4221 Forbes Boulevard · Suite 250
Lanham, Maryland 20706
T: 202.558.7487 | http://atiinc.com/

June 5, 2019

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772
Attention: Mr. Alex Baylor

RE: Indoor Air Quality Screening, Gwynn Park High School
IFB: 022-19
ATI Project Number: ATI19-678

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) screening at Gwynn Park High School. The IAQ screening was conducted on May 25, 2019. Its key findings are enclosed in the Executive Summary on page three, and the official laboratory report for total fungal spore trap sampling is enclosed in Appendix A.

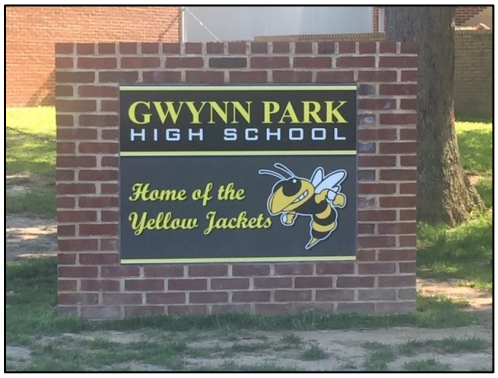
Thank you for the opportunity to provide Industrial Hygiene services for Prince George's County Public Schools. If you have any questions regarding this report, please contact us at (202) 643-4283.

Sincerely,
ATI, INC.

Courtney E. McCall
Project Manager

Sarath Seneviratne
CIH, CSP, CHMM

Indoor Air Quality Screening Report



Prince George's County Public Schools
Gwynn Park High School
13800 Brandywine Road
Brandywine, Maryland 20613

Prepared for:

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772

June 5, 2019

Submitted by:

ATI Job # 19-678

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Table of Contents

Abbreviations and Acronyms

AHU	Air-Handling Unit
AIHA	American Industrial Hygiene Association
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASTM	American Society for Testing and Materials
CO	Carbon Monoxide
CO_2	Carbon Dioxide
EMLAP	Environmental Microbiology Laboratory Accreditation Program
HVAC	Heating, Ventilating, And Air-Conditioning
IAQ	Indoor Air Quality
NIST	National Institute for Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
RH	Relative Humidity

Abbreviations involving scientific volume and measurements involving media or water sampling

Counts/m^3	Mold spores per cubic meter of air
LPM	Liters Per Minute
NTE	Not to exceed
°F	degree Fahrenheit
PPM	Parts Per Million

1. Executive Summary and Key Findings

ATI conducted a proactive Indoor Air Quality (IAQ) screening on May 25, 2019, at Gwynn Park High School, located at 13800 Brandywine Road, Brandywine, MD 20613.

The screening included a visual assessment of randomly selected classrooms and other frequently occupied spaces, such as the cafeteria, the library, and classrooms, for potential IAQ contributors and pathways. As part of the screening, ATI collected direct reading measurements for comfort parameters, including temperature, relative humidity, carbon dioxide, and carbon monoxide. Also, ATI collected total fungal air samples on spore trap cassettes for microbiological analysis.

The following is a summary of the key findings from this screening:

1. Temperature measurements were cooler than the ASHRAE guidelines for summer temperatures, between 73°F and 79°F.
2. Relative humidity measurements were within ASHRAE guidelines, <65%.
3. All tested areas were within the recommended ASHRAE limit for carbon dioxide, which was 1,062.5 parts per million (PPM).
4. Carbon monoxide was not detected throughout the tested spaces.
5. Total spore counts in each tested location did not exceed those detected outdoors, 7,550 counts/m^3. Low spore counts were detected in most spaces. One classroom had elevated levels of Aspergillus/Penicillium, and this classroom had a potted plant and no visible signs of microbial growth in the room.

2. Assessment Methods

Ms. Courtney McCall of ATI, Inc., conducted a visual assessment and air sampling on May 25, 2019. Sampled rooms were randomly selected and accounted for approximately 10% of classrooms or a minimum of five samples. Visual observations were made at the time the samples were collected. ATI references the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) *Standard 62.1 – 2016* and ASHRAE *Standard 55 – 2017* when providing IAQ services to clients. ASHRAE is an industry leader on energy efficiency and indoor air quality.

All measurements and air samples were collected between three-six feet from floor elevation, which represents the breathing zone, and away from air-supply and return diffusers. Real-time direct readings for temperature, relative humidity, carbon dioxide (CO_2), and carbon monoxide (CO), were obtained with a calibrated TSI Q-Trak 7575-X Meter and attached 982 Probe.

Total fungal air samples were collected with a Buck BioAire High-Volume Sampling Pump on Zefon Air-O-Cell spore-trap cassettes at a flow rate of 15 liters per minute for five minutes, for a sample volume of 75 liters. The samples were analyzed by direct microscopic examination (identifies and counts both viable and non-viable spores, which is then considered "total fungal"), via the American Society for Testing and Materials (ASTM) Standard D7391-09 by EMSL Analytical, Inc., (EMSL) located in Beltsville, MD.

EMSL participates in the National Institute of Standards and Technology's (NIST's) National Voluntary Laboratory Accreditation Program (NVLAP) for general laboratory performance and management and the American Industrial Hygiene Association (AIHA) Environmental Microbial Laboratory Accreditation Program (EMLAP, Certificate Number 102891).

Instrument calibration records are included in Appendix B of this report.

3. Visual Observations

Table 1: Visual Observations and Sampling Locations

Sample Location	Observations
Outside	• Clear skies • Light breeze and grasses nearby. No standing water present.
Library, Second Floor	• No occupants were present during sampling. • Housekeeping is good and no visible dust is present in sampling area. No microbial growth observed. • Space is approximately 3,500 ft.^{2}
Room 238 Chemistry Lab	• No occupants are in classroom during sampling. • One small plant 10 feet from sampling pump. Lab tables do not have dust or stacks of papers. No microbial growth observed. • Faint smell of cleaning products present and room appears to be freshly cleaned. • Space is approximately 720 ft.^{2}
Room 218	• No occupants are in classroom during sampling. • Housekeeping is good and no visible dust is present. No microbial growth observed. • Space is approximately 480 ft.^{2}
Room 126 Home Management	• No occupants are in classroom during sampling. • Room appears to have newer finishings, such as baseboard and ceiling tiles. • Very clean space and no microbial growth observed. • Room feels pretty cool and air supply can be felt. • Space is approximately 540 ft.^{2}
Room 115 Art Room	• No occupants are in classroom during sampling. • Large instruction room with paper and art supplies stored and artwork on display. These materials are scattered in the room. • Visible dusts not present and no microbial growth observed. • Space is approximately 1,300 ft.^{2}
Room 155	• No occupants are in classroom during sampling. • Room feels warmer and is located on a wing away from the main school section. Air conditioning is turning off and on. • A potted plant is at the teacher's desk. • Books and papers are scattered on the back shelf. Dusts not visible. No microbial growth observed. • Space is approximately 650 ft.^{2}

Sample Location	Observations
Cafeteria	• Two occupants in the room during sampling. • Custodian said that the cafeteria had a big cleaning about a week prior, with scrubbing all tables (underneath), walls and floors. • No visible dusts or debris present. No microbial growth observed. • Space is approximately 4,500 ft.^{2}

4. Thermal Environmental Conditions for Human Occupancy

ASHRAE *Standard 55-2017, Thermal Environmental Conditions for Human Occupancy*, addresses thermal comfort in an office environment, which means that an employee wearing a normal amount of clothing feels neither too cold nor too warm. This standard discusses thermal comfort within the context of air temperature, humidity, and air movement and provides recommended ranges for temperature and humidity that are intended to satisfy most building occupants. The recommended ASHRAE ranges are referenced below by each comfort parameter.

4.1 Temperature

The ASHRAE standard establishes a winter comfort range of between 68°F and 75°F and a summer range of between 73°F and 79°F. The temperature measurements obtained during the May 25, 2019 screening is summarized in Table 2. As indicated by the data in the table, temperatures in the school averaged between 67.2 – 72.6°F, below the ASHRAE summer comfort range.

Table 2: Temperature Measurements

Sample Location	May 25, 2019 °F			ASHRAE Standard °F
	Min	Max	Average	
Outside	68	70	69	N/A
Indoors				
Library, Second Floor	72	73.3	72.6	73 – 79
Room 238 Chemistry Lab	69.7	71	70.4	73 – 79
Room 218	67.3	68	67.7	73 – 79
Room 126 Home Management	66.8	67.5	67.2	73 – 79
Room 115 Art Room	67.6	68	67.8	73 – 79
Room 155	69.7	71.6	70.7	73 – 79
Cafeteria	72	72	72	73 – 79

4.2 Relative Humidity

Relative humidity is a key factor for mold growth. Mold has the potential of growing on suitable surfaces with humidity levels above 65%. ASHRAE *Standard 62.1-2016*, *Ventilation for Acceptable Indoor Air Quality,* recommends a maximum indoor relative humidity of 65% to prevent condensation of moisture on surfaces. Relative humidity below 30% may result in drying of the mucous membranes and skin. Relative humidity measurements are summarized in Table 3. As indicated by the data in the table, relative humidity measurements averaged between 48.5% and 59.8%, within the ASHRAE maximum recommendation of 65% relative humidity.

Table 3: Relative Humidity Measurements

Sample Location	May 25, 2019 (%)			ASHRAE Standard (% RH)
	Min	Max	Average	
Outside	56	59	58	N/A
Inside				
Library, Second Floor	48	49	48.5	< 65
Room 238 Chemistry Lab	50	51.7	50.9	< 65
Room 218	54	55.5	54.8	< 65
Room 126 Home Management	57.6	59.1	58.4	< 65
Room 115 Art Room	57.5	58.7	58.1	< 65
Room 155	58.3	61.3	59.8	< 65
Cafeteria	56.9	57.7	57.3	< 65

4.3 Carbon Dioxide

Carbon dioxide measurements within an occupied building are a standard method used to gauge the efficiency of ventilation systems. Carbon dioxide is a by-product of human respiration and does not pose an acute health hazard alone. Elevated concentrations may suggest that insufficient fresh air is being supplied to an occupied space and/or that the ventilation system does not provide a sufficient rate of air exchange.

Research has indicated that buildings with adequately operating ventilation systems are able to remove odors generated by activities in an indoor office environment efficiently. ASHRAE *Standard 62.1-2016* states that comfort (odor) criteria with respect to human bioeffluents are likely to be satisfied if the ventilation results indoor carbon dioxide concentrations are less than 700 parts per million (ppm) above the outdoor air concentration.

Carbon dioxide measurements are summarized in Table 4. On the day of the screening, the average outdoor carbon dioxide concentration obtained was 362.5 ppm, which calculates to a maximum indoor concentration of 1,062.5 ppm (700 + 362.5). The carbon dioxide levels inside the suite ranged from the minimum average

detected, 366.5 ppm to 434 ppm, the maximum average detected, less than the ASHRAE recommended range for the day, 1,062.5 ppm.

Table 4: Carbon Dioxide Measurements

Sample Location	May 25, 2019 Concentration (parts per million)			ASHRAE Standard (ppm) NTE
	Min	Max	Average	
Outside	358	367	362.5	N/A
Inside				
Library, Second Floor	374	465	419.5	1,062.5
Room 238 Chemistry Lab	390	392	391	1,062.5
Room 218	379	388	383.5	1,062.5
Room 126 Home Management	369	371	370	1,062.5
Room 115 Art Room	361	372	366.5	1,062.5
Room 155	425	443	434	1,062.5
Cafeteria	398	437	417.5	1,062.5

4.4 Carbon Monoxide

Carbon monoxide is a colorless and odorless gas produced by the incomplete combustion of carbon containing fuels. Oil, gasoline, diesel fuels, wood, coke, and coal are the major sources of carbon monoxide. ASHRAE recommends that carbon monoxide not exceed nine ppm indoors. As indicated by the data in Table 5, carbon monoxide was not detected throughout the suite.

Table 5: Carbon Monoxide Measurements

Sample Location	May 25, 2019 Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outside	0	0	0	N/A
Inside				
Library, Second Floor	0	0	0	< 9
Room 238 Chemistry Lab	0	0	0	< 9
Room 218	0	0	0	< 9
Room 126 Home Management	0	0	0	< 9
Room 115 Art Room	0	0	0	< 9
Room 155	0	0	0	< 9
Cafeteria	0	0	0	< 9

5. Total Fungal Air Sampling Results

Mold needs a food source, moisture, proper temperature and humidity, and at times, a source of light, to grow in an environment. Air infiltration through building entrances and exits, open windows and loading docks, and foot traffic into buildings, including the HVAC system all serve as primary pathways that can carry fungi indoors. Water leaks and humid conditions inside of buildings provide the moisture that fosters mold growth.

The May 25, 2019, mold screening sampled air using spore trap cassettes in randomly selected classrooms and other areas throughout the facility. These cassettes collect both viable spores, those capable of producing more fungal colonies, and non-viable spores, which cannot reproduce. Based upon recognized industry practices, indoor mold concentrations are compared with those detected outdoors, which are also known as ambient or baseline samples.

In normal circumstances, the diversity of spores identified indoors and outdoors should be similar with some exceptions. The high concentration of one or two species of fungal spores identified indoors and the absence of the same species outdoors can indicate a moisture problem with the potential to degrade the air quality. Fungi species present indoors are typically found at levels ranging from approximately 10-50% of their levels in the outdoor air, reflecting the filtering by the building's HVAC system.

The official laboratory report with spore trap samples collected on May 25, 2019, is presented in Appendix A. Generally, the findings indicated that the indoor concentrations were favorable compared to the outdoor concentrations with four classrooms detecting only four raw counts of spores. The total spore counts in each tested location did not exceed those detected outdoors, 7,550 counts/m^3.

Ascospores, Basidiospores and Cladosporium, mold spores that are commonly detected indoors, were the predominant spore types. Aspergillus/Penicillium, which is known to cause allergies, was detected at 1,000 counts/m^3 in Room 155, higher than the outdoor concentration. Room 155 had a potted plant about 12 feet from the mold sampling pump. No microbial growth was observed in this room. Aspergillus/Penicillium can cause allergies and health problems for persons with lung and immune system disorders.

6. Summary of Findings

Temperature measurements were cooler than the ASHRAE guidelines for summer temperatures, between 73°F and 79°F. Relative humidity measurements were within ASHRAE guidelines, <65%. All tested areas were within the recommended ASHRAE limit for carbon dioxide, which was 1,062.5 parts per million (PPM). Carbon monoxide was not detected throughout the tested spaces.

Total spore counts in each tested location did not exceed those detected outdoors, 7,550 counts/m^3. Low spore counts were detected in most spaces. One classroom had elevated levels of Aspergillus/Penicillium, and this classroom had a potted plant and no visible signs of microbial growth.

We appreciate the opportunity to provide these IAQ testing services for you. If you have any questions, please contact us at (202) 643-4283.

Sincerely,
ATI, INC.

Courtney E. McCall
Project Manager

Sarath Seneviratne
CIH, CSP, CHMM

Appendix A:
Laboratory Report and Chain of Custody

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order: 061910209
Customer ID: ATII25A
Customer PO:
Project ID:

Attn: Courtney McCall
ATI
4221 Forbes Blvd
Suite 250
Lanham, MD 20706
Project: 19-678 Gwynn Park HS

Phone: (202) 832-1433
Fax:
Collected: 05/25/2019
Received: 05/28/2019
Analyzed: 05/30/2019

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	061910209-0001			061910209-0002			061910209-0003		
Client Sample ID:	2826 0967			2826 0952			2826 0938		
Volume (L):	75			75			75		
Sample Location	Ambient			Library 2nd Floor			Classroom 238		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	39	1700	22.5	-	-	-	4	200	16.4
Aspergillus/Penicillium	5	200	2.6	-	-	-	-	-	-
Basidiospores	116	5060	67	1*	10*	100	21	920	75.4
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	13	570	7.5	-	-	-	3	100	8.2
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	1*	10*	0.1	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Polythrincium	1*	10*	0.1	-	-	-	-	-	-
Total Fungi	**175**	**7550**	**100**	**1**	**10**	**100**	**28**	**1220**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	1	40	-	1	40	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Jeffrey Lau, Microbiology Laboratory Manager
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY AIHA-LAP, LLC--EMLAP Accredited #102344

Initial report from: 06/03/2019 14:31:09

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

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Received: 05/28/2019
Analyzed: 05/30/2019

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	061910209-0004			061910209-0005			061910209-0006		
Client Sample ID:	2826 0937			2826 0962			2826 0948		
Volume (L):	75			75			75		
Sample Location	Classroom 218			Home Mgmt Room 126			Art Room, Room 115		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	1	40	23.5
Aspergillus/Penicillium	-	-	-	-	-	-	1	40	23.5
Basidiospores	2	90	100	1	40	50	2	90	52.9
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	1	40	50	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Total Fungi	**2**	**90**	**100**	**2**	**80**	**100**	**4**	**170**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Jeffrey Lau, Microbiology Laboratory Manager
or other approved signatory

Initial report from: 06/03/2019 14:31:09

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Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	061910209-0007			061910209-0008			061910209-0009		
Client Sample ID:	28260968			2826 0936			2826 0944		
Volume (L):	75			75					
Sample Location	Classroom 155			Cafeteria			Field Blank		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	1	40	3.2	22	960	30.4	-	-	-
Aspergillus/Penicillium	23	1000	80.6	4	200	6.3	-	-	-
Basidiospores	4	200	16.1	44	1900	60.1	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	3	100	3.2	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Total Fungi	**28**	**1240**	**100**	**73**	**3160**	**100**	**-**	**No Trace**	**-**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	0	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	0*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	-	-
Background (1-5)	-	1	-	-	1	-	-	-	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Jeffrey Lau, Microbiology Laboratory Manager
or other approved signatory

Initial report from: 06/03/2019 14:31:09

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OrderID: 061910209

Microbiology Chain of Custody

EMSL Order Number (*Lab Use Only*): 061910209

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX:(856) 786-0262

Company Name: ATI, Inc.	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments
Street: 4221 Forbes Blvd Suite 250	*Third Party Billing requires written authorization from third party.*
City: Lanham **State/Province:** MD	**Zip/Postal Code:** 20706 **Country:**
Report To (Name): Courtney McCall	**Telephone #:** 703 399 5423
Email Address: courtney@atiinc.com	**Fax #:** **Purchase Order:**
Project Name/Number: 19-678 Gwynn Park HS	**Please Provide Results:** ☐ Fax ■ Email
U.S. State Samples Taken: MD **Project Zip Code:** 20613	**Connecticut Samples:** ☐ Commercial ☐ Residential
Sterile, Sodium Thiosulfate Preserved Bottle Used: ☐ **Biocide Used in Source (specify):** ☐	
Public Water Supply Samples: ☐ **Note: All results may automatically be reported to DOH if required by state.**	

Turnaround Time (TAT) Options - Please Check

☐ 3 Hour	☐ 6 Hour	☐ 24 Hour	☐ 48 Hour	☐ 72 Hour	☐ 96 Hour	■ 1 Week	☐ 2 Week

Microbiology Test Codes

M001 Air-O-Cell | **M174** MoldSnap
~~**M030** Micro 5~~ | **M032** Allergenco-D

M041 Fungal Direct Examination
M169 Pollen ID & Enumeration
M280 Dust Characterization Level-1
M281 Dust Characterization Level-2
M005 *Viable Fungi*- Air Samples (Genus ID & Count)
M006 Viable Fungi- Air Samples (Includes *Penicillium, Aspergillus, Cladosporium, Stachybotrys* Species ID & Count)
M007 Culturable fungi - Surface Samples (Genus ID & Count)
M008 Culturable fungi - Surface Samples (Includes *Penicillium, Aspergillus, Cladosporium, Stachybotrys* Species ID & Count)
M009 Bacteria Culture Gram Stain & Count
M010 Bacteria Count & ID - 3 Most Prominent
M011 Bacteria Count & ID - 5 Most Prominent

M012 *Pseudomonas aeruginosa* (P/A***)
M024 *Pseudomonas aeruginosa* (MFT*)
M015 Heterotrophic Plate Count
M017 Total Coliform & *E. coli* (Colilert P/A***)
M018 Total Coliform & *E. coli* (MFT*)
M114 Total Coliform & *E. coli* Enumeration (Colilert MPN**)
M019 Fecal Coliform (MFT*)
M020 Fecal *Streptococcus* (MFT*)
M029 *Enterococci* (MFT*)
M129 *Enterococci* (Enterolert P/A***)
M180 Real Time qPCR-ERMI 36 Panel
M025 Sewage Screen –Water (MFT*)

M115 Sewage Screen - Water (P/A***)
M116 Sewage Screen - Water (MPN**)
M117 Sewage Screen - Swab (P/A***)
M013 Sewage Screen - Swab (MFT*)
M133 *Methicillin-resistant Staph. aureus* (MRSA)
M031 Rapid-growing non-TB *Mycobacteria* Detection & Enumeration
M014 Endotoxin Analysis
M044 Group Allergen (Cat, Dog, Cockroach, Dust Mite)
Other See Analytical Price Guide
Legionella **Analysis** Please use EMSL *Legionella* COC

*MFT= Membrane Filtration Technique
**MPN= *Most Probable Number*
***P/A= Presence/Absence

Name of Sampler: Courtney E McCall **Signature of Sampler:**

Sample #	Sample Location/Description	Sample Type	Potable/ NonPotable (Only for Waters)	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
Example A1	**Kitchen Sink/Tap**	**Water**	☒ P ☐ NP	M017	100 mL	**9/1/13 4:00 PM**	
2826 0967	Ambient	Air	☐ P ☐ NP	M001	75L	5/25/19 745 am	
2826 0952	Library 2nd Floor	Air	☐ P ☐ NP	M001	75L	5/25/19 815 am	
2826 0938	Classroom 238	Air	☐ P ☐ NP	M001	75L	5/25/19 825 am	
2826 0937	Classroom 218	Air	☐ P ☐ NP	M001	75L	5/25/19 835 am	
2826 0962	Home Mgmt Room 126	Air	☐ P ☐ NP	M001	75L	5/25/19 848 am	

Client Sample # (s): - **Total # of Samples:** 9 **Samples Received Chilled?** Yes / No (Lab Use Only)

Relinquished (Client): Courtney E McCall **Date:** 5/28/19 **Time:**

Received (Lab): L. Bonworth Linda Sr **Date:** 5/28/19 **Time:** 11:10 am

Comments/Special Instructions:

19 MAY 30 PM 9:27

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RCVD 5/30/19 9:27AM

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

061910209

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX:(856) 786-0262

Additional pages of the chain of custody are only necessary if needed for additional sample information.

Sample #	Sample Location/Description	Sample Type	Potable/ NonPotable (Only for Waters)	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
2826 0948	Art Room, Room 115	Air	☐P ☐NP	M001	75L	5/25/19 900 am	
2826 0968	Classroom 155	Air	☐P ☐NP	M001	75L	5/25/19 908 am	
2826 0936	Cafeteria	Air	☐P ☐NP	M001	75L	5/25/19 917 am	
2826 0944	FIELD BLANK	Air	☐P ☐NP	M001	NA	5/25/19 NA	
			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				
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			☐P ☐NP				

Comments/Special Instructions:

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Appendix B:
Instrument Calibration Records

Certificate of Calibration

(✓) Buck™ BioAire Pump Calibration Rotameter

( ) Buck™ BioSlide Pump Calibration Rotameter

Serial number: R14057

Date Calibrated: 1/22/19 **Calibration Due Date:** 1/22/20

Flow Calibration

This is to certify that the rotameter listed above has been calibrated using a Buck Primary calibrator listed below which is calibrated according to A.P. Buck, Inc. calibration procedure APB-1, Ver. 6.2 and is traceable to the National Institute of Standards & Technology (N.I.S.T). A.P. Buck guarantees the accuracy of the rotameter to be within ± 5% of the actual flow rate.

AMBIENT CONDITIONS: Temperature 74±3° F Relative Humidity 50±10%

Description	MFR.	Model	Serial #
Primary Calibrator	A.P. Buck Inc.	M30B	☐ A40020 ☑ A40021

QA Approval By:

A.P. BUCK, INC.
7101 Presidents Drive, Suite 110
Orlando, FL 32809
Phone: 407-851-8602
Fax: 407-851-8910

BUCK
A.P. BUCK, INC.

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	75.9 (24.4)	°F (°C)
RELATIVE HUMIDITY	34	%RH
BAROMETRIC PRESSURE	29.08 (984.8)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100007

☒ AS LEFT ☒ IN TOLERANCE
☐ AS FOUND ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

TEMPERATURE VERIFICATION — SYSTEM T-101 — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	32.0 (0.0)	31.6 (−0.2)	31.0~33.0 (−0.6~0.6)	2	140.0 (60.0)	140.4 (60.2)	139.0~141.0 (59.4~60.6)

HUMIDITY VERIFICATION — SYSTEM H-120 — *Unit: %RH*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	9.8	7.8~12.2	4	70.0	70.0	67.8~72.2
2	30.0	30.6	27.8~32.2	5	90.0	89.6	87.8~92.2
3	50.0	50.4	47.8~52.2				

CO_2 GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0	0	0~50	4	3000	3005	2910~3090
2	500	487	450~550	5	5042	5034	4891~5193
3	1000	1000	950~1050				

CO GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	35	35	32~38	2	100	99	97~103

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E003986	02-12-19	08-31-19
Humidity	E002008	01-25-19	07-31-19
200 CO	CC15018	04-15-19	04-12-22
Air	GT-0540	01-19-19	01-18-22
Flow	E003978	02-26-19	02-29-20
Flow	E003501	09-04-18	09-30-19
100 C4H8	EB0100212	09-29-17	09-29-21

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E003987	02-12-19	08-31-19
5000 CO_2	3341007	12-14-18	12-11-21
N2	UT-102	04-30-19	04-30-24
Flow	E003341	09-14-18	09-30-19
Flow	E003502	02-26-19	02-29-20
2000 C4H8	EB0081455	06-27-18	06-26-21

CALIBRATED

May 23, 2019
DATE

Doc. ID: CERT_GEN_WCC

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	75.5 (24.2)	°F (°C)
RELATIVE HUMIDITY	38	%RH
BAROMETRIC PRESSURE	28.66 (970.5)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711006

☐ AS LEFT ☒ IN TOLERANCE
☒ AS FOUND ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

THERMO COUPLE — **SYSTEM PRESSURE01-02** — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	73.5 (23.1)	73.1 (22.8)	71.5~75.5 (21.9~24.2)				

BAROMETRIC PRESSURE — **SYSTEM PRESSURE01-02** — *Unit: inHg (hPa)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	28.67 (970.9)	28.65 (970.2)	28.10~29.24 (951.6~990.2)				

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E003170	02-21-19	02-29-20	Pressure	E005254	10-29-18	10-31-19
Pressure	E003982	02-07-19	08-31-19	DC Voltage	E003493	08-23-18	08-31-19

Sharol M^cElmury
VERIFIED

May 22, 2019
DATE

Doc ID: CERT_GEN_WCC

TSI P/N 2300157