Air Quality Management Services, Inc.

"Discovering Solutions for Healthier Living"

March 19th, 2019

Siemens
c/o David Anthony
66 Mussey Road
Scarborough, Maine 04074

Re: Mold sampling at Lawrence Junior High School, located at 7 School Street in Fairfield, Maine.

AQM Project #: 19-151

Air Quality Management Services, Inc. (AQM) conducted mold sampling at your request on March 11th, at the above location (Junior High Gym only), to characterize airborne and surface mold levels.

I. Background

Sampling requested as an indirect test of the HVAC system and associated ducts. It was reported that water impact reportedly occurred to the air-supply ducts located at the gym ceiling. It was thought that there no practical way to directly sample the ducts, and therefore general area-sampling was requested. Prior to sampling, Client ensured that the HVAC system was operating at 100% capacity and that outdoor air exchange was set at 0%. Note: AQM was not asked to perform a full mold assessment of the Junior High Gym or an assessment of the water-damage event that impacted the HVAC system.

II. Testing

Air samples: Air samples were collected using a high-volume sampling pump and Air-O-Cell media (Spore-Trap) cassettes. Samples were collected in representative locations to determine airborne particle and fungal burdens. Samples were collected at 15 liters per minute flow rate for either 5 or 10 minutes. An ambient outdoor sample was collected as a comparative reference.

Surface samples: Tape lift samples were collected from representative surfaces to evaluate mold growth and/or settled spores / dust. Samples were collected using special microscope slides fitted with clear tape tabs.

Samples for mold analysis were submitted to Micro Diagnostic Services in Lewiston, Maine.

Temperature / Relative Humidity: Area temperature and relative humidity were determined using an EXTECH RH300 combination meter.

Moisture Readings: Moisture content of building materials (if applicable) was measured using a Delmhorst "MoistureCheck" meter in either scanning or penetration mode.

III. Observations (see photos for examples and more details)

- At the time of sampling, active construction was occurring in the Junior High Gym. It was reported to AQM that water had impacted the floor system and that most of the flooring had been removed and was in the process of being replaced. Some flooring under the bleachers reportedly had not yet been removed (and had reportedly been impacted by the water-damage event).
- Abundant dust was observed on surfaces in the Gym. Much of it likely was related to the installation of the flooring. AQM's area-dust samples were collected from the new flooring surface to represent recently settled dust and mold spores. Abundant dust was also visible under the bleachers, and was more consistent with chronic dust accumulation.

IV. Results

Temperature and Relative Humidity

Area	Temp (°F)	%RH	GPP Moisture
Junior High Gym	70.7	21.7	ND

Temp = Temperature; %RH = Relative Humidity (%); GPP Moisture = Grains per Pound moisture content of air (higher values indicate greater amounts of water in the air); ND = Not Determined

Moisture Readings (not applicable or not determined if no entry below)

Area	Location	Material	Moisture Elevated
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Area Characterization of Fungal Presence, per IICRC S520 Standard (1)

Condition-1 Areas: None Known
Condition-2 Areas: Junior High Gym
Condition-3 Areas: None Known

See Photos and Lab Results for basis of characterization, and Definitions Section for Area Characterization Notes
(1) ANSI/IICRC S520/R520 Standard and Reference Guide for Professional Mold Remediation - Third Edition: 2015, The Institute of Inspection, Cleaning and Restoration Certification, www.iicrc.org

IV. Results (Continued)

Airborne Mold Sampling (refer to lab report for full details)

Air sample results are summarized as follows:

Sample #	Location	Comments	Overall Airborne Mold Level (1)	Mold Type(s) of Concern / Amplified Mold (2)
A1	Outdoors	Comparative Air Sample	Trace	Not Applicable
A2	Gym Front	None	Low / Moderate	Aspergillus/Penicillium-like, Low / Moderate
A3	Gym Back	None	Low / Moderate	Aspergillus/Penicillium-like, Low

(1) Based on AQM experience
(2) Based on industry consensus and AQM experience. Note that for Aspergillus/Penicillium-like spores, a common spore that is also commonly involved in air quality issues, the typical outdoor level in Maine through much of the warmer months is 200 to 300 counts per cubic meter of air (though wide variations can occur). This common outdoor level may be considered when viewing these spores in terms of occupant exposure or presence of significant elevation, regardless of outdoor levels at the time of sampling.

Results for indoor air samples identified low to moderate elevations of Aspergillus/Penicillium-like spores in the Junior High Gym. Based on the general nature of these samples, it is unclear as to the likely source(s). These could include a contaminated HVAC system, mold growth related to the reported water damage (from growth within or under the flooring), from chronic, accumulated dust and humidity-related mold or to issues in other areas of the building. Also note that airborne spore levels may have been artificially high at the time of sampling, due to the construction activity.

Note: prior to completing this report, Client reported to AQM that direct testing had in fact been conducted on the HVAC system / ducts, and it was determined that they were not contaminated.

Surface Mold Sampling (refer to lab report for full details)

Surface sample results are summarized as follows:

Sample #	Location	Comments	Mold Type(s) Present at Excess Level (1) or Mold Type(s) of Concern (2)
T1	Area Dust, Gym Front	Dusty Surfaces	None
T2	Area Dust, Gym Back	Dusty Surfaces	None

(1) Based on AQM experience and/or industry consensus; represents mold growth unless stated otherwise
(2) Spore types strongly correlated with water damage and/or air quality concerns, based on scientific literature and/or industry consensus

Results for surface samples, collected in representative locations to assess settled mold spores, identified only trace levels of common, outdoor-type mold spores. No evidence of mold growth or spores of concern based on these results.

V. Recommendations

- No recommendations are warranted for direct-testing of the HVAC system and ducts, as it was reported to AQM that this testing had already occurred and ducts were not contaminated with mold growth. Note, however, that cleaning may required based on the results in this report, and any further assessment of the area (see below).
- Further assessment of the Gym and adjoining areas is recommended to determine likely source(s) of mold spores and to determine if areas outside of the Gym have been affected.

VI. Definitions:

- ***Finished System*** includes the underlying wall / ceiling insulations and appropriate vapor barriers.
- ***Detail Cleaning*** involves HEPA vacuuming and damp wiping with a mild detergent (including hard-to-reach areas / inside / underside / behind furniture and other objects).
- ***Clean / Treat*** involves the application of an appropriate cleaning / treatment system. Surfaces should be thoroughly cleaned including damp / wet cleaning and wiping of surfaces; use cleaning / scrubbing method with appropriate abrasiveness based on characteristics of the material surfaces as well as types and extent of mold growth. Application of any coating must be light; encapsulation is unacceptable unless done after post-remediation testing. There should never be any visible mold, demolition debris, dust, paper or insulation fragments, etc. remaining on surfaces after Clean / Treatment actions.

Area Characterization Notes (According to the IICRC S520 Standard):

A "**Condition 1**" environment contains what would be considered normal background amounts of fungal spores and fragments, as well as trace amounts of fungal growth. Normal housekeeping and cleaning procedures can keep a Condition 1 environment under control. Most residential homes and commercial office space would be considered Condition 1.

A "**Condition 2**" environment is associated with an area that has a limited amount of fungal growth present. Condition 2 environments are also associated with areas adjacent to heavy contamination that may contain elevated levels of spores or fungal fragments generated by the adjacent contamination. Condition 2 environments also may contain a limited amount of porous materials and can usually be returned to Condition 1 by diligent cleaning and thorough drying.

"**Condition 3**" environments contain heavy mold growth and usually are associated with persistent moisture or water intrusions. Condition 3 environments often contain hidden mold growth, due to water damage being present in closed areas such as wall cavities.

The overall goal of mold remediation as presented in IICRC S520 Standard is to return the area to a Condition 1. This means that trace amounts of mold may still be present, but the type and amount of mold is consistent with measurements made outdoors or in an adjacent indoor area that is free from amplified levels of mold.

AQM appreciates this opportunity to have aided in this project. In the event you have questions or require further assistance, please do not hesitate to contact us.

Sincerely,

Nick Ferrala

Nick Ferrala, BA, CIEC
Industrial Hygienist, Microbiologist