ADDENDUM 3 TO THE
INDOOR ENVIRONMENTAL QUALITY INVESTIGATION
FOR
GLENWOOD MIDDLE SCHOOL

PREPARED FOR:

HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21043

PREPARED BY:

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

AUGUST 27, 2014

130767

ADDENDUM 3 TO THE
INDOOR ENVIRONMENTAL QUALITY INVESTIGATION
FOR
GLENWOOD MIDDLE SCHOOL

Reviewed by: _____

Michele M. Twilley, DrPH, CIH
Aria Environmental, Inc.

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FOR
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EXECUTIVE SUMMARY

Aria Environmental, Inc. (AEI) was contracted by Howard County Public School System to perform an indoor environmental quality investigation of the Glenwood Middle School at the end of August 2013. A complaint was lodged by one of the teachers about high humidity, mold and adverse health effects experienced while she is in the school. AEI conducted interviews with Glenwood Middle School faculty, staff and administrators, Howard County Public School System facilities and building services personnel and Global Facilities Solutions (a mechanical engineering consultant). AEI also performed visual inspections of the classrooms, boiler room and crawlspace; made measurements for temperature, humidity, carbon monoxide, carbon dioxide, particulate matter and fungal identification and counting; and has attended meetings with HCPSS and Global Facilities Solutions. AEI performed additional air monitoring for the presence of mold spores at Glenwood Middle School on December 17, 2013 and March 20, 2014 and those results are reported in Addenda 1 and 2. HCPSS requested additional air monitoring for the presence of mold spores. This addendum report presents the results of air sampling for fungi and indoor air quality measurements for temperature, relative humidity, carbon monoxide, carbon dioxide and particulate matter made on June 11, 2014. Methods used in the investigation and background information are presented in the November 1, 2013 report.

I. BACKGROUND

A representative from Aria Environmental, Inc. (AEI) visited Glenwood Middle School on June 11, 2014 to perform additional air monitoring in response to an ongoing indoor air quality complaint at the school. Indoor air samples were collected from classrooms 7, 11, 15, 20, 24, 26, 29, Art Room 38 and in the crawlspace accessed from the administrative work room. One outdoor air sample was also collected for comparison purposes. The background associated with the complaint is detailed in the Indoor Environmental Quality Investigation report dated November 1, 2013. This monitoring was done to evaluate complaint rooms vs. non-complaint areas during the cooling season and to evaluate the impact of custodial cleaning activities on particles and spores and disturbances inside the crawlspace.

The school did not appear to be under the influence of strong negative pressure as evidenced by the ease of opening and closing doors to the outside. No measurements were made to determine pressurization of the school or air flow patterns. There was no evidence of mold growth observed in the classrooms. Weather on the day of monitoring was warm and humid.

II. OBSERVATIONS AND MEASUREMENTS

A. Observations and Measurements on June 11, 2014

The room air temperature measured between 3:23 pm and 6:44 pm ranged from 69.8 to 76.3°F with an average of 73.2°F. The temperatures are considered acceptable for summer thermal comfort. The indoor relative humidity ranged from 55.6 to 83.9 percent. Results of temperature, relative humidity, carbon dioxide and carbon monoxide monitoring are presented in Table 2.

Table 1- Acceptable Ranges of Temperature and Relative Humidity in Summer and Winter[a]

Relative Humidity	Winter Temperature	Summer Temperature
30%	68.5°F – 76.0°F	74.0°F – 80°F
40%	68.5°F - 75.5°F	73.5°F – 79.5°F
50%	68.5°F - 74.5°F	73.0°F – 79.0°F
60%	68.0°F - 74.0°F	72.5°F – 78.0°F

[a]adapted from ASHRAE Standard 55-2010

The outside temperature at 5:45 PM was 75.9°F and the outdoor relative humidity was 78.1%. No windows or doors were observed to be open during the monitoring period. The U.S. Environmental Protection Agency (EPA) recommends maintaining indoor relative humidity below 60% and ideally between 30 and 50% to prevent mold growth. The indoor humidity measurements were above what is recommended for mold prevention. The air conditioning system is set to stop at 4:00 PM every school day. The relative humidity measurements increased after 4 PM.

Carbon dioxide and carbon monoxide measurements are used to assess ventilation system performance. The exhaled breath of building occupants is the main indoor source of carbon dioxide; therefore, the build-up of carbon dioxide indicates inadequate ventilation. Air monitoring was performed after school hours when the rooms were unoccupied. Carbon dioxide concentrations ranged from 392 to 1,115 ppm indoors. The concentration of concern for carbon dioxide is set by ASHRAE standard 62.1–2013 as 700 ppm above outdoor air. On the day of monitoring, the outdoor air concentration of carbon dioxide was 338 ppm. Carbon dioxide

concentrations were within the comfort parameters established by ASHRAE except in Room 20, occupied by 4 people at the time of monitoring. Carbon monoxide is mainly attributed to incomplete combustion. Concentrations of CO ranged from 1.7 to 2.5 ppm indoors and the outdoor concentration was 2.5 ppm. CO concentrations were below the ASHRAE concentration of concern of 9 ppm.

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 "inhalable 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, chalk dust, and dust and fibers from building materials. ASHRAE Standard 62.1–2013 suggests target indoor concentrations for PM 2.5 and PM 10 of 15 $\mu g/m^3$ and 50 $\mu g/m^3$, 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. Occupational standards and guidelines for particles are nearly an order of magnitude higher than concentrations typically found in non-occupational settings and are not appropriate for comparison.

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 Table 2, revealed that PM 2.5 and PM 10 particle concentrations were well below the ASHRAE target concentrations in all areas monitored except for classroom 7 after custodian cleaning of the room including sweeping. PM 10 concentrations in classroom 7 were 95 $\mu g/m^3$ and reduced to 66 $\mu g/m^3$ after seven minutes.

The visual inspection of the rooms visited on June 11, 2014 did not reveal any obvious sources of water damage, moisture or mold growth. The slightly chemical type odor previously observed in Classroom 15 was still noticeable. There was no obvious source of this odor. Ventilators were operating in cooling mode in all classrooms until 4:00 PM. Two teachers reported that Scantron answer sheets and other paperwork in some classrooms were occasionally so humid that they could not be marked with pencil and had to be replaced with paper from another area.

Table 2: Particle, Temperature, Relative Humidity, Carbon Dioxide and Carbon Monoxide Measurements Collected on June 11, 2014 at Glenwood Middle School

Location	Time	PM1 (mg/m^3)	PM2.5 (mg/m^3)	PM7 (mg/m^3)	PM10 (mg/m^3)	TSP (mg/m^3)	Temp (°F)	Rh (%)	CO (ppm)	CO_2 (ppm)
Room 11 pre-cleaning	3:23 PM	0.000	0.000	0.001	0.001	0.003	69.8	64.4	1.8	457
Room 7 pre-cleaning	3:32 PM	0.000	0.000	0.001	0.002	0.004	71.2	57.4	1.7	753
Room 15 pre-cleaning	3:42 PM	0.000	0.000	0.000	0.000	0.001	72.0	75.2	2.3	511
Room 20 pre-cleaning	3:57 PM	0.000	0.000	0.000	0.000	0.004	74.1	66.3	1.9	1,115
Room 11 after cleaning	4:15 PM	0.000	0.001	0.017	0.029	0.043	74.3	64.6	1.7	406
Room 11 after cleaning	4:24 PM	0.000	0.001	0.009	0.017	0.027	73.4	69.5	2.3	409
Room 7 after cleaning	4:28 PM	0.000	0.002	0.055	**0.095**	0.131	75.4	55.6	1.7	593
Room 7 after cleaning	4:35 PM	0.000	0.002	0.038	**0.066**	0.086	75.2	59.3	1.7	686
Room 38 pre-cleaning	4:44 PM	0.000	0.000	0.003	0.004	0.007	76.3	66.3	1.8	616
Room 26 after cleaning	5:00 PM	0.000	0.001	0.018	0.026	0.037	73.6	64.8	1.7	544
Room 26 after cleaning	5:08 PM	0.000	0.001	0.013	0.020	0.030	73.0	68.6	1.9	510
Room 24 pre-cleaning	5:14 PM	0.000	0.001	0.003	0.003	0.006	73.8	74.5	2.5	397
Room 29 pre-cleaning	5:27 PM	0.000	0.000	0.003	0.003	0.005	73.8	64.7	1.8	735
Outside near Portable Classroom 19	5:45 PM	0.000	0.002	0.006	0.007	0.009	75.9	78.1	2.5	338
Crawlspace before disturbance	6:07 PM	0.000	0.000	0.000	0.001	0.002	70.7	83.9	2.4	514
Crawlspace after disturbance	6:20 PM	0.000	0.002	0.012	0.015	0.022	71.1	82.1	2.2	561
Room 24 after cleaning	6:40 PM	0.000	0.004	0.028	0.039	0.047	73.8	78.7	2.4	392
Room 24 after cleaning	6:44 PM	0.000	0.004	0.020	0.008	0.035	73.6	78.9	2.3	401

B. Air Monitoring for Fungal Identification and Counting on June 11, 2014

In the absence of visual sources of mold amplification and growth in the classrooms, non-viable spore trap samples were collected from eight classrooms (classrooms 7, 11, 15, 20, 24, 26, 29 and 38), one crawlspace and one outdoor location to determine whether there was a difference between mold spore loads inside the building versus outside. Classrooms 7, 15, 26, and 29 are complaint areas and classrooms 11, 20, 24 and 38 are non-complaint areas.

The spore trap samples were collected using AllergenCo-D cassettes attached to a sampling pump calibrated to 15 liter per minute (LPM) air flow. The samples were collected for a period of 10 minutes, the time period recommended for spore trap sampling in a clean indoor environment. The spore trap samples were submitted to Aerobiology Laboratory for analysis. The sample results are reported as the spores per cubic meter of air (spores per m^3) of hyphal fragments and total fungal spores. Depending upon the morphology of the spores, they were counted by their unique genus or were grouped into spores exhibiting common characteristics (e.g., Penicillium/Aspergillus group). Table 3 presents the results of the spore trap samples collected at Glenwood Middle School on June 11, 2014.

Table 3 - Results of Spore Trap Sampling in Selected Classrooms in Glenwood Middle School on June 11, 2014

Location	Outside	Room 11 Before Cleaning	Room 11 After Cleaning	Room 7 Before Cleaning	Room 7 After Cleaning	Room 24 Before Cleaning	Room 24 After Cleaning	Room 26 After Cleaning	Room 15 Before Cleaning	Room 20 Before Cleaning	Room 29 Before Cleaning	Room 38 Before Cleaning
Spore Type	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3	Spores/ m^3
Alternaria	7	-	7	-	-	7	-	-	-	-	-	7
Ascospores	1,704	1,333	1,227	240	320	**4,899**	**2,718**	1,493	300	273	1,280	**2,400**
Basidiospores	29,819	800	1,307	427	133	23,855	**36,611**	4,800	2,720	400	3,520	3,467
Botrytis	13	-	-	-	-	-	-	-	-	-	-	7
Cercospora	-	-	-	-	-	-	**7**	-	-	-	-	-
Cladosporium	3,627	240	600	127	200	380	280	227	100	87	60	373
Clear brown	-	-	**27**	-	-	-	-	-	-	-	-	-
Colorless	7	-	-	-	-	-	-	-	-	-	-	-
Curvularia	7	-	-	-	7	-	-	-	-	-	-	-
Epicoccum	27	-	-	-	-	-	-	-	-	-	-	7
Exosporium	-	-	-	-	-	-	-	**7**	-	-	-	-
Helicosporium/ Helicomyces	80	13	7	-	40	67	13	-	7	-	7	**113**
Hyphal Elements	53	-	20	-	27	7	27	7	-	-	7	7
Penicillium/ Aspergillus	20	20	**120**	20	**27**	**87**	**113**	**107**	13	**80**	**40**	**87**
Pithomyces	-	-	-	-	-	-	-	-	**7**	-	-	-
Pyricularia	-	-	-	-	-	**7**	-	-	-	-	-	-
Smuts, Periconia, myxomycetes	-	**13**	**27**	-	**13**	**7**	**20**	**20**	-	-	-	**40**
Unknown	-	-	**13**	-	**7**	-	-	-	-	**7**	-	-
Total Fungi	35,364	2,419	3,355	814	774	29,316	**39,789**	6,661	3,147	847	4,914	6,508

Bold numbers represent spore concentrations above the outdoor counts. Dashes designate none detected.

Table 3 - Results of Spore Trap Sampling in a Crawlspace Before and After Disturbance at Glenwood Middle School on June 11, 2014

Location	Outside	Crawlspace Before Disturbance	Crawlspace After Disturbance
Spore Type	Spores/ m^3	Spores/ m^3	Spores/ m^3
Alternaria	7	-	-
Ascospores	1,704	100	33
Basidiospores	29,819	1,227	87
Botrytis	13	-	-
Cercospora	-	-	-
Cladosporium	3,627	13	53
Clear brown	-	-	-
Colorless	7	-	-
Curvularia	7	-	-
Epicoccum	27	-	-
Exosporium	-	-	-
Helicosporium/ Helicomyces	80	-	-
Hyphal Elements	53	-	-
Penicillium/ Aspergillus	20	**747**	**6,235**
Pithomyces	-	-	-
Pyricularia	-	-	-
Smuts, Periconia, myxomycetes	-	-	-
Unknown	-	-	-
Total Fungi	35,364	2,087	6,408

Indoor spore counts, not including the crawlspace samples, ranged from 774 to 39,789 total spores per cubic meter of air (m^3), including samples collected before and after sweeping. The crawlspace sample before disturbance was 2,087 total spores per m^3 and 6,408 total spores per m^3 after someone entered and walked around in the crawlspace. All samples had total spore counts lower than the outdoor sample except for the sample collected in Room 24 immediately following sweeping. In rooms with samples before and after sweeping, all total spore counts increased except for the sample in Room 7.

The presence of Penicillium/Aspergillis group spores was higher in ten samples than outdoors: classrooms 7, 11, 24, and 26 after cleaning, classrooms 20, 24, 29 and 38 before cleaning and the two crawlspace samples. Ascospores and basidiospores were elevated above the outdoor sample counts in the samples collected from Room 24. These spores made up the majority of the total counts in this room as well. Samples collected in Room 24 were very similar to the outdoor sample counts. This room appeared to have a stronger influence from outdoors either from the mechanical ventilation system or from open windows. Windows were not open during sampling

but they could have been left open by the teacher during the school day. Smuts, Periconia and Myxomycetes spores were higher in some classrooms than the outdoor sample but these counts were relatively low.

No secondary colonizers including Chaetomium or Stachybotrys were detected in the classrooms. Hyphal elements were detected in some classrooms but were not detected above the outdoor count in any sample. Certificates of analysis are included as Attachment B.

Tables 4a-4d present the spores per cubic meter of air measured in classrooms 11, 15, 26 and 29 on October 18th, 28th, 2013, December 17, 2013, March 20, 2014 and June 11, 2014. The tables show natural variability in the spore counts within in the building.

Table 4a: Spore Concentrations on October 18, 2013, December 17, 2013 and June 11, 2014 At Glenwood Middle School in Classroom 11

Spores/m³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types			
	CR11 10/18/13	CR11 12/17/13	CR11 03/20/14	CR11 06/11/14
Ascospores	7	**33**	20	1,333
Basidiospores	4,480	260	93	800
Cladosporium	333	**73**	**133***	240
Penicillium/Aspergillis group	27	53	**1,973***	20
Total	4,947	426	2,306	2,419

Bold represents spore concentrations that were higher than outdoors.
*Sampling occurred after custodian swept this classroom.

Table 4b: Spore Concentrations on October 18, 2013, October 28, 2013, December 17, 2013 and June 11, 2014 At Glenwood Middle School in Classroom 15

Spores/m³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types				
	CR15 10/18/13	CR15 10/28/13	CR15 12/17/13	CR15 03/20/14	CR15 06/11/14
Ascospores	47	33	-	7	300
Basidiospores	12,373	620	127	20	2,720
Cladosporium	1,067	33	**107**	20	100
Penicillium/Aspergillis group	**1,440**	**287**	**4,153**	40	13
Total	15,055	1,013	**4,413**	87	3,147

Bold represents spore concentrations that were higher than outdoors.

Table 4c: Spore Concentrations on October 18, 2013, December 17, 2013 and June 11, 2014 At Glenwood Middle School in Classroom 26

Spores/m³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types			
	CR26 10/18/13	CR26 12/17/13	CR26 03/20/14	CR26 06/11/14
Ascospores	20	**67**	-	1,493
Basidiospores	**22,062**	3,200	53	4,800
Cladosporium	720	**4,267**	13	227
Penicillium/Aspergillis group	80	**1,600**	27	**107**
Total	**22,942**	**9,134**	93	6,661*

Bold represents spore concentrations that were higher than outdoors.
*Sampling occurred after custodian swept this classroom.

Table 4d: Spore Concentrations on October 18, 2013, October 28, 2013, December 17, 2013 March 20, 2014 and June 11, 2014 At Glenwood Middle School in Classroom 29

Spores/m³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types			
	CR29 10/18/13	CR29 12/17/13	CR29 03/20/14	CR29 06/11/14
Ascospores	73	---	7	1,280
Basidiospores	3,627	67	173	3,520
Cladosporium	513	7	20	60
Penicillium/Aspergillis group	**187**	**5,973**	53	**40**
Total	4,447	**6,054**	253	4,914

Bold represents spore concentrations that were higher indoors than outdoors on the day of monitoring.

Table 5 presents a comparison of the outdoor spore concentrations for five days of monitoring for select spore types. The outdoor spore concentrations were within the range of expected concentrations for Maryland as reported by EMLab in their MoldRANGE tables. Variations in outdoor spore concentrations are a function of diurnal rhythms of spore release, weather-related factors (e.g., wind, rain, snow cover, temperature), and physical spatial factors.

Table 5: Outdoor Spore Concentrations on October 18, 2013, October 28, 2013, December 17, 2013, March 20, 2014 and June 11, 2014 at Glenwood Middle School

Spores/m³	10/18/13	10/28/13	12/17/13	03/20/14	06/11/14
Ascospores	173	507	13	80	1,704
Basidiospores	13,845	2,880	3,413	2,107	29,819
Cladosporium	5,120	107	40	127	3,627
Penicillium/Aspergillis group	80	140	313	53	20
Total	20,204	3,834	3,786	2,388	35,364

III. CONCLUSIONS AND RECOMMENDATIONS

Thermal comfort parameters of temperature and humidity were measured on June 11, 2014. The temperature was within the comfort range established by ASHRAE but the relative humidity measurements were above the recommended comfort ranges. The air conditioning system is set to stop at 4:00 PM every school day. The relative humidity measurements increased after 4 PM. Carbon monoxide, carbon dioxide and particulate matter measurements were within

acceptable ranges for good indoor air quality except for particulate measurements (PM10) in classroom 7 after custodial cleaning (95 and 66 µg/m^3) and in classroom 20 when 4 people were in the room during monitoring.

Spore measurements collected in classrooms were generally acceptable compared to outdoor samples with outdoor total spore counts exceeding indoors. All samples had total spore counts lower than the outdoor sample except for the sample collected in Room 24 immediately following sweeping. The presence of Penicillium/Aspergillis group spores was higher in ten samples than outdoors: classrooms 7, 11, 24, and 26 after cleaning, classrooms 20, 24, 29 and 38 before cleaning and the two crawlspace samples (before and after disturbance). In rooms with samples collected before and after sweeping, all total spore counts increased except for the sample in Room 7.

No other modifications to building systems or the crawl spaces have occurred since the sampling on March 20, 2014. Follow up air sampling should occur approximately quarterly in order to monitor changes in conditions that may be related to seasonal variations.

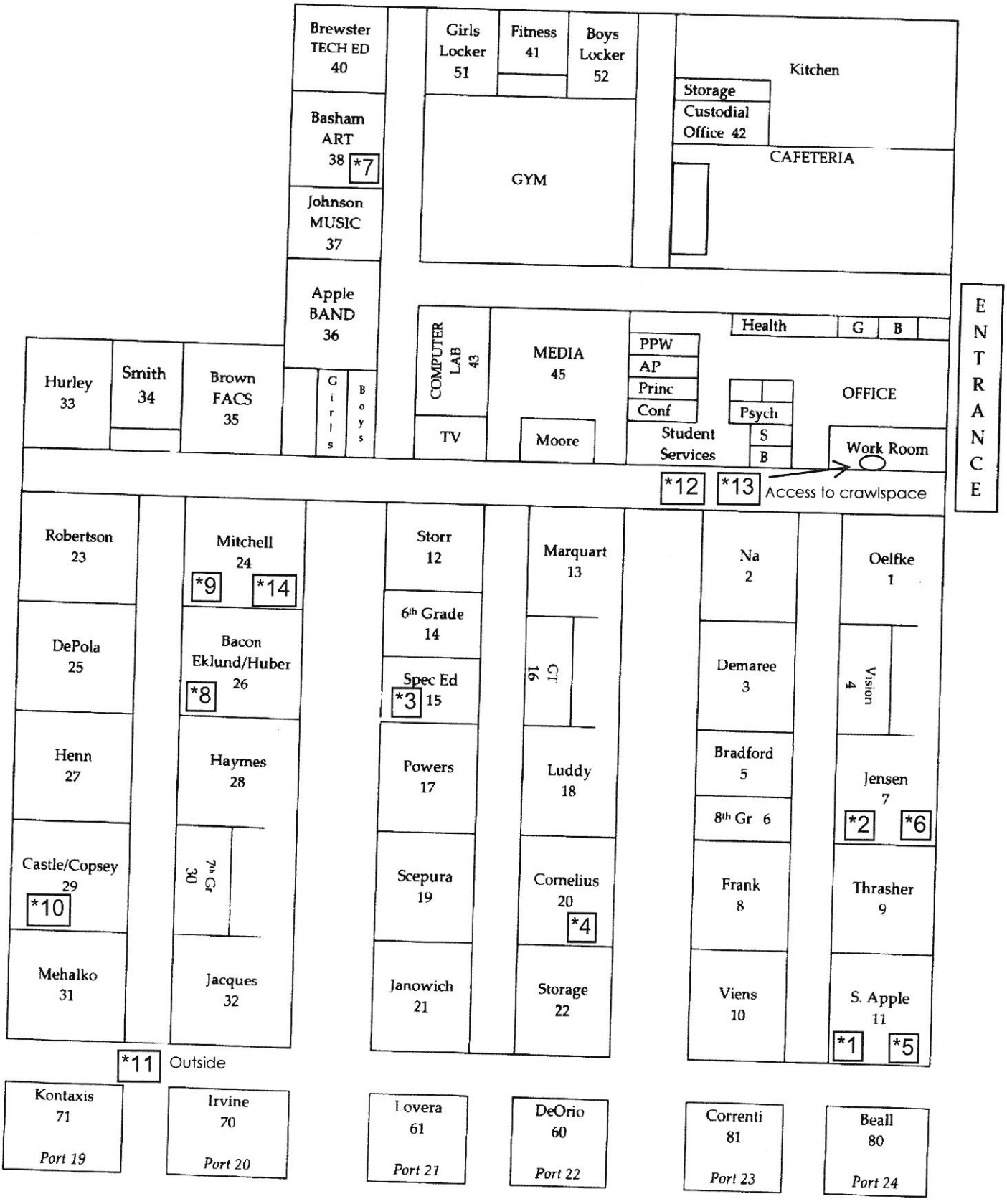
IV. LIMITATIONS

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.

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:

Building Layout and Sample Location Plan for June 11, 2014



As of 8/02/13

Glenwood Middle School Floor Plan

Sample Location Plan
June 11, 2014

N

Attachment B:

Report of Analysis and Chain of Custody Forms
June 11, 2014

Aerobiology Laboratory Associates, Incorporated
Expertise Since 1997

43760 Trade Center Place
Suite 100
Sterling, Virginia 20166
(877) 648-9150
www.aerobiology.net

Certificate of Analysis
EMLAP# 102977

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

1054 Spore Trap Analysis: SOP 3.8

Client Sample Number	061114-01				061114-11			
Sample Location	Room 11 Pre-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-001				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	50	1333	55	1/1	8	1704	5	-
Basidiospores	30	800	33	1/37	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	36	240	10	1/15	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	2	13	1	1/6	12	80	<1	-
Hyphal elements	-	-	-	-	8	53	<1	-
Penicillium/Aspergillus group	3	20	1	1/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	2	13	1	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **2**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	123	2419	~100%	1/15	214	35364	~100%	-

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Sterling, Virginia 20166
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Certificate of Analysis
EMLAP# 102977

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-02				061114-11			
Sample Location	Room 7 Pre-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-002				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	9	240	29	1/7	8	1704	5	-
Basidiospores	16	427	52	1/70	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	19	127	16	1/29	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	-	-	-	-	12	80	<1	-
Hyphal elements	-	-	-	-	8	53	<1	-
Penicillium/Aspergillus group	3	20	2	1/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **2**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	47	814	~100%	1/43	214	35364	~100%	-

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Certificate of Analysis
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Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-03				061114-11			
Sample Location	Room 15 Pre-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-003				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	45	300	10	1/6	8	1704	5	-
Basidiospores	51	2720	86	1/11	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	15	100	3	1/36	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	1	7	<1	1/11	12	80	<1	-
Hyphal elements	-	-	-	-	8	53	<1	-
Penicillium/Aspergillus group	2	13	<1	1/2	3	20	<1	-
Pithomyces	1	7	<1	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	115	3147	~100%	1/11	214	35364	~100%	-

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Attn: Julie Barth
Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-04				061114-11			
Sample Location	Room 20 Pre-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-004				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	41	273	32	1/6	8	1704	5	-
Basidiospores	60	400	47	1/75	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	13	87	10	1/42	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	-	-	-	-	12	80	<1	-
Hyphal elements	-	-	-	-	8	53	<1	-
Penicillium/Aspergillus group	12	80	9	3/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	-	-	-	-	-	-	-	-
Unknown	1	7	1	-	-	-	-	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	127	847	~100%	1/42	214	35364	~100%	-

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Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

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Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-05				061114-11			
Sample Location	Room 11 Post-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-005				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	1	7	<1	1/1	1	7	<1	-
Ascospores	46	1227	37	1/1	8	1704	5	-
Basidiospores	49	1307	39	1/23	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	90	600	18	1/6	34	3627	10	-
Clear brown	4	27	1	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	1	7	<1	1/11	12	80	<1	-
Hyphal elements	3	20	1	1/3	8	53	<1	-
Penicillium/Aspergillus group	18	120	4	5/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	4	27	1	-	-	-	-	-
Unknown	2	13	<1	-	-	-	-	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	218	3355	~100%	1/11	214	35364	~100%	-

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Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

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Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-06				061114-11			
Sample Location	Room 7 Post-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-006				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	48	320	41	1/5	8	1704	5	-
Basidiospores	20	133	17	1/224	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	30	200	26	1/18	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	1	7	1	1/1	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	6	40	5	1/2	12	80	<1	-
Hyphal elements	4	27	3	1/2	8	53	<1	-
Penicillium/Aspergillus group	4	27	3	1/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	2	13	2	-	-	-	-	-
Unknown	1	7	1	-	-	-	-	-
	Debris Rating **4**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments	Large amount of particulate seen.							
Total *See Footnotes	116	774	~100%	1/46	214	35364	~100%	-

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Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
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Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-07				061114-11			
Sample Location	Room 38 Pre-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-007				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	1	7	<1	1/1	1	7	<1	-
Ascospores	45	2400	37	1/1	8	1704	5	-
Basidiospores	65	3467	53	1/9	140	29819	84	-
Botrytis	1	7	<1	1/2	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	56	373	6	1/10	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	1	7	<1	1/4	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	17	113	2	1/1	12	80	<1	-
Hyphal elements	1	7	<1	1/8	8	53	<1	-
Penicillium/Aspergillus group	13	87	1	5/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	6	40	1	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **2**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	206	6508	~100%	1/5	214	35364	~100%	-

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Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-08				061114-11			
Sample Location	Room 26 Post-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-008				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	14	1493	22	1/1	8	1704	5	-
Basidiospores	45	4800	72	1/6	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	34	227	3	1/16	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	1	7	<1	-	-	-	-	-
Helicosporium/Helicomyces	-	-	-	-	12	80	<1	-
Hyphal elements	1	7	<1	1/8	8	53	<1	-
Penicillium/Aspergillus group	16	107	2	5/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	3	20	<1	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **4**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments	Large amount of particulate seen.							
Total *See Footnotes	114	6661	~100%	1/5	214	35364	~100%	-

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Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-09				061114-11			
Sample Location	Room 24 Pre-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-009				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	1	7	<1	1/1	1	7	<1	-
Ascospores	23	4899	17	3/1	8	1704	5	-
Basidiospores	112	23855	81	1/1	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	57	380	1	1/10	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	10	67	<1	1/1	12	80	<1	-
Hyphal elements	1	7	<1	1/8	8	53	<1	-
Penicillium/Aspergillus group	13	87	<1	5/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	1	7	<1	-	-	-	-	-
Smuts,Periconia,Myxomycetes	1	7	<1	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **2**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	219	29316	~100%	1/1	214	35364	~100%	-

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Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
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Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-10				061114-11			
Sample Location	Room 29 Pre-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-010				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	12	1280	26	1/1	8	1704	5	-
Basidiospores	33	3520	72	1/9	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	9	60	1	1/61	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	1	7	<1	1/11	12	80	<1	-
Hyphal elements	1	7	<1	1/8	8	53	<1	-
Penicillium/Aspergillus group	6	40	1	2/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **2**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	62	4914	~100%	1/7	214	35364	~100%	-

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Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-12				061114-11			
Sample Location	Workroom Crawlspace Before Disturbance				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-012				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	15	100	5	1/17	8	1704	5	-
Basidiospores	23	1227	59	1/24	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	2	13	1	1/279	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	-	-	-	-	12	80	<1	-
Hyphal elements	-	-	-	-	8	53	<1	-
Penicillium/Aspergillus group	14	747	36	-	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **2**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	54	2087	~100%	1/17	214	35364	~100%	-

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Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-13				061114-11			
Sample Location	Workroom Crawlspace After Disturbance				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-013				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	5	33	1	1/52	8	1704	5	-
Basidiospores	13	87	1	1/343	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	-	-	-	-	-	-	-	-
Cladosporium	8	53	1	1/68	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	-	-	-	-	12	80	<1	-
Hyphal elements	-	-	-	-	8	53	<1	-
Penicillium/Aspergillus group	39	6235	97	>100/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **4**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments	Large amount of particulate seen.							
Total *See Footnotes	65	6408	~100%	1/6	214	35364	~100%	-

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Certificate of Analysis
EMLAP# 102977

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 06/11/2014
Date Received: 06/13/2014
Date Analyzed: 06/18/2014
Date Reported: 06/18/2014
Project ID: 14012872

Client Sample Number	061114-14				061114-11			
Sample Location	Room 24 Post-Cleaning				Outdoors Near Portable 19			
Sample Volume (L)	150				150			
Lab Sample Number	14012872-014				14012872-011			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	1	7	<1	-
Ascospores	17	2718	7	2/1	8	1704	5	-
Basidiospores	229	36611	92	1/1	140	29819	84	-
Botrytis	-	-	-	-	2	13	<1	-
Cercospora	1	7	<1	-	-	-	-	-
Cladosporium	42	280	1	1/13	34	3627	10	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	1	7	<1	-
Curvularia	-	-	-	-	1	7	<1	-
Epicoccum	-	-	-	-	4	27	<1	-
Exosporium	-	-	-	-	-	-	-	-
Helicosporium/Helicomyces	2	13	<1	1/6	12	80	<1	-
Hyphal elements	4	27	<1	1/2	8	53	<1	-
Penicillium/Aspergillus group	17	113	<1	5/1	3	20	<1	-
Pithomyces	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-
Smuts,Periconia,Myxomycetes	3	20	<1	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
	Debris Rating **4**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments	Large amount of particulate and fibers seen.							
Total *See Footnotes	315	39789	~100%	1/1	214	35364	~100%	-

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P.O. Box 286
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Project: **J13-767 GLenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

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Date Reported: 06/18/2014
Project ID: 14012872

Footnotes and Additional Report Information

Debris Rating Table

1	Minimal (<5%) particular present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
4	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.

2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.

3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.

4. The Smut, Periconia, Myxomycete group is composed of three different groups whose spores have similar morphologies. Smuts are plant pathogens, Periconia is a relatively uncommon mold indoors, and Myxomycetes are not fungi but slime molds. Although these organisms do not typically proliferate indoors, their spores are potentially allergenic.

5. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.

6. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.

7. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).

8. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole; for this reason the sum of the calculated counts may be less than the positive hole corrected total.

9. Due to rounding totals may not equal 100%.

10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.

11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

12. Analysis conducted on non-viable spore traps is completed using Indoor Environmental Standards Organization (IESO) Standard 2210.

13. The results in this report are related to this project and these samples only.

14. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should considered (3) three. For example, a sample with a result of 55,443 spr/m3 from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,400 spr/m^3.

Terminology Used in Direct Exam Reporting

Conidiophores are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.

Suzanne S. Blevins, B.S., SM (ASCP)
Laboratory Director

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Lab Use: 14 012872 (1401 2872)

Page ____ of ____

ELITE
CO, GA, VA

NVLAP
NVLAP Lab Code 200860-0
NVLAP Lab Code 200829-0
NVLAP Lab Code 500097-0

LAB #192683 (CO)
LAB #102977 (GA)
LAB #163063 (VA)
LAB #210229 (AZ)

Aerobiology Client	Aria Environmental, Inc.
Field Contact	Julie Barth
Address	PO Box 286
Address	Woodbine, MD 21797
Phone/Fax	410-549-5774/410-549-4488
Email	jbarth@ariaenviro.com

Collected By/Date: 06/11/14		Relinquished By/Date: 06/12/14	
Relinquished By/Date		Received By/Date: STAT 6/13/14	
Sampler Type	Andersen____	SampleAire____	Other Allergenco-D
	SAS____	AeroTrap____	BioCulture____
PO#/Job#/Project Name: J13-767 Glenwood MS			

Routine ◉ | 24 Hour ○ | Same Day ○ | 4 Hour ○ | 2 Hour ○ | 5 Day (Asbestos Only) ○

Notes/CC Info:

Zip Code Where Work Is Performed: 21738

	Sample No.	Test Code	Sample Location	Total Volume/Area
1	061114-01	1054	Room 11 pre-cleaning	150 L
2	061114-02	1054	Room 7 pre-cleaning	150 L
3	061114-03	1054	Room 15 pre-cleaning	150 L
4	061114-04	1054	Room 20 pre-cleaning	150 L
5	061114-05	1054	Room 11 post-cleaning	150 L
6	061114-06	1054	Room 7 post-cleaning	150 L
7	061114-07	1054	Room 38 pre-cleaning	150 L
8	061114-08	1054	Room 26 post-cleaning	150 L
9	061114-09	1054	Room 24 pre-cleaning	150 L
10	061114-10	1054	Room 29 pre-cleaning	150 L
11	061114-11	1054	Outdoors near Portable 19	150 L
12	061114-12	1054	Workroom Crawlspace before disturbance	150 L
13	061114-13	1054	Workroom Crawlspace after disturbance	150 L
14	061114-14	1054	Room 24 post-cleaning	150 L

1054	Direct, Non-viable Spore Trap	1015	Culture - WATER Legionella
1051	Direct, Qualitative- **Swab/Tape**	1017	Culture - SWAB Legionella
1050	Direct, Qualitative- **Bulk**	1010	WATER - Potable - E. coli/total coliforms
1005	AIR Culture - Bacterial Count w/ ID's	1012	SWAB - E. coli/total coliforms
1030	AIR Culture - Fungal Count w/ ID's	1028	Sewage Screen (E. coli/Enterococcus/fecal coliforms)
1006	SWAB Culture - Bacterial Count w/ ID's	2056	Heterotrophic Plate Count
1031	SWAB Culture - Fungal Count w/ ID's	3001	ASBESTOS - Point count
1008	BULK Culture - Bacterial Count w/ ID's	3002	ASBESTOS - PLM Analysis
1033	BULK Culture - Fungal Count w/ ID's	3003	ASBESTOS - Particle characterization
1007	WATER Culture - Bacterial Count w/ID's	3004	ASBESTOS - PCM Analysis

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