



Aerosol Monitoring & Analysis, Inc.

Environmental Consultants

October 1, 2017

Mr. Scott W. Washington, Director
Office of School Construction
Howard County Public School System
9020 Mendenhall Court, Suite C
Columbia, MD 20145

RE: Report for the Indoor Environmental Quality (IEQ) survey of Pointers Run Elementary School located on at 6600 S. Trotter Road, Clarksville, MD; AMA Project # 17361

Dear Mr. Washington:

In accordance with the request of Howard County Public School System (HCPSS) to provide IEQ consulting and evaluation services, Aerosol Monitoring & Analysis, Inc. (AMA) conducted an IEQ survey documenting conditions of apparent mold growth (AMG) and/or conditions that are associated with mold related issues, unusual odors, water staining, or other parameters that may lead to indoor air quality (IAQ) problems. The work was performed in accordance with your requests.

EXECUTIVE SUMMARY

AMA conducted a IEQ survey throughout Pointers Run Elementary School for possible sources that could have impact on the IAQ on August 16, 2017. Mr. Andrew Washington and Mr. Patrick LaShier conducted the survey. The survey was conducted as a visual inspection, as requested by the Client.

The survey included a visual inspection of all accessible areas, including above ceilings, documenting noted conditions of apparent mold growth (AMG), water damage, unusual odors, and temperature and relative humidity measurements in representative areas of the building. Additionally, the scope-of-work consisted of conducting an assessment for moisture and mold by inspecting for AMG on building surfaces and components, if any; and identifying potential conditions or sources for moisture or elevated humidity and their cause(s).

AMA conducted a visual inspection of all accessible areas in the building to determine if building materials were impacted by potential mold growth or had conditions that can be associated to mold growth. The inspection included viewing the rooms surfaces (ceilings, walls, floors), accessible components of the heating, ventilation, and air-conditioning (HVAC) system and/or other potentially impacted surfaces (if accessible).

During the survey, some notable conditions that were observed included water-stains on ceilings and walls, the presence of some AMG on a pipe, and some rust on supply vents in two rooms. Since the HVAC was off in all areas of the building except for the main office, high humidity was noted throughout the building. The primary source or cause for the impacted water damage within the building appeared to be from roof and/or skylight leaks. A pipe within the small boiler room inside Penthouse #2 has AMG which appeared to be caused by a condensation on the pipe. No other exterior sources or causes of moisture (seepage through the window systems, foundation walls, grading issues, and clogged gutters/downspouts) were noted. No unusual odors were present within the building. Floor waxing was occurring within the school, and the that odor was present throughout.

Based on these results, AMA recommends that actions be taken to make any necessary corrections or repairs for the source or cause for the moisture in the noted areas and then remediate the impacted building components and surfaces of AMG under controlled conditions in accordance with Environmental Protection Agency (EPA), Occupational Safety and Health Administrations (OSHA), and other industry standards and guidelines.

TECHNICAL APPROACH & METHODOLOGIES

Technical Approach

The technical approach used for this microbial evaluation followed standard IAQ microbial evaluation protocols for the parameters included in the scope of work. The protocols and assessment criteria used to conduct the inspection and sampling were based on those established by the American Industrial Hygiene Association (AIHA); the American Conference of Governmental Industrial Hygienists (ACGIH); the New York City Department of Health “Guidelines on Assessment and Remediation of Fungi in Indoor Environments;” EPA’s “Mold Remediation in Schools and Commercial Buildings;” the ACGIH’s Bioaerosols, Assessment and Control; the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE); Institute of Inspection Cleaning and Restoration Certification (IICRC) “Standard and Reference Guide for Professional Mold Remediation S520;” OSHA’s “A Brief Guide to Mold in the Workplace,” and industry practices.

AMA conducted a visual inspection survey to identify areas and surfaces that may have been impacted by moisture and/or suspect mold growth as well as any other observable environmental conditions that may lead to poor IAQ. The preliminary work involved a visual inspection and temperature and relative humidity measurements.

Temperature and Relative Humidity

Measurements were made with a hygrometer that was calibrated in accordance with standard industrial hygiene protocols. ASHRAE recommends that indoor temperatures be maintained between 68°F and 76°F during the winter/transitional (spring) season and between 73°F and 79°F during the summer/transitional (fall) season with relative humidity (RH) levels between 30% and 60%. These values are considered the comfort zone i.e., acceptable ranges of

temperature and humidity for persons wearing typical summer clothing or typical winter clothing. These “comfort zones” assume that occupants are engaged in only light activity, such as what would be found in a typical office setting.

The ideal comfortable relative humidity range has been reported as 40% to 60%, as long as building materials or contents are not adversely affected. Low relative humidity can result in eye irritation and complaints of nose and throat discomfort. High humidity levels (consistently over 70% for long periods of time and with the right conditions) can promote the growth of microorganisms on building surfaces and furnishings, and cause or contribute to microbial IAQ problems.

Moisture Testing

Measurements for surface moisture were made with a GE Protimeter MMS Plus that was calibrated in accordance with standard industrial hygiene protocols. The use of the GE moisture meter complemented the visual inspection and facilitated identifying building materials that were still wet or damp. It is generally accepted that wet/damp building materials can provide a suitable environment for mold growth. The Protimeter pin meter measurement scale ranges from 0 – 16% normal/dry, 17% – 19% at risk, and 20% – 100% as wet.

OBSERVATIONS & TEST RESULTS

Observations

The results of the observations are presented in detail in the attached table. A visual inspection was conducted in all accessible areas. Areas of the inspection included walls, floors, ceilings and spaces above the ceiling. The building has a forced air HVAC system with a plenum return. Except for the main office area, the HVAC was turned off throughout the school.

All accessible areas were visually inspected and the following conditions were noted during the survey. The results obtained during this survey reflect conditions at the time of inspection, and may not reflect other conditions or time periods.

- 4 in² water stain on ceiling tile near skylight within Kindergarten Room 3126. Leak appears to be from the roof, and it is unknown if the leak is active. Ceiling tile was tested as dry with moisture meter.
- 2 in² water stain on ceiling tile within Health Room 225. Leak appears to be from the roof, and it is unknown if the leak is active. Ceiling tile was tested as dry with moisture meter.
- Surface rust on supply diffusers within Preschool Room 3129 and Computer Lab Room 3305.
- 1 water damaged ceiling tile and 100 ft² of water damaged drywall at skylight within Room 3135. Drywall was wet at the time of the inspection; therefore, the roof/skylight leak is active.

- 2 in² water stain on ceiling tile within the Media Office. Leak appears to be from the roof, and it is unknown if the leak is active. Ceiling tile was tested as dry with moisture meter.
- Water staining on various pipes within Mechanical Room #2. Some AMG on pipe insulation within small boiler room inside Mechanical Room #2 near ceiling.
- 4 ft² of water damaged drywall around skylight within 2nd Grade Room 3158. Leak appears to be from the roof/skylight, and it is unknown if the leak is active. Drywall was tested as dry with moisture meter.
- 2 ft² water stain on ceiling tile within Pod Storage near 2nd Grade. Leak appears to be from the roof, and it is unknown if the leak is active. Ceiling tile was tested as dry with moisture meter.
- 10 ft² water stain on ceiling tile and drywall wall within the Staff Lounge near the vending machines and 1 ft² water stain on ceiling tile within Planning Room #3. The leaks appear to be from the roof, and it is unknown if the leaks are active. Ceiling tile and drywall were tested as dry with moisture meter.

The temperature and relative humidity levels obtained during the survey were as follows:

Temperature	73.0 °F to 82.3 °F
Relative Humidity	56.0% to 77.5%

The temperatures were at or above the ASHRAE comfort zone of 73°F and 79°F during the summer/transitional (fall) season. RH levels were found to be mostly within the 60% range to 70%.

No unusual odors were observed within the building at the time of the survey. Waxing operations were underway and the wax odors were prevalent throughout the school.

CONCLUSIONS & RECOMMENDATIONS

Based on the results of the visual inspection within the building, conditions were observed that can promote growth on some building surfaces or building components. The following types of conditions were noted:

- Water-impacted surfaces (ceiling tiles, HVAC diffusers, drywall walls and ceilings, fiberglass pipe insulation). Except for condensation on a pipe within Mechanical Room #2, all water intrusion sources within the building appear to be from roof and/or skylight leaks.
- Relative humidity levels throughout the building were elevated since the HVAC system was turned off. No AMG was observed at the time of the inspection on building components outside of Mechanical Room #2.

It is AMA's opinion that the roof and skylight leaks need to be repaired within the building. At least one active leak exists within Room 3135 and has impacted a ceiling tile and drywall around the skylight. Mold growth was not observed on these components at the time of the inspection, but growth is likely if the leak is not fixed and the drywall is not removed and replaced in a

timely manner. Other roof and skylight leaks do not appear to be active as the building components tested dry, but the HCPSS should investigate these areas and confirm these leaks are not current. Within Mechanical Room #2, AMG exists on a small portion of fiberglass pipe insulation. This insulation should be remediated and the condensation/pipe leak should be fixed.

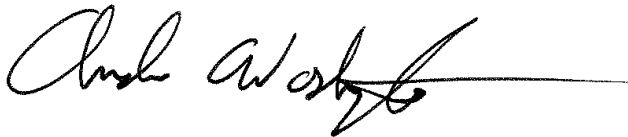
Based on the observations, it is recommended that the impacted and potentially impacted items/surfaces be remediated. All of the noted building components and building materials (pipe insulation, ceiling tiles, drywall will need to be remediated under controlled conditions in accordance with generally accepted industry practices, protocols, and methods.

The impacted ceiling tiles will need to be replaced; however, steps must be taken to correct or repair the source or cause for the leaks in each location before replacing the tiles.

No other recommendations are indicated at this time.

If there are any questions with regard to this report, or if we may be of further service, please feel free to call us at any time.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew Washington", with a long horizontal line extending to the right.

Andrew Washington, CIH
Project Manager

attachment

**Visual Assessment Table
Pointers Run Elementary School
Howard County Public School System
August 2017**

Room	Conditions	Temp (degrees F)	RH (%)
3324 Kindergarten 4	No observed IEQ concerns	73.0	77.5
3323 Kindergarten 3	No observed IEQ concerns	75.8	76.2
3325 Kindergarten	No observed IEQ concerns	74.7	72.5
3128 Preschool 1	No observed IEQ concerns	75.3	72.5
3127 Preschool	No observed IEQ concerns	75.2	72.2
3131 Therapy	No observed IEQ concerns	75.3	70.9
3129 Preschool 2	Small quantities of rust on diffuser, no other IEQ concerns	75.4	70.8
Speech	No observed IEQ concerns	76.0	68.2
3126 Kindergarten	~4 square inches of water stained ceiling tile, tile is dry	76.0	72.3
3125 Kindergarten	No observed IEQ concerns	76.3	72.3
225 Health	~2 square inches of water stained ceiling tile near bathroom wall, tile is dry	76.4	58.8
Main Office Suite	No observed IEQ concerns	74.2	59.3
3133 1 st Grade	No observed IEQ concerns	75.5	72.1
3134 1 st Grade	No observed IEQ concerns	76.6	77.3
3137 1 st Grade Project Room	No observed IEQ concerns	76.4	72.1
3135 1 st Grade	1 water damaged ceiling tile, drywall ceiling at skylight window is water damaged and wet (~100 square feet)	76.8	72.1

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Room	Conditions	Temp (degrees F)	RH (%)
3136 1s Grade	No observed IEQ concerns	76.8	71.0
3300 Media Lab	~2 square inches water stained ceiling tile, in media office, tile is dry	77.1	65.1
West Corridor Women's Bathroom	No observed IEQ concerns	77.1	67.6
West Corridor Men's Bathroom	No observed IEQ concerns	77.2	64.3
Pod Storage	No observed IEQ concerns	77.4	64.6
Parent Volunteer Room	No observed IEQ concerns	77.1	63.9
Pod Storage	No observed IEQ concerns	77.4	67.0
West Corridor North Men's Bathroom	No observed IEQ concerns	77.7	66.0
West Corridor North Women's Bathroom	No observed IEQ concerns	77.7	65.8
Building Storage	No observed IEQ concerns	77.6	67.8
Mechanical Room 2 Penthouse	Minor water staining on pipes within boiler, possible mold growth on one pipe	78.4	78.2
Northside East-West Hallway Women's Bathroom	No observed IEQ concerns	78.5	67.1
Northside East-West Hallway Men's Bathroom	No observed IEQ concerns	78.2	66.8
Pod Storage	No observed IEQ concerns	78.5	66.4
Northside East-West Hallway	No observed IEQ concerns	78.6	66.2
3154 Classroom 2	No observed IEQ concerns	78.3	67.6

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Room	Conditions	Temp (degrees F)	RH (%)
3155 2 nd Grade	No observed IEQ concerns	77.9	78.1
3156 2 nd Grade	No observed IEQ concerns	77.8	69.3
2 nd Grade Work Room	No observed IEQ concerns	77.9	70.1
3153 2 nd Grade	No observed IEQ concerns	77.7	71.4
3158 2 nd Grade	~4 Square Feet of water damage at drywall ceiling around skylight, ceiling is dry	77.6	73.1
East North-South Hall Men's Bathroom	No observed IEQ concerns	77.6	68.5
East North-South Hall Women's Bathroom	No observed IEQ concerns	77.8	68.5
Pod Storage	~2 Square Feet water damage stain on ceiling tile, tile is dry	77.9	71.3
3160 Art	No observed IEQ concerns	78.0	67.8
3161	No observed IEQ concerns	78.4	73.1
Art Storage	No observed IEQ concerns	78.8	71.3
3162	No observed IEQ concerns	79.3	64.9
3163	No observed IEQ concerns	79.2	66.1
1 st Grade Work Room	No observed IEQ concerns	78.8	67.1
3164	No observed IEQ concerns	78.9	68.9
3165	No observed IEQ concerns	78.6	65.6

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Room	Conditions	Temp (degrees F)	RH (%)
1 st Grade Men's Restroom	No observed IEQ concerns	78.6	67.4
1 st Grade Women's Restroom	No observed IEQ concerns	78.2	66.8
Pod Storage	No observed IEQ concerns	78.4	67.1
Staff Lounge	~10 Square feet of water damaged ceiling tile and wall above vending machines, 1 Square foot of water damaged ceiling tile in Planning Room 3, Both areas are currently dry	77.0	59.0
3123 Music Room	No observed IEQ concerns	75.8	56.1
Room 233 Guidance	No observed IEQ concerns	75.7	56.0
Music Men's Bathroom	No observed IEQ concerns	76.5	67.4
Music Women's Bathroom	No observed IEQ concerns	76.2	68.2
Penthouse #1	No observed IEQ concerns	77.2	72.4
Gym	No observed IEQ concerns	77.8	66.2
Boiler Room	No observed IEQ concerns	82.3	61.6
Service Hall/Rooms	No observed IEQ concerns	80.1	62.2
Cafeteria/ Kitchen	No observed IEQ concerns	79.6	64.3
Main Corridor/ Entrance	No observed IEQ concerns	79.8	60.1
3303 Room 7	No observed IEQ concerns	76.1	66.1

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Room	Conditions	Temp (degrees F)	RH (%)
3304 Room 4	No observed IEQ concerns	75.9	69.2
3302 Room 8	No observed IEQ concerns	76.0	68.6
3305 Computer Lab	Rust on supply diffuser, no other IEQ concerns	75.9	66.2
3301 Room 9	No observed IEQ concerns	76.3	69.8
Women's Bathroom Room 10	No observed IEQ concerns	76.2	66.3
Janitor's Closet Room 13	No observed IEQ concerns	76.4	64.8
Men's Bathroom Room 11	No observed IEQ concerns	76.6	65.8
3310 Room 14	No observed IEQ concerns	76.4	66.1
3309 Room 15	No observed IEQ concerns	76.2	68.3
3308 Room 16	No observed IEQ concerns	76.1	68.5
3307 Room 19	No observed IEQ concerns	76.2	69.0
3306 Room 20	No observed IEQ concerns	76.2	67.8
3149	No observed IEQ concerns	76.1	63.5
3150	No observed IEQ concerns	76.3	63.3
3151 Men's Bathroom	No observed IEQ concerns	76.1	63.6
3148 Rohnick Room	No observed IEQ concerns	76.1	63.1

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Room	Conditions	Temp (degrees F)	RH (%)
Project Room/ Book Closet	No observed IEQ concerns	76.0	63.2
Gibbon's Closet	No observed IEQ concerns	76.2	60.4
3153 Classroom 1	No observed IEQ concerns	76.1	62.9
3146 Fallon Room	No observed IEQ concerns	76.2	63.2
3145 Noon Room	No observed IEQ concerns	76.1	63.7
Project Room	No observed IEQ concerns	76.0	64.7
3144 Brown Room	No observed IEQ concerns	75.9	65.1
3143 Cooney Room	No observed IEQ concerns	75.6	64.4
3139 Seminar Room	No observed IEQ concerns	75.6	62.4
Speech Room	No observed IEQ concerns	75.5	63.2
3141 Art Room	No observed IEQ concerns	75.5	64.6
3140	No observed IEQ concerns	75.4	66.8