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June 24, 2019

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

RE: Indoor Air Quality Screening, Martin Luther King, Jr. Middle School
IFB: 022-19
ATI Project Number: ATI19-684

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) screening at Martin Luther King, Jr. Middle School. The IAQ screening was conducted on May 29, 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
Martin Luther King, Jr. Middle School
4545 Ammendale Road
Beltsville, Maryland 20705

Prepared for:

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

June 24, 2019

Submitted by:

The logo for ATI, consisting of the lowercase letters 'ati' in a bold, blue, serif font.

ATI Job # 19-684

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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
CO₂	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/m³	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 29, 2019, at Martin Luther King, Jr. Middle School, located at 4545 Ammendale Rd, Beltsville, MD 20705.

The screening included a visual assessment of randomly selected classrooms and other frequently occupied spaces, such as the main office 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. Two locations fell below the ASHRAE recommended guidelines for summer temperatures, between 73°F and 79°F.
2. Relative humidity measurements were within ASHRAE guidelines, < 65%, with one location exceeding 65%.
3. Two tested spaces exceeded recommended ASHRAE limit for carbon dioxide, which was 945.5 parts per million (PPM).
4. Carbon monoxide was not detected throughout the tested spaces.
5. The indoor mold spore concentrations were favorable compared to the outdoor concentrations. No indoor location had total concentrations that exceeded the outdoor concentration, which was 85,840 counts/m³. *Aspergillus/Penicillium* was detected in two spaces, slightly exceeding the presence in the ambient outdoor sample. These low concentrations do not pose a concern. Low concentrations of other spores, such as *Arthrinium* and *Cercospora*, were detected indoors and not outdoors. These concentrations are not remarkable.

2. Assessment Methods

Ms. Mikal Frater of ATI, Inc. conducted a visual assessment and air sampling on May 29, 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 (CO₂), 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	<ul style="list-style-type: none"> • Partly cloudy. • Moderate traffic on adjacent road. • School buses and cars parked and idling in lot.
Main Office	<ul style="list-style-type: none"> • Light traffic. • Seven occupants in immediate sampling area. • Two fake plants on countertop, light dust accumulation.
Room 306	<ul style="list-style-type: none"> • One air return, two air diffusers. • Space is approximately 1,140 ft.² • Staff complaints of respiratory issues caused by dwelling in space (asthmas, bronchitis, etc.) • Two occupants in area during sampling. • No visible leaking, stained tiles, or growth. • Stuffy air.
Gymnasium	<ul style="list-style-type: none"> • Four air returns, eight air diffusers. • Space feels humid - A/C cannot be felt. • Water stain/missing ceiling tile in area. • Large occupied area. • 60 occupants in area.
Room 102	<ul style="list-style-type: none"> • Four air returns, four air diffusers. • Scattered papers around area. • Door to corridor open. • A/C can be felt. • Two occupants in area during sampling. • Individual oscillating fan – OFF. • Diffusers and returns right next to each other. • Peeling ceiling tile next to diffuser. • Room is adjacent to student bathroom. • Space is approximately 1,156 ft.²

Sample Location	Observations
Room 209	<ul style="list-style-type: none"> • Six air returns, one air diffuser with light/moderate dirt load. • Individual oscillating fan – OFF. • Sweeping during sampling. • A/C off. • Three occupants in sampling area. • No visible stained ceiling tiles or growth. • Placement of A/C vent next to back table, blocking proper circulation.
Additional Notes	<ul style="list-style-type: none"> • Classrooms do not have windows. • A/C is inconsistent – currently working. • School built between 1973-1975.

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 29, 2019, screening is summarized in Table 2. As indicated by the data in the table, temperatures in the school averaged between 70.1 – 77.1°F, with two locations falling slightly below the ASHRAE summer comfort range.

Table 2: Temperature Measurements

Sample Location	May 29, 2019 °F			ASHRAE Standard °F
	Min	Max	Average	
Outside	93.0	93.6	93.3	N/A
Indoors				
Main Office	76.1	78.1	77.1	73 – 79
Room 306	74.4	75.4	74.9	73 – 79
Gymnasium	76.0	76.2	76.1	73 – 79
Room 102	69.5	70.7	70.1	73 – 79
Room 209	71.3	71.3	71.3	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 55.4 and 67.1%, with one location exceeding the ASHRAE maximum recommendation of 65% relative humidity.

Table 3: Relative Humidity Measurements

Sample Location	May 29, 2019 (%)			ASHRAE Standard (% RH)
	Min	Max	Average	
Outside	39.3	41.2	40.25	N/A
Inside				
Main Office	54.2	56.6	55.4	< 65
Room 306	61.3	62.1	61.7	< 65
Gymnasium	64.4	64.4	64.4	< 65
Room 102	58.8	60.4	59.6	< 65
Room 209	67.0	67.2	67.1	< 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 245.5 ppm, which calculates to a maximum indoor concentration of 945.5 ppm (700 + 245.5). The carbon dioxide levels inside the school ranged from the minimum average detected, 483 ppm to 1,083 ppm, the maximum average detected, with two locations exceeding the ASHRAE maximum recommended concentration of 945.5 ppm.

Table 4: Carbon Dioxide Measurements

Sample Location	May 29, 2019 Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outside	223	268	245.5	N/A
Inside				
Main Office	878	878	878	945.5
Room 306	481	485	483	945.5
Gymnasium	1,047	1,059	1,052	945.5
Room 102	1,083	1,083	1,083	945.5
Room 209	820	856	838	945.5

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 school.

Table 5: Carbon Monoxide Measurements

Sample Location	May 29, 2019 Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outside	0	0	0	N/A
Inside				
Main Office	0	0	0	< 9
Room 306	0	0	0	< 9
Gymnasium	0	0	0	< 9
Room 102	0	0	0	< 9
Room 209	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 29, 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 29, 2019, is presented in Appendix A. The findings indicated that the indoor concentrations were favorable compared to the outdoor concentrations, and no indoor location had total concentrations that exceeded the outdoor concentration, which was 85,840 counts/m³.

Ascospores, Basidiospores and Cladosporium had the highest concentrations, although they did not exceed those detected outdoors. These three spore types are commonly found indoors. Each are known to cause allergies yet are not associated with water damaged materials in buildings.

Aspergillus/Penicillium was detected indoors in two locations, the Gym and Room 102, that slightly exceeded detection levels outdoors. Outdoor levels were 300 counts/m³, while levels in the Gym were 440 counts/m³ and Room 102 detected 480 counts/m³. These concentrations are low and do not pose a concern. Low concentrations of other spores, such as Arthrinium and Cercospora, were detected indoors and not outdoors. These concentrations are not remarkable.

6. Summary of Findings

Two locations fell below the ASHRAE recommended guidelines for summer temperatures, between 73°F and 79°F. With the exception of one location, relative humidity measurements were within ASHRAE guidelines, <65%. Two tested locations exceeded the ASHRAE limit for carbon dioxide, which was 945.5 parts per million (PPM). Carbon monoxide was not detected throughout the tested spaces.

The indoor mold spore concentrations were favorable compared to the outdoor concentrations. No indoor location had total concentrations that exceeded the outdoor concentration, which was 85,840 counts/m³. Aspergillus/Penicillium was detected in two spaces slightly exceeding the presence in the ambient outdoor sample, yet these low concentrations do not pose a concern. Low concentrations of other spores, such as Arthrinium and Cercospora, were detected indoors and not outdoors. These concentrations are not remarkable.

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.

10768 Baltimore Avenue Beltsville, MD 20705

Tel/Fax: (301) 937-5700 / (301) 937-5701

<http://www.EMSL.com> / beltsvillelab@emsl.com

EMSL Order: 191906414

Customer ID: ATII25A

Customer PO:

Project ID:

Attn: Courtney McCall

ATI

4221 Forbes Blvd

Suite 250

Lanham, MD 20706

Project: 19-684-PGCPs MLK JR MS

Phone: (202) 832-1433

Fax:

Collected: 05/29/2019

Received: 05/30/2019

Analyzed: 06/06/2019

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	191906414-0001 19-684-01 75 OUTSIDE PARKING LOT			191906414-0002 19-684-02 FIELD BLANK			191906414-0003 19-684-03 75 MAIN OFFICE		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	4	200	0.2	-	-	-	-	-	-
Ascospores	32	1400	1.6	-	-	-	2	90	6.8
Aspergillus/Penicillium	7	300	0.3	-	-	-	8*	100*	7.6
Basidiospores	111	4840	5.6	-	-	-	7	300	22.7
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1790	78100	91	-	-	-	17	740	56.1
Curvularia	1	40	0	-	-	-	-	-	-
Epicoccum	4	200	0.2	-	-	-	-	-	-
Fusarium	5	200	0.2	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	6	300	0.3	-	-	-	-	-	-
Pithomyces++	1*	10*	0	-	-	-	-	-	-
Rust	1	40	0	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Arthrinium	-	-	-	-	-	-	-	-	-
Cercospora++	2	90	0.1	-	-	-	2	90	6.8
Gonatobotryum	1	40	0	-	-	-	-	-	-
Oidium	1	40	0	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	1	40	0	-	-	-	-	-	-
Total Fungi	1967	85840	100	-	No Trace	-	36	1320	100
Hypal Fragment	3	100	-	-	-	-	-	-	-
Insect Fragment	6	300	-	-	-	-	-	-	-
Pollen	3	100	-	-	-	-	1	40	-
Analyt. Sensitivity 600x	-	44	-	-	0	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	0*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	-	-	-	4	-
Fibrous Particulate (1-4)	-	1	-	-	-	-	-	1	-
Background (1-5)	-	2	-	-	-	-	-	1	-

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

Stefanie Schneider, 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. Beltsville, MD AIHA-LAP, LLC --EMLAP Accredited #102891

Initial report from: 06/06/2019 13:28:44

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



EMSL Analytical, Inc.

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EMSL Order: 191906414

Customer ID: ATII25A

Customer PO:

Project ID:

Attn: Courtney McCall

ATI

4221 Forbes Blvd

Suite 250

Lanham, MD 20706

Project: 19-684-PGCPs MLK JR MS

Phone: (202) 832-1433

Fax:

Collected: 05/29/2019

Received: 05/30/2019

Analyzed: 06/06/2019

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	191906414-0004 19-684-04 75 ROOM 306			191906414-0005 19-684-05 75 GYM			191906414-0006 19-684-06 75 ROOM 102		
	Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³
Alternaria (Ulocladium)	-	-	-	4	200	4.3	1	40	7.1
Ascospores	17	740	8.9	3	100	2.2	-	-	-
Aspergillus/Penicillium	5	200	2.4	10	440	9.5	11	480	85.7
Basidiospores	70	3100	37.2	15	660	14.3	1	40	7.1
Bipolaris++	1	40	0.5	1	40	0.9	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	91	4000	48	61	2700	58.4	-	-	-
Curvularia	-	-	-	1*	10*	0.2	-	-	-
Epicoccum	1	40	0.5	1	40	0.9	-	-	-
Fusarium	1	40	0.5	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	2	90	1.1	6	300	6.5	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	1*	10*	0.2	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Arthrinium	-	-	-	1	40	0.9	-	-	-
Cercospora++	2	90	1.1	-	-	-	-	-	-
Gonatobotryum	-	-	-	-	-	-	-	-	-
Oidium	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	1	40	0.9	-	-	-
Torula-like	-	-	-	1	40	0.9	-	-	-
Total Fungi	190	8340	100	106	4620	100	13	560	100
Hyphal Fragment	-	-	-	5	200	-	-	-	-
Insect Fragment	-	-	-	1	40	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	4	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	2	-	-	1	-

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

Stefanie Schneider, 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.

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Initial report from: 06/06/2019 13:28:44

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Project: 19-684-PGCPS MLK JR MS

Phone: (202) 832-1433

Fax:

Collected: 05/29/2019

Received: 05/30/2019

Analyzed: 06/06/2019

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

Lab Sample Number:	191906414-0007		
Client Sample ID:	19-684-07		
Volume (L):	75		
Sample Location	ROOM 209		
Spore Types	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	-	-	-
Ascospores	-	-	-
Aspergillus/Penicillium	1	40	20
Basidiospores	1	40	20
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	1	40	20
Curvularia	-	-	-
Epicoccum	1	40	20
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	1	40	20
Pithomyces++	-	-	-
Rust	-	-	-
Scopulariopsis/Microascus	-	-	-
Stachybotrys/Memnoniella	-	-	-
Unidentifiable Spores	-	-	-
Arthrinium	-	-	-
Cercospora++	-	-	-
Gonatobotryum	-	-	-
Oidium	-	-	-
Polythrincium	-	-	-
Torula-like	-	-	-
Total Fungi	5	200	100
Hyphal Fragment	-	-	-
Insect Fragment	-	-	-
Pollen	-	-	-
Analyt. Sensitivity 600x	-	44	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	1	-
Fibrous Particulate (1-4)	-	1	-
Background (1-5)	-	2	-

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

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

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Initial report from: 06/06/2019 13:28:44

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



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only)

191906414

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: <input type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments				
Street: 4221 Rumsey Road, 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 / Mikal Frater			Telephone #: 202-558-7489				
Email Address: Courtney@atiinc.com & Mikal@atiinc.com			Fax #:		Purchase Order:		
Project Name/Number: 19-684- PGCPS - MLK Jr. MS			Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email				
U.S. State Samples Taken:		Project Zip Code:	Connecticut Samples: <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Residential				
Sterile, Sodium Thiosulfate Preserved Bottle Used: <input type="checkbox"/> Biocide Used in Source (specify): <input type="checkbox"/>							
Public Water Supply Samples: <input type="checkbox"/> Note: All results may automatically be reported to DOH if required by state.							
Turnaround Time (TAT) Options - Please Check							
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour	<input type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input checked="" type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week	
Microbiology Test Codes							
M001 Air-O-Cell M030 Micro 5 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 <i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i> , <i>Stachybotrys</i> Species ID & Count) M007 Culturable fungi - Surface Samples (Genus ID & Count) M008 Culturable fungi - Surface Samples (Includes <i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i> , <i>Stachybotrys</i> Species ID & Count) M009 Bacteria Culture Gram Stain & Count M010 Bacteria Count & ID - 3 Most Prominent M011 Bacteria Count & ID - 5 Most Prominent		M174 MoldSnap M032 Allergenco-D		M012 <i>Pseudomonas aeruginosa</i> (P/A***) M024 <i>Pseudomonas aeruginosa</i> (MFT*) M015 Heterotrophic Plate Count M017 Total Coliform & <i>E. coli</i> (ColiAlert P/A***) M018 Total Coliform & <i>E. coli</i> (MFT*) M114 Total Coliform & <i>E. coli</i> Enumeration (ColiAlert MPN**) M019 Fecal Coliform (MFT*) M020 Fecal <i>Streptococcus</i> (MFT*) M029 <i>Enterococci</i> (MFT*) M129 <i>Enterococci</i> (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 <i>Staph aureus</i> (MRSA) M031 Rapid-growing non-TB <i>Mycobacteria</i> 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	
Name of Sampler: Mikal Frater			Signature of Sampler: <i>Mikal Frater</i>				
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	<input checked="" type="checkbox"/> P <input type="checkbox"/> NP	M017	100 mL	9/1/13 4:00 PM	
19-684-01	Outside Parking Lot	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	75L	05-29-19 - 3.56	
19-684-02	Field Blank	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	75L	05-29-19 -	
19-684-03	Main Office	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	75L	05-29-19 - 2.50	
19-684-04	Room 306	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	75L	05-29-19 - 3 01	
19-684-05	Gymnasium	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	75L	05-29-19 - 3 15	
Client Sample # (s): - 7		Total # of Samples: 7		Samples Received Chilled? Yes / No (Lab Use Only)			
Relinquished (Client):			Date: 5-30-19	Time:			
Received (Lab): <i>Jalynn Camara</i>			Date: <i>5/30/19</i>	Time: <i>4:30 PM</i>			
Comments/Special Instructions: <i>waitlin</i>							

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

**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 $\pm 5\%$ of the actual flow rate.

AMBIENT CONDITIONS: Temperature $74 \pm 3^{\circ}$ F Relative Humidity $50 \pm 10\%$

Description	MFR.	Model	Serial #
Primary Calibrator	A.P. Buck Inc.	M30B	<input type="checkbox"/> A40020 <input checked="" type="checkbox"/> A40021

QA Approval By: 

Information contained in this document should not be reproduced in any form without the written consent of A.P. Buck, Inc. It is for reference only and cannot be used as a form of endorsement by any private or governmental regulatory body.

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			MODEL	982
TEMPERATURE	75.9 (24.4)	°F (°C)	SERIAL NUMBER	P17100007
RELATIVE HUMIDITY	34	%RH		
BAROMETRIC PRESSURE	29.08 (984.8)	inHg (hPa)		

<input checked="" type="checkbox"/> AS LEFT	<input checked="" type="checkbox"/> IN TOLERANCE
<input type="checkbox"/> AS FOUND	<input type="checkbox"/> 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)	139.0~141.6 (59.4~60.6)	

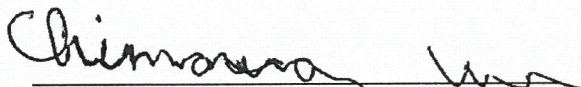
HUMIDITY VERIFICATION				SYSTEM H-120				Unit: %RH
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	10.0	9.8	7.8~12.2	4	70.0	70.0	67.8~72.2	
2	30.0	30.6	27.8~32.2	5	90.0	89.6	87.8~92.2	
3	50.0	50.4	47.8~52.2					

CO2 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	Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E003986	02-12-19	08-31-19	Temperature	E003987	02-12-19	08-31-19
Humidity	E002008	01-25-19	07-31-19	5000 CO2	3341007	12-14-18	12-11-21
200 CO	CC15018	04-15-19	04-12-22	N2	UT-102	04-30-19	04-30-24
Air	GT-0540	01-19-19	01-18-22	Flow	E003341	09-14-18	09-30-19
Flow	E003978	02-26-19	02-29-20	Flow	E003502	02-26-19	02-29-20
Flow	E003501	09-04-18	09-30-19	2000 C4H8	EB0081455	06-27-18	06-26-21
100 C4H8	EB0100212	09-29-17	09-29-21				


CALIBRATED

May 23, 2019

DATE

Doc ID CERT_GEN_WCC



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			MODEL	7575-X
TEMPERATURE	75.5 (24.2)	°F (°C)	SERIAL NUMBER	7575X1711006
RELATIVE HUMIDITY	38	%RH		
BAROMETRIC PRESSURE	28.66 (970.5)	inHg (hPa)		

<input type="checkbox"/> AS LEFT	<input checked="" type="checkbox"/> IN TOLERANCE
<input checked="" type="checkbox"/> AS FOUND	<input type="checkbox"/> 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. Elmery

VERIFIED

May 22, 2019

DATE

Doc ID CERT_GEN_WCC