

INDOOR AIR QUALITY ASSESSMENT

**Green Meadow Elementary School
5 Tiger Drive
Maynard, MA**



Prepared by:
Massachusetts Department of Public Health
Bureau of Environmental Health
Indoor Air Quality Program
September 2018

Background

Building:	Green Meadow Elementary School (GME)
Address:	5 Tiger Drive, Maynard, MA
Assessment Requested by:	Aaron Miklosko, Director of Public Works, Town of Maynard
Reason for Request:	Concerns regarding water damage, mold and health as well as general indoor air quality (IAQ)
Date of Assessment:	September 12, 2018
Massachusetts Department of Public Health/Bureau of Environmental Health (MDPH/BEH) Staff Conducting Assessment:	Ruth Alfasso, Environmental Engineering/Inspector, IAQ Program
Date of Building Construction/Description:	The GME is a brick and cinderblock school with a single story. The original wing was constructed in the 1950s and has a flat roof. An addition with peaked shingled roofs was constructed in the 1980s.
Building Population:	Approximately 535 students in grades pre-K through 3 rd grade with a staff of approximately 75
Windows:	Openable

IAQ Testing Results

Please refer to the IAQ Manual for methods, sampling procedures, and interpretation of results (MDPH, 2015). The following is a summary of indoor air testing results (Table 1).

- **Carbon dioxide levels** were below the MDPH guideline of 800 parts per million (ppm) in the majority of areas tested, indicating adequate air exchange in most areas of the building. As shown in Table 1, many classrooms had low occupancy and windows or doors open which can reduce carbon dioxide levels.
- **Temperature** was within the recommended range of 70°F to 78°F in most areas the day of assessment with a few slightly above which is reflective of outdoor conditions.
- **Relative humidity** was above the recommended range of 40 to 60% in all but one area tested, which is reflective of high outdoor humidity and rain during the assessment.

- **Carbon monoxide** levels were non-detectable in all areas tested.
- **Fine particulate matter (PM_{2.5})** concentrations measured were below the National Ambient Air Quality (NAAQS) limit of 35 µg/m³ in all areas tested.

Ventilation

A heating, ventilating and air conditioning (HVAC) system has several functions. First it provides heating and, if equipped, cooling. Second, it is a source of fresh air. Finally, an HVAC system will dilute and remove normally-occurring indoor environmental pollutants by not only introducing fresh air, but by filtering the airstream and ejecting stale air to the outdoors via exhaust ventilation. Even if an HVAC system is operating as designed, point sources of respiratory irritation may exist and cause symptoms in sensitive individuals.

Mechanical ventilation is provided by univents located near the windows of classrooms (“univents”, Picture 1), or, in some cases, above the ceiling. Univents draw air from the outdoors through a fresh air intake located on the exterior wall of the building (Picture 2) and return air through an air intake located at the base of the unit. Fresh and return air are mixed, filtered, heated or cooled and provided to rooms through an air diffuser located in the top of the unit (Figure 1). In many areas items were on top or in front of univents (Pictures 1 and 3; Table 1), which can block air circulation.

Exhaust vents are located along interior walls of classrooms, with some in closets (Picture 4); they are ducted to fans on the roof. Some exhaust vents were not working at the time of the assessment. In some cases, these vents are operated when a switch on the wall is turned on; some were found turned off; and others did not activate fan motors. As shown in Picture 4, some of the exhaust vents in closets were blocked with items which can reduce their effectiveness.

Of note, is that the main office area is not currently served by any fresh air ventilation. Fresh air is supplied through either open windows or window air conditioners in an exterior-facing office. Heating is provided by a radiator. Doors are left open to the office suite area to supply fresh air, heating and cooling to the rest of the office. The nurse’s office has a restroom with an exhaust vent which is the only source of stale air removal. This configuration makes controlling temperature and supplying fresh air to the office area difficult.

Building maintenance staff reported that univents and other ventilation equipment are also connected to a centralized computer system which can remotely control on/off timing and fresh air vent dampers. It is recommended that fresh air ventilation and exhaust be on whenever the building is occupied.

Window air conditioners (WAC) were found in some classrooms and offices with some in use due to the warm humid weather during this assessment. It was reported that these units are also interlocked with operation of univents, so that univents are turned off during WAC operation to prevent overloading the system with warm humid outside air. While the use of the WAC can provide for more comfortable temperature and humidity, a WAC can only provide a small amount of outside air in comparison to the univents, so the need for fresh air should be balanced with the need for temperature control in deciding when to operate the WAC. Note, however, that one classroom had a window open while the WAC was in operation. The use of air conditioning with windows open while also bringing in warm, humid air will not achieve temperature control and dehumidification as desired, and can lead to surfaces becoming covered with condensation if chilled by the WAC.

In order to have proper ventilation with a mechanical supply and exhaust system, these systems must be balanced to provide an adequate amount of fresh air while removing stale air from a room. It is recommended that existing ventilation systems be re-balanced every five years to ensure adequate air systems function (SMACNA, 1994). It is unknown the last time these systems were balanced. Increased relative humidity can cause heat discomfort.

When relative humidity increases, the ability of moisture to evaporate from skin decreases, preventing heat loss and increasing an individual's discomfort. The heat index is a description of how hot a person feels as temperature in combination with relative humidity rises. Humidity levels above the DPH recommended range can feel muggy and lead to increased temperature complaints. The guidance document "Methods for Increasing Comfort in Non-Air-Conditioned Schools" provides strategies for dealing with these conditions; it is included as Appendix A.

Prolonged periods of elevated humidity can also lead to condensation on building materials, water damage, and microbial growth. The guidance document "Guidance Concerning Remediation and Prevention of Mold Growth and Water Damage in Public Schools/Buildings to

Maintain Air Quality” describes strategies that can be used to reduce the impact of these conditions and remediate any damage; this is included as Appendix B.

Microbial/Moisture Concerns

Water-damaged ceiling tiles and other ceiling materials were observed in classrooms, offices and other areas (Pictures 5-7; Table 1). A few ceiling tiles had dark stains that may indicate mold growth. Water-damaged ceiling tiles should be replaced, with priority given to those with evidence of mold growth. Some tiles in the school are of an interlocking type (spline) that are difficult to replace.

Most stained tiles are from roof leaks. Building maintenance staff reported that a section of the flat roof on the original wing was patched within the last two years and this has reduced the leaking in that section of the building. SMS staff report that the shingles on the newer section of the roof peak are reaching the end of their service life. Gutters and downspouts were damaged and leaking (Picture 8 and 9) in some areas, likely due to ice-related damage in previous winters. Damage to gutters can increase the likelihood of leaking along the building edges when water builds up and does not drain. When water drains close to the building from leaking gutters, this can lead to damage and potential water infiltration along the foundation.

The area above the ceiling tile system was examined in classroom 7B. Note that the area above the ceiling tile system in most parts of the school is a wide open space (Pictures 10 and 11). This allows any moistened tiles to dry quickly most of the time, with less chance of any microbial growth. In the room examined, near the outside edge of the building where there are soffit vents, there is some insulation. This insulation was dry at the time of the visit. When any stained ceiling tiles are removed for replacement, the area above should be examined for odors, water-damaged materials, insulation and other conditions and remediated as necessary.

Mold growth was observed on the refrigerator gasket in the teacher’s lunch room (Picture 12). Refrigerators should be cleaned on a regular schedule, including disinfection of gaskets and the interior with an antimicrobial solution. Mold growth on gaskets can be an indication that the gaskets are too worn to seal properly and should be replaced.

A water-damaged upholstered chair was also noted in the teacher’s lunchroom (Picture 13). Any items which have been water-damaged and not dried promptly, or that show signs of microbial growth such as moldy odors should be discarded. In general, the US Environmental

Protection Agency (US EPA) and the American Conference of Governmental Industrial Hygienists (ACGIH) recommends that porous materials (e.g., wallboard, carpeting) be dried with fans and heating within 24 to 48 hours of becoming wet (US EPA, 2008; ACGIH, 1989). If porous materials are not dried within this time frame, mold growth may occur.

Many classrooms had sinks. In some rooms, the sink backsplashes had a gap which can allow water into the porous material underneath (Table 1). This can lead to water damage and mold growth. Some sinks also had plumbing leaks, which should be repaired. Many sinks also had a significant amount of items stored underneath, which makes it difficult to detect leaks (Picture 14). Porous items (paper, cardboard) should not be stored underneath sinks as it is a moist environment.

Indoor plants were observed in a few areas (Table 1). Plants can be a source of pollen and mold, which can be respiratory irritants to some individuals. Plants should be properly maintained and equipped with drip pans and should be located away from air diffusers to prevent the aerosolization of dirt, pollen and mold.

Other IAQ Evaluations

Exposure to low levels of total VOCs (TVOCs) may produce eye, nose, throat, and/or respiratory irritation in some sensitive individuals. To determine if VOCs were present, BEH/IAQ staff examined rooms for products containing VOCs. BEH/IAQ staff noted hand sanitizers, cleaners/spray bottles, and dry erase materials in use (Table 1). All of these products have the potential to be irritants to the eyes, nose, throat, and respiratory system of sensitive individuals. In addition, spray bottles/cleaning products should be kept out of reach of children.

Many classrooms had personal or stand fans to provide circulation. Some of these had dusty blades/housing (Picture 15, Table 1). Some exhaust vent louvers were also observed to be dusty. This dust can be reaerosolized when the equipment is activated. Univent cabinet diffusers also had debris inside (Picture 16) which can be a source of odors, especially when heated. Note that univents are equipped with filters, which should be changed on a regular schedule, two to four times a year. Filters are reportedly changed three times a year (Picture 17). This type of filter, however, does not provide much filtration. It is recommended that pleated filters with a minimum efficiency rating value (MERV) of 8. However, with the age of the univents, they may not be able to operate with higher efficiency filters.

Window air conditioners were also dusty in some places (Picture 18). Furthermore, these units have filters which need to be cleaned regularly.

In many areas, items, including books, papers, toys and decorative items were observed on floors, windowsills, tabletops, counters, bookcases, and desks. These items can make it difficult for custodial staff to clean. It is particularly important that porous items, including boxes, papers, books and toys, be kept off the floor and away from areas that may become damp from condensation or leaks. Organic items, such as science demonstrations (Picture 19) can be a source of mold, allergens and odors, and should be carefully vetted before being brought into classrooms or removed entirely.

Most classrooms had area rugs. Carpeting should be cleaned annually or semi-annually in soiled high traffic areas as per the recommendations of the Institute of Inspection, Cleaning and Restoration Certification (IICRC, 2012). If carpeting has been exposed to water from leaks or condensation, they should be carefully examined, particularly on the underside, for any signs of mold growth. Some area rugs appeared soiled and should be discarded when too worn out or soiled to be cleaned.

Note that the Environmental Protection Agency (EPA) conducted a National School Radon Survey in which it discovered nearly one in five schools had "...at least one frequently occupied ground contact room with short-term radon levels above 4 [picocuries per liter] pCi/L" (US EPA 1993). The BEH/IAQ Program therefore recommends that every school be tested for radon, and that this testing be conducted during the heating season while school is in session in a manner consistent with USEPA radon testing guidelines. Radon measurement specialists and other information can be found at www.nrsb.org and <http://aarst-nrpp.com/wp>, with additional information at: <http://www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/exposure-topics/iaq/radon>.

Conclusions/Recommendations

The following recommendations are made to assist in improving IAQ:

1. Operate univents equipment *continuously* during occupied periods. Remove all obstructions from the front and top of the univents.
2. Work with staff to monitor/adjust computerized HVAC system for fresh air intake/comfort.

3. Use openable windows to supplement fresh air during temperate weather. Ensure all windows are tightly closed at the end of the day.
4. Ensure all exhaust vents are operable and switched on during occupied periods. Reduce clutter near closet-mounted vents to ensure air flow.
5. Consider adopting a balancing schedule of every 5 years for all mechanical ventilation systems, as recommended by ventilation industrial standards (SMACNA, 1994).
6. If possible, consult an engineering firm to provide fresh air supply and exhaust to the main office area.
7. Use the information in “Methods for Increasing Comfort in Non-Air-Conditioned Schools” (Appendix A) and “Guidance Concerning Remediation and Prevention of Mold Growth and Water Damage in Public Schools/Buildings to Maintain Air Quality” (B) to assist with hot humid conditions to maintain comfort and air quality.
8. For buildings in New England, periods of low relative humidity during the winter are often unavoidable. Therefore, scrupulous cleaning practices should be adopted to minimize common indoor air contaminants whose irritant effects can be enhanced when the relative humidity is low. To control dusts, a high efficiency particulate arrestance (HEPA) filter equipped vacuum cleaner in conjunction with wet wiping of all surfaces is recommended. Avoid the use of feather dusters. Drinking water during the day can help ease some symptoms associated with a dry environment (throat and sinus irritations).
9. Ensure that procedures are in place for occupants to report leaks, wet tiles, and other maintenance conditions so that they can be logged and dried/repared promptly.
10. Replace any water-damaged ceiling tiles and wall materials. During replacement, examine the area above these tiles for mold growth and odors and remediate as necessary.
11. Ensure the ceiling tile system is intact/complete to prevent odors and particulates from migrating into occupancies spaces.
12. Repair gutters, downspouts and related drainage to remove water away from the building.
13. Consider a long-term plan for roof repairs to reduce leaking.
14. Clean and disinfect interior of refrigerators and freezers with mild detergent or antimicrobial agent. Consider replacing poorly-sealed or mold-contaminated gaskets. Clean spilled food promptly, and clean out the refrigerator of expired items on a regular schedule.

15. Remediate or discard any other water-damaged porous materials such as upholstered furniture, carpeting, papers and other items.
16. Repair any leaking plumbing in sinks. Avoid storing large amounts of materials or porous materials under sinks.
17. Properly maintain plants, including drip pans, to prevent water damage to porous materials. Plants should also be located away from air diffusers to prevent the aerosolization of dirt, pollen, and mold.
18. Reduce use of products and equipment that create VOCs (e.g., air fresheners).
19. Keep spray bottles/cleaning products out of reach of children (e.g., in cabinets over sinks).
20. Continue to change filters for HVAC equipment 2-4 times a year. The MDPH recommends using pleated filters of Minimum Efficiency Reporting Value (MERV) of 8, which are adequate in filtering out pollen and mold spores (ASHRAE, 2012). Consult with an engineer to determine if current ventilating equipment can be used with more effective filters.
21. Regularly clean AHU cabinets, supply/return/exhaust vents, WAC housings and filters, and personal fans to avoid aerosolizing accumulated particulate matter.
22. Consider reducing the amount of items stored in classrooms to make cleaning easier. Periodically move items to clean flat surfaces. Store materials in plastic totes for ease of movement and protection from water, dust and pests.
23. Examine items brought into classrooms, including books, toys, and particularly organic items for science demonstrations, for any sign of water damage, mold, odors or allergens. Discard any suspect items.
24. Clean area rugs annually (or semi-annually in soiled high traffic areas) as per the recommendations of the Institute of Inspection, Cleaning and Restoration Certification (IICRC).
25. The school should be tested for radon by a certified radon measurement specialist during the heating season when school is in session. Radon measurement specialists and other information can be found at: www.nrsb.org, and <http://aarst-nrpp.com/wp>.

26. Consider adopting the US EPA (2000) document, “Tools for Schools”, as an instrument for maintaining a good IAQ environment in the building available at:
<http://www.epa.gov/iaq/schools/index.html>.
27. Refer to resource manual and other related IAQ documents located on the MDPH’s website for further building-wide evaluations and advice on maintaining public buildings. These documents are available at: <http://mass.gov/dph/iaq>.

References

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- US EPA. 2008. Mold Remediation in Schools and Commercial Buildings. US Environmental Protection Agency, Office of Air and Radiation, Indoor Environments Division, Washington, D.C. EPA 402-K-01-001. <http://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>.

Picture 1



Classroom unit ventilator (univent), note obstructions in front

Picture 2



Fresh air intake for univent, note that louvers are dusty

Picture 3



Univent with return vent along the bottom obstructed

Picture 4



Closet-mounted exhaust vent, note materials obstructing flow

Picture 5



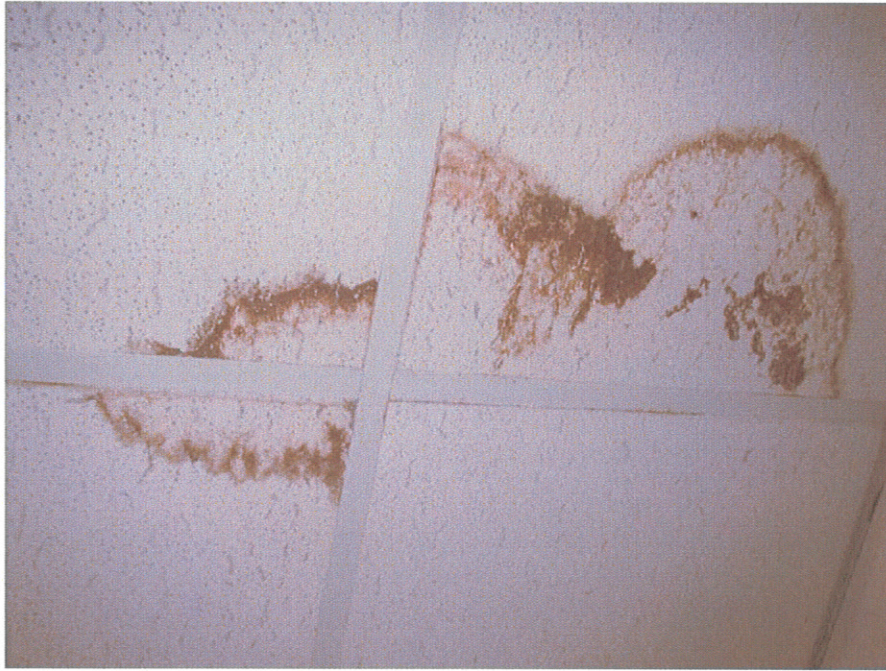
Water-damaged ceiling tiles of the interlocking type

Picture 6



Water-damaged ceiling tile with dark stain suggesting mold growth

Picture 7



Water-damaged ceiling tiles

Picture 8



Damaged gutter

Picture 9



Water running over edge of gutter, note puddle near foundation

Picture 10



Air space between ceiling tiles and roof deck

Picture 11



Area above ceiling tile system showing insulation along the outer edge, which was dry

Picture 12



Mold-stained gasket in teachers' lunchroom

Picture 13



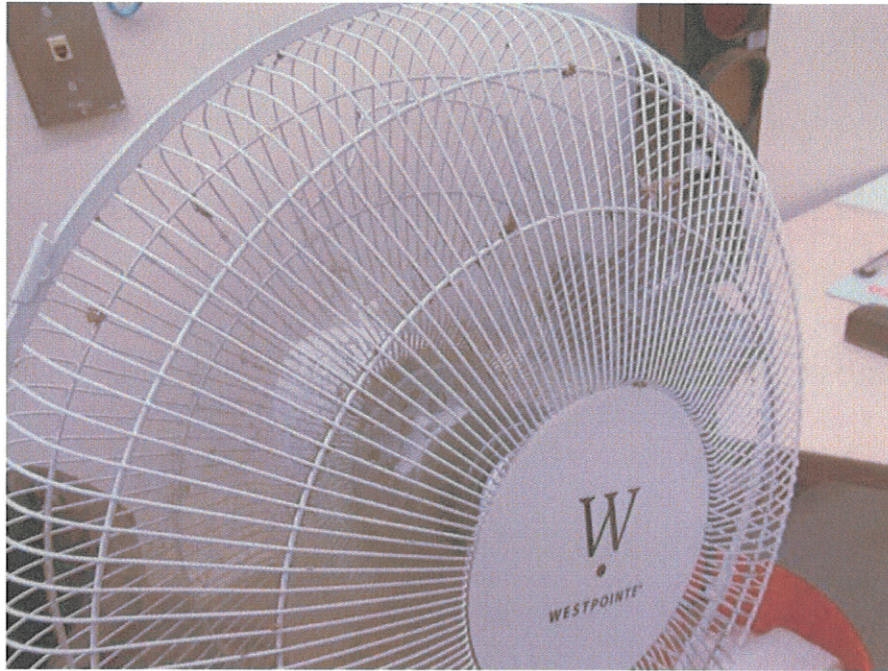
Water stains on upholstered chair

Picture 14



Significant amounts of porous items under a classroom sink

Picture 15



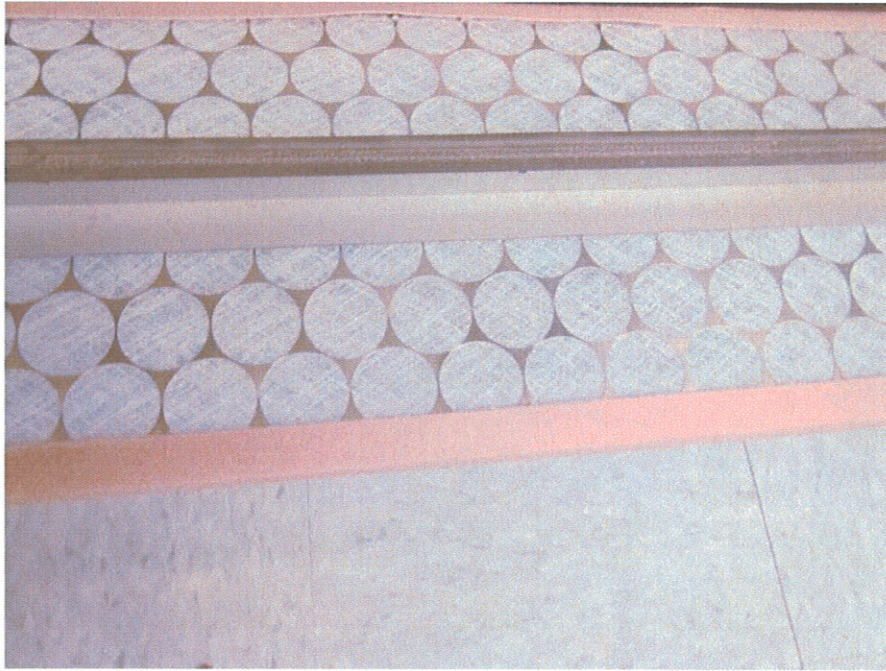
Dusty fan

Picture 16



Debris in univent diffuser

Picture 17



Filter in classroom univent

Picture 18



Window air conditioner housing and filter are dusty

Picture 19



Science item (wasp nest) in classroom

Table 1

Location	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temp (°F)	Relative Humidity (%)	PM2.5 (µg/m³)	Occupants in Room	Windows Openable	Ventilation		Remarks
								Supply	Exhaust	
Background	467	ND	71	82	5					Steady rain, high of 82°F later in the day
7B	796	ND	75	81	5	15	Y	Y on	Y off	
Coppola	1348	ND	76	74	10	16	Y	Y off	Y off	
9	980	ND	76	75	6	19	Y	Y	Y on	
Wallace	1378	ND	77	77	7	20	Y	Y	Y off	
Mazeika	679	ND	76	73	3	1	Y	Y on	Y on	
Galdamez	711	ND	76	75	3	25	Y	Y on	Y off	
Excel Kindergarten		ND	74	74	3	2	Y 1 open	Y on	Y	WAC dusty, area rugs, lots of items in storage
Teacher Resource Room/Duclos Library	521	ND	75	74	3	0		Y on	Y	
Megan	1046	ND	75	66	9	0	Y	Y on		

ppm = parts per million
 µg/m³ = micrograms per cubic meter
 ND = non detect

CP = cleaning product
 CT = ceiling tile
 DEM = dry erase materials

HS = hand sanitizer
 MT = missing tile
 PF = personal fan

TB = tennis balls
 WAC = window air conditioner
 WD = water-damaged

Comfort Guidelines

Carbon Dioxide: < 800 ppm = preferred
 > 800 ppm = indicative of ventilation problems

Temperature: 70 - 78 °F
 Relative Humidity: 40 - 60%

Table 1

Location	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temp (°F)	Relative Humidity (%)	PM2.5 (µg/m ³)	Occupants in Room	Windows Openable	Ventilation		Remarks
								Supply	Exhaust	
Mooradian	752	ND	76	76	4	11	Y	Y on		
K3	774	ND		76	15	15	Y (1 open)	Y off	Y	
K4	565							Y on	Y	
K5	560	ND	75	78	12	20	Y	Y on		Area rug, DEM, restroom with exhaust, HS, WAC on, bowed CT
OT/PT	991	ND	75	75	2	3	Y	Y on	Y	Higher ceiling, HS, mats and foam and beanbag chairs
Mr. Thomas	1393	ND	76	74	4	15	Y	Y off	Y	PF dusty, backslash gap, area rug, DEM, CP
6A Mrs. McPhail	743	ND	75	58	3	21	Y	Y off	Y	WAC on, a few TBs, DEM, stain on plaster/painted ceiling
5C		ND	76	75	2	18	Y	Y on	Y	WAC, area rugs
Mr. Mehigan	549	ND	76	76	3	20	Y	Y on	Y	Area rugs, books on UV, DEM, DO

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								Supply	Exhaust	
Mrs. Tretheway	581	ND	76	74	3	0	Y	Y on	Y	Area rug
5E	550	ND	76	74	3	0	N	Y	Y	Office, now vacant, WD CT
5A	764	ND	75	75	5	9	Y 1 open	Y on	Y	Area rug, stand fan
4B Computers	694	ND	73	73	3	0	N, but door to outside	Y off		DEM, area rug, dusty PF
4E office	694	ND	72	72	4	1	N	Y	Y	DEM, PF
Mrs. Toss	565	ND	74	74		0	Y	Y on	Y	Area rug, DEM, HS, PF
Mrs. Lewis	581	ND	76	74	3	0	Y 2 open	Y	Y	HS, CP, DEM
4C	555	ND	77	74	5	0	Y	Y on	Y	PF on, area rug, backsplash gap, DEM
3B	665	ND	77	74	3	22	Y 2 open	Y	Y	Area rug, clutter in closet, HS, paper art items
3A	635	ND	77	75	4	22	Y	Y on	Y	Area rug, DEM

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								Supply	Exhaust	
3 office	531	ND	76	72	3	2	Y	Y off	Y	DEM
Girls RR						0	Y	Y	Y on	Cleaner odor
3D	453	ND	76	73	2	2	N	Y on	Y	Area rug
Boys RR						0	Y 1 open	Y	Y on	
Miss Mara	649	ND	77	73	3	1	Y 1 open	Y on	Y	Area rug, DEM, PF, HS
2E office	570	ND	78	69	4	0	N	Y	Y	PF on, DEM
2A	572	ND	77	70	3	5	Y 2 open	Y on	Y	PF, DEM, area rug, HS
2C	524	ND	77	72	3	0	Y	Y on	Y	DEM, WAC – filter and unit dusty, area rug
2D	502	ND	76	72	3	0	Y 1 open	Y	Y	Area rug
1B	625	ND	76	67	3	1	Y 1 open	Y on	Y	WAC on (with window open), DEM, area rug

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								Supply	Exhaust	
1F	638	ND	76	69	3	0	N	Y	N	Closet/storage, 2 WD CT
1E	660	ND	76	69	4	1	N	Y	Y	DEM, HS
1A	694	ND	77	72	3	21	Y	Y	Y dusty	HS area rug
1C	590	ND	77	72	5	0	Y	Y on	Y	Area rug, HS, PF on
1D	653	ND	75	61	3	19	Y	Y	Y	WAC on, DEM, HS, univent blocked
1G Staff workroom	608	ND	76	73	4	0	Y	Y on	Y	WAC, DEM, mats
Tech closet	653	ND	78	72	4	0	N	Y		WD CT (5), items
Library	638	ND	79	70	5	1	N	Y	Y	Some carpeted, computers, office with laminator adjacent between this and the library
Gym	660	ND	79	70	5	20	N	Y	Y	DEM

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								Supply	Exhaust	
Gym office	663	ND	78	69	7	0	N	Y	N	HS
Custodian's office	584	ND	77	71	4	0	N	Y		Food, PF on
Girls and boys RR near gym								N		Exhaust vent hard to identify
Art	561	ND	77	71	3	20	Y 1 open	N	Y	WD ceiling, DEM, PFs
Teacher's staff workroom	418	ND	75	73	2	0	Y	Y on	Y	DEM, carpet
Science storage							N	N	N	Items
Teachers' lunch	407	ND	75	74	4	1	Y 2 open	Y off	Y	Has restroom with dusty vent, upholstered furniture, stove, fridge, microwave. Fridge gasket with stains
Restroom next to teachers' lunch							N	N	Y off	WD near vent
Mrs. Schwartz	824	ND	75	77	4	0	N	Y	Y	PF, this is a small office

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Temperature: 70 - 78 °F
 Relative Humidity: 40 - 60%

Table 1

Location	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temp (°F)	Relative Humidity (%)	PM2.5 (µg/m³)	Occupants in Room	Windows Openable	Ventilation		Remarks
								Supply	Exhaust	
Behind stage	831	ND	77	79	4	0	N			
Music	669	ND	76	73	4	1	Y 1 open	Y	Y	
Music closet							N			WD CT and MT, storage
Music office	796	ND	75	76	6	0	N			WD/moldy CT, rusty vent
Office next to cafeteria	852	ND	76	76	6	1	N	Y	Y	WAC in wall
CAF	749	ND	77	77	5	~100	Y 4 open	Y	Y	Items hanging from ceiling
Small prep room	650	ND	77	70	4	0	N	Y	Y	
Girls RR									Y	WD CT
Boys RR									Y	WD CT

ppm = parts per million
 µg/m³ = micrograms per cubic meter
 ND = non detect

CP = cleaning product
 CT = ceiling tile
 DEM = dry erase materials

HS = hand sanitizer
 MT = missing tile
 PF = personal fan

TB = tennis balls
 WAC = window air conditioner
 WD = water-damaged

Comfort Guidelines

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Temperature: 70 - 78 °F
 Relative Humidity: 40 - 60%

Location: Green Meadow Elementary School
Address: 5 Tiger Drive, Maynard, MA

Indoor Air Results
Date: 9/12/2018

Table 1

Location	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temp (°F)	Relative Humidity (%)	PM2.5 (µg/m³)	Occupants in Room	Windows Openable	Ventilation		Remarks
								Supply	Exhaust	
Main staff office	746	ND	76	67	5	2	N	N	N	Heating and cooling in principal's office only, doors kept open to distribute, DEM
Principal	716	ND	73	54	4	0	Y	N	N	WAC on
Nurse	717	ND	73	65	5	0	Y	N	Y in attached restroom	
Old vault/storage							N	N	N	No vents, rubber band odor
Conference	835	ND	74	68	7	0	N	N	N	1 WD CT, DEM
Copy/lounge	856	ND	74	67	5	0	Y	Y on	N	Upholstered furniture

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