0.002 +/- 0.018 mg (average blank weight change +/- 95% confidence interval or k=2). The estimated uncertainty applies to the media, technology, and SOP(s) referenced in this report and does not account for any uncertainty associated with the sampling process.
PNOR = Particulates Not Otherwise Regulated.

<	-Less Than	mg	-Milligrams	m3	-Cubic Meters	kg	-Kilograms	ppm	-Parts per Million
>	-Greater Than	ug	-Micrograms	l	-Liters	NS	-Not Specified	ND	-Not Detected	NA	-Not Applicable

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

–Airborne Asbestos –

Contact Information

Client Company:	Aria Environmental, Inc.	**Project Number:**	J17-1031
Office Address:	5292 Enterprise Street, Suite B	**Project Name:**	Wilde Lake High School
City, State, Zip:	Sykesville, MD 21784	**Primary Contact:**	Michele Twilley, DrPH, CIH
Fax Number:	410-549-4488	**Office Phone:**	410-549-5774
Email Address:	mtwilley@ariaenviro.com	**Cell Phone:**	410-960-8136

Matrix/Method:

- ☑ PCM: NIOSH 7400
- ☐ PCM: OSHA ID-160
- ☐ TEM: NIOSH 7402
- ☐ TEM: AHERA 40 CFR 763
- ☐ TEM: ISO 10312
- ☐ TEM: ISO 13794
- ☐ Other _____

Special Instructions: _____

_____

_____

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time)

☐ Verbal ■ Email ☐ Fax

☐ 10 Day ■ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization):	J. Barth/AE	Date:	08/22/17	Time:	18:00
Received (Name / iATL):		Date:		Time:	
Sample Login (Name / iATL):		Date:		Time:	
Analysis(Name(s) / iATL):		Date:		Time:	
QA/QC Review (Name / iATL):		Date:		Time:	
Archived / Released: _____	QA/QC InterLAB Use: _____	Date:		Time:	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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

CERTIFICATE OF ANALYSIS

Client: Aria Environmental
PO Box 286
Woodbine MD 21797

Client: ARI436

Report Date: 8/24/2017
Report No.: 544744 - PCM
Project: Wilde Lake High School
Project No.: J17-1031

PCM AIR SAMPLE ANALYSIS SUMMARY

Lab No.:6323882 **Location:**Rm 222 **Volume:**1550L
Client No.:01FWL **Date Sampled:**8/22/17 **Density (fibers/mm^2):**2.65
Concentration (fibers/cc):<0.0018

Lab No.:6323883 **Location:Rm** 136 **Volume:**1590L
Client No.:02FWL **Date Sampled:**8/22/17 **Density (fibers/mm^2):**2.65
Concentration (fibers/cc):<0.0018

Lab No.:6323884 **Location:**Rm 333 **Volume:**1690L
Client No.:03FWL **Date Sampled:**8/22/17 **Density (fibers/mm^2):**2.65
Concentration (fibers/cc):<0.0017

Lab No.:6323885 **Location:**3rd Fl Hall **Volume:**1510L
Client No.:04FWL **Date Sampled:**8/22/17 **Density (fibers/mm^2):**2.65
Concentration (fibers/cc):<0.0019

Lab No.:6323886 **Location:**Gym **Volume:**1520L
Client No.:05FWL **Date Sampled:**8/22/17 **Density (fibers/mm^2):**2.65
Concentration (fibers/cc):<0.0018

Lab No.:6323887 **Location:**Blank **Volume:**Blank
Client No.:06BLKWL **Date Sampled:**8/22/17 **Density (fibers/mm^2):**1.33
Concentration (fibers/cc):NA

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

Date Received: 8/24/2017
Date Analyzed: 08/24/2017
Signature:
Analyst: Ben Reich

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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

CERTIFICATE OF ANALYSIS

Client:	Aria Environmental	Report Date:	8/24/2017
	PO Box 286	Report No.:	544744 - PCM
	Woodbine MD 21797	Project:	Wilde Lake High School
		Project No.:	J17-1031
Client:	ARI436		

Appendix to Analytical Report:

Customer Contact: Michele Twilley
Analysis: NIOSH 7400

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

Project Summary:
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Air Cassette
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.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 NIOSH 7400

APPLICABILITY: The quantitative working range is 0.04 to 0.5 fiber/cc for a 1000L air sample. The LOD depends on sample volume and quantity of interfering dust, and is <0.01 fiber/cc for atmospheres free of interferences. The method gives an index of airborne fibers. It is primarily used for estimating asbestos concentrations, though PCM does not differentiate between asbestos and other fibers. Use this method in conjunction with electron microscopy (e.g., Method 7402) for assistance in identification of fibers. Fibers < 0.25 µm diameter will not be detected by this method.

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CERTIFICATE OF ANALYSIS

Client:	Aria Environmental	Report Date:	8/24/2017
	PO Box 286	Report No.:	544744 - PCM
	Woodbine MD 21797	Project:	Wilde Lake High School
		Project No.:	J17-1031
Client:	ARI436		

Certification: AIHA Registry Program, LLC, AIHA-LAP, LLC No. 100188
NJ Department of Environmental Protection, No. 03863

A VOID concentration means that the sample has been overloaded with particulate matter and could not be reliably analyzed.

Method requires the submittal of 2 to 10 field blanks per set.

Method specifies volume of air to be sampled (step 4, NIOSH 7400) for clean conditions (3000 L to 10000 L) and dusty conditions (≤400 L)

These results are corrected for contamination by field or analytical blanks.

Reporting Limit based upon 7 f/mm².

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

Current annual Coefficient of Variation (CV) values from low to high fiber ranges are 0.25, 0.27, and 0.23 as required by NIOSH 7400.

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**.

Note: Sample integrity compromised. Received with portion of filter missing.

Minimum Sampling Volumes required to attain method sensitivity.

STEL, PEL, and other OSHA related samples may not meet method required minimum sample volumes.