



**Environmental Air Quality Professionals, Inc.  
(EAQP)**

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**INDOOR ENVIRONMENTAL QUALITY (IEQ)  
INITIAL REPORT**

**Report Date:** October 6, 2018

**File#:** 180928-EAQP Initial Report-Belfor4UTK-Student.Housing



**CLIENT & CONTACT:** Mr. Bryan Goldberg [REDACTED]  
[REDACTED] **for** the University of Tennessee Knoxville University Housing-Division of Student Life.

**SITE LOCATION:** The University of Tennessee Knoxville University Housing-Division of Student Life at 1615 Laurel Avenue Knoxville, TN 37916 Knox County Latitude (N) is 35° 57' 36" N and Longitude (W) 83° 55' 55" W.

**OWNERS NAME:** The University of Tennessee Knoxville University Housing-Division of Student Life

**PRESENT at time of INVESTIGATION and/or Pre Inspection Conference:** Ms. Chandra Myrick (Executive Director) of University Housing-Division of Student Life (405 Student Services Bldg. Knoxville, TN 37996-0241 (W#865-974-1423 & cmyrick1@utk.edu), Mr. Michael J West (Associate Director) of University Housing-Division of Student Life (1720 Melrose Place #K120 Knoxville, TN 37996-3535 ([REDACTED] W#865-974-2397 & mwest4@utk.edu), Mr. Bob Caudill-Director of Facilities Services Department-Facilities Operations (2040 Sutherland Ave. Knoxville, TN 37921 (Physical/37996[mailing]) & OnCall-24/7 Service 865-946-7777 & [REDACTED] & rcaudill@utk.edu), etc., Mr. Bryan Goldberg Belfor [REDACTED] & EAQP (Dewayne R. Miller, Joshua C. Miller, & Walter H. Carter)

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INVESTIGATIONS CONDUCTED By EAQP Investigators and Building Scientist: Mr. Walter H. Carter (CIEC, RPIH, IEP, EP and IH), Mr. Dewayne R. Miller (Engineer, RPIH, IEP, EP and IH) and Mr. Joshua C. Miller (CIE, CIAET, IEP & IH) on Friday, September 28, 2018. ~0955time

Introduction: EAQP, Inc. has completed a Limited Environmental Investigation at the above address. This report presents our understanding of the project information, a description of the environmental consulting services provided by EAQP, Inc. findings, conclusions and recommendations.

# **SCOPE of WORK**

(See APPENDIX C-1= Conditions, Definitions & further explanations in back of report)

Environmental Air Quality Professionals, Inc. (EAQP) was retained by Belfor - Mr. Bryan Goldberg **for** the University of Tennessee Knoxville University Housing-Division of Student Life to perform independent third-party water, mildew microbial, odor, investigation and IEQ (Indoor Environmental Quality) assessment of the subject property at University of Tennessee at 1615 Laurel Avenue Knoxville, TN 37916 on Friday, September 28, 2018. The investigation included a walk-through inspection of visible and readily accessible \* areas inside of the structure and adjacent areas including outside of the structure. Standard testing & monitoring included limited (i.e. not exhaustive) microbiological testing and sampling. EAQP personnel will not go into areas that are perceived to be injurious or danger to one's health and well-being or potentially dangerous. Some materials or areas may not be found or sampled because they were hidden from view or otherwise inaccessible\*\*.

\*readily accessible=easily accessible for visual inspection without requiring moving of personal property, dismantling, destructive measures, or any action which will likely contain risk to persons or property.

\*\*inaccessible =not easily accessible for visual inspection without requiring moving of personal property, dismantling, destructive measures, or any action which will likely contain risk to persons or property.

EAQP's minimum established criteria includes having environmental surfaces clean, dry and free of active particulates/microbial/fungi or significant microbial deposition and target organisms within the areas tested (The Institute of Inspection Cleaning and Restoration [IICRC]-Condition 1, 2 & 3) and air sampling includes the use of an outdoor ambient air samples as a reference standard. The optimal EAQP environmental comfortable range for % Relative Humidity to be 45-55% RH (ALA). A method of collecting air samples is to use the Non-viable Slit Impactor or Spore Trap, etc. EAQP wants the indoor /outdoor [ambient] spore count fungi microbial air ratio (I/O) to be generally equal to or less than ( $\leq$ ) 1.0 assuming the ambient outdoor total fungi is greater than ( $>$ ) 1,000 spores/m<sup>3</sup> and without significant amounts of specific genus/species of concern. The types and percentage of specific genus/species of concern inside the structure should be similar or less than for outdoor ambient air. One such common genus of concern is *Penicillium/Aspergillus*-like [Pen/Asp]. EAQP would like the Pen/Asp spore count to be less than ( $<$ ) 1,000\*\* spores/m<sup>3</sup> and in certain situations etc. along with less than ( $<$ ) 42 spores/m<sup>3</sup> for certain other fungi [~3 actual spores] of concern, etc.).

EAQP's Indoor Air Quality criteria: Generally, greater than ( $>$ )1,000 spores/m<sup>3</sup> of *Penicillium/Aspergillus* (Pen/Asp) is indicative of poor air quality.

**Condition**= for the purpose of this report, Conditions 1, 2 & 3 are defined for indoor environments relative to mold.

**IICRC S-520 Condition 1** = (normal fungal ecology): an indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity; location and quantity are reflective of a normal fungal ecology for a similar indoor environment.

**IICRC S-520 Condition 2** = (settled spores): an indoor environment which is primarily contaminated with settled spores that were dispersed directly or indirectly from a Condition 3 area, and which may have traces of actual growth.

**IICRC S-520 Condition 3** = (actual growth): an indoor environment contaminated with the presence of actual mold growth and associated spores. Actual growth includes growth that is active or dormant, visible or invisible.

# **EXECUTIVE SUMMARY for FINDINGS & CONCLUSIONS WITH RECOMMENDATIONS**

## **FINDINGS & CONCLUSIONS**

EAQP Inspectors noted the following:

Forty-six apartment dormitory units were inspected by EAQP personnel. Air and surface samples were collected in most of these rooms. The samples revealed that fungi(mold) were present in excess in a majority of the areas tested (~92.5%). Due to the types and amount of fungi present along with a cost benefit ratio we suggest the best approach is to clean and remediated all the dorm units after the students are relocated to another area.

Microbial Volatile Organic Compound [MVOC]-like odors were detected during the inspection process in a significant number of dorm units within the structure. The Relative Humidity (RH) measurements within the structure showed the Relative Humidity (RH) to be in the moderate to high range considering the ambient weather conditions. There were a number of rooms within the building where the windows were open and/or the Portable Terminal Air Conditioning (PTAC) fans were in the “on fan” position.

The average for the rooms tested standard % Relative Humidity (RH) environmental conditions were 62.8% and EAQP’s comfort range is 45-55% RH. The % Relative Humidity measurements were above EAQP’s environmental comfortable range and are considered unacceptable for optimum environmental comfort.

The rooms HVAC systems are PTAC units most of which are unclean. NOTE: High moisture and RH contributes to the coagulation of dust and debris which tends to collect/adhere on surfaces of the HVAC system and minimize its effectiveness as well as accentuates odor and can be a health nuisance factor.

There is visible Microbial Growth (MG) on wood furniture within the structure. Some wood furniture within the dorm rooms have a white film. The white film may contain Suspected Microbial Growth (SMG).

This situation appears to have been caused by high moisture levels (%RH) within the structure. Some of the occupants have their fans on their HVAC units allowing hot moist air into the building. The PTAC units dehumidify the air and help control the relative humidity (RH). Most of the students tend to take long hot showers adding more moisture to the air. Over the past several months we have experienced an unusual amount of rain and the exterior humidity has been high adding to the problems within the building.

## **SURFACES**

Visual microbial growth was observed on the surfaces inside ~56.5% of the rooms investigated. The Independent Laboratory data verified that 100% of the direct surface samples analyzed contained microbials. The amount of fungi was **Remarkable** and suggest an **Atypical** amount of fungi amplification within the structure’s envelope and considered **Abnormal**. The areas are at IICRC-Condition 2 and/or 3 Environment Status and require removal and/or remediation and cleaning with proper sanitizers/disinfectant after all the source/s are determined and corrected. EAQP’s PRV criterion is to become an IICRC-Condition 1 Environment Status and meet EAQP minimum criteria.

## **AIR**

Significant fungal amplification of a potentially unhealthy genus of molds (>1,000 spores/m<sup>3</sup>) is present in 87.2% of the units tested. Remediation/Clean/Correction and/or repairs are required at this time to bring these areas to IICRC-Condition1 with normal fungal ecology and meet EAQP's other PRV criteria. Generally, greater than (>)1,000 spores/m<sup>3</sup> of Penicillium/Aspergillus (Pen/Asp) is indicative of poor air quality.

## **EAQP's hypothesis is that these unhealthy conditions within the structure are a result of the high relative humidity\* within the building resulting in microbial growth.**

\***Contributing factors**: The Knoxville region has recently experienced significant rain and high humidity.

### **RECOMMENDATIONS:** (See separate ATACHMENT C-2 for recommendation details)

(This remediation protocol is good for at least 15 days from date on subject EAQP report from when it was derived and assuming the points below are corrected, maintained and no unknown moisture or unusual event occurred).

The building will need to be remediated/cleaned and the fungi removed from the contents and environment as well as implement a system within the building to maintain %RH between 30-60% and prefer 45 to 55% if possible.

1. Remove the occupants from the building prior to remediation.
2. Discard any item that cannot be properly cleaned.
3. Remove and clean all PTAC units.
4. Remediate/Disinfect with Antimicrobials/Clean or Discards surfaces/ceiling tiles/contents/etc. that cannot be cleaned or deodorize properly.
5. Remove and replace any stained ceiling tiles.
6. Wipe down all surfaces within each room.

**-PRIMARY ITEMS**=EAQP recommends the use of the "**HEPA Sandwich remediation techniques**" (HEPA vacuum followed by remediation and cleaning with proper sanitizers/disinfectant and HEPA vacuum again) on all walls, ceilings, personal contents (do a "cost-benefit analyses" then followed by "air washing" at the very end after all areas are remediation.: #1 Repairing & remediate/clean (remove and/or sanitizers/disinfectant) and/or Replace the PTAC/HVAC systems (PTAC/AH, duct & plenum if present, etc.) because the PTAC/HVAC system propels particulates, microbial(s), odors and acting as a secondary reservoir and odor source. #2 Remove and replace all (stained) ceiling tiles, clean and remediate as needed within the structure to arrive at an IICRC Condition 1 normal fungal ecology. #3 "Air Wash" the building and surrounding area.

**NOTE:** Make correction and/or repairs using present day building, mechanical, electrical, etc. codes. At the property's owner/s and/or remediators discretion as to how and when the PTAC/HVAC work is to be performed, Repair/Clean/Remediate or Replace the PTAC/HVAC and its air delivery systems and/or Clean, remediate (remove and/or sanitizers/disinfectant). Use the "**HEPA Sandwich remediation techniques**" (HEPA vacuum followed by remediation and cleaning with proper sanitizers/disinfectant and HEPA vacuum again) then followed by "air washing" at the very end after all areas are remediation. Leave HEPA units on till EAQP performs their PRV investigation and testing. EAQP further recommends: Use containment under neutral pressure, introduce HEPA filtered air into remediation space/s and remove air out the opposite end through a HEPA filter.

### **"MICROBIAL INFORMATION on genus and/or species detected"**.



Based on the results of our observations and data from limited sampling, EAQP recommends that the structure located at 1615 Laurel Avenue Knoxville, TN 37916 should have correction and repairs made on the property (“cost-benefit-ratio”) followed by remediation and cleaning. This work is to be performed under containment and managed (+/-) pressure in the event microbial activity is present behind the walls, ceiling and miscellaneous components such as luminaries, shelving, etc. This work is to be performed by qualified contractors that adheres to the principles of the IICRC S-500, S520, returning the affected areas to a Condition 1 with normal microbial ecology and meets EAQP’s minimum established criteria as stated on page 2. The qualified and specializing contractor with technicians/workers are to be licensed & members in good standing in their professional organization/s and are knowledgeable, trained and skilled in the techniques within their profession in the use of containment, air pressure management and mold remediation techniques in the event microbial activity is present.

**The minimum objective for the remediator is to meet EAQP’s PRV criteria as stated above under the scope of work**

If you have medical questions or other medical situations, EAQP recommends that your health care provider review EAQP’s report.

**BACKGROUND:**

(As conveyed to investigator by shared by UT-Knoxville personnel & Belfor-Bryan Goldberg)

The structure has had moisture (%RH) resulting in mildew growth in the building.

See Appendix C-2 for Mold Remediation Protocol

**INITIAL RESULTS:** (See Appendix B for Photos with additional details)

Weather conditions at time of investigation were sunny with clouds with a temperature of 65.7<sup>0</sup>F and relative humidity 70.9%RH with a slight breeze.

The 14-story student housing with 3 wings or T shaped apartment units. The foundation supports a brick veneer outside exterior cladding. The lot is generally sloped from front to rear and from left to right. AC and Heat is being used via PTAC units to service apartments.

Objectionable odors\* (Microbial Volatile Organic Compounds [MVOC]-like, etc.) were detected in a few apartments with mildew like microbial growth. The Temperature within the building survey and other measurements showed temperature, Dew Point, CO<sub>2</sub> and CO were in the normal range normal range considering the PTAC set points and ambient weather conditions. **However**, the Relative Humidity (RH) varied greatly depending on the occupants mid 50’s to 65-72% in those units that had visible microbial growth-mildew on the contents and a microbial odor. The 65% to 72% RH is unacceptable and is considered higher than recommended for environmental comfort, EAQP considers a RH over 60% to be considered high and is a concern. The ALA (American Lung Association) environmental comfort range is considered to be 50 %. EAQP has found the preferred RH range to be 45 to 55% RH (50%+/-5%) to maximum environmental comfort for most individuals in the indoor building envelope.

\*to the investigators

Recommend thermal seals (insulation) around outlets, receptacles, etc. around exterior walls inside to improve energy conservation and control air flow from unconditioned spaces.

## Observations

- SMG on wooden furniture
- SMG and/or on ceiling tiles
- SMG on furniture with textiles
- Dirty HVAC system (PTAC)

**EAQP's hypothesis is that these unhealthy conditions within the structure are a result of elevated to high %RH due to students preferences, inadequate dehumidification, etc. which in part over loads the buildings dehumidification ability to control the RH within these spaces resulting in microbial mildew growth on furniture and building components.**

Have the structure checked by a qualified HVAC company and personnel to assure you that all design criteria is within the ASHRAE standards and operating efficiently. Recommend an HVAC company that its personnel are well acquainted, trained and specializing in working with and performing work for sensitized/sensitive individuals.

A partial table is included below with a more detailed table containing ~48 data points by unit and/or area which is attached as an excel tale noted as Appendix D.

Yellowed contain areas of concern & Gray is for out of comfort range

Area	Temp °F	RH %	Dew Point °F	CO <sub>2</sub> ppm*	CO ppm*
Outside	65.7	70.9	56.7	504	0
Lobby	73.3	58	57.6	611	0
Rm [REDACTED]	70	73.9	61.3	900	0
Rm [REDACTED]	70.6	56.1	54		
Hallway [REDACTED]	70.6	52.7			
Rm [REDACTED]	72.3	73.6	63.6		
Rm [REDACTED]	55.9	62.7	61		
Average	68.8	62.8	59.5	755.5	0.0

\*ppm=parts per million / Temp=Temperature; RH=Relative Humidity; CO<sub>2</sub>=Carbon Dioxide; CO=Carbon Monoxide / ---=not determined / Relative Moisture Content =RMC in %; prefer 45 to 55% RH (50%+/-5%)-in habited portion of structure

**See APPENDIX B for Photos and/or Results Below and Lab Data in separate attachments.**

## **BIO-SURFACE SWAB SAMPLES:**

The BIO-SURFACE SWAB SAMPLES incorporate the Adenosine Triphosphate (ATP) within microbial entities. The ATP technical process consisting of a chemical luminescent technology to convert an invisible concentration of ATP on the tested surface and converts the ATP into a measurable visible light output or Relative Light Units (RLU). A measurement of 150 RLU or less is **Acceptable**. Conversely, measurements

of 151 RLU and above constitute a fail, meaning, the Bio-Surface Sample Swab test detected an **Unacceptable** amount of active microbial(s).

The Photographs are in Appendix B and a Bldg. Sketch with Sample location in back of the Report and Laboratory Data are present below

## Bio-Surface Swabs Sample Area=10X10 cm (100cm<sup>2</sup>) or 4X4 inch (16 inch<sup>2</sup>)

Yellow=Results more than 150 RLU is Unacceptable & indicates Microbial Growth (MG) growth. If results are more than 150 RLU and Microbial Growth is **NOT Visibly** present then Area is questionable for Microbial Growth (MG) growth.

Investigation Samples						
Photo #	Sample #	Bio-Swab	Standardized		Visible SMG	Sampling Area & IICRC-S520 Condition 1,2,3  environmental status
			Unit ID# 1 or #2			
			Test #	RLU		
-	99	Bio-Swab	1669	0	-	Control/Blank
7	100	“ “	1662	0	Clean	PT Unit in shop clean
	101	“ “	1663	4	dust	Dirty PT unit in shop
10/11	102/102a	“ “	1664	4	SMG	Dirty PT unit in room 601
14&15	103	“ “	1666	9	SMG	Dirty PT unit in room 701
17	104	“ “	1675	83	SMG	Room [REDACTED] Light Fixture in bed room
	105	“ “	1776	0	SMG	Room [REDACTED] Bed room cabinet left side
	106	“ “	1777	48	SMG	Room [REDACTED] Bed room
26	107	“ “	1778	7	SMG	Room [REDACTED] Desk left side
	108	“ “	1779	59	SMG	Room [REDACTED] Desk
28	109	“ “	1780	83	SMG	Room [REDACTED] Kitchen Table
	110	“ “	1781	14	SMG	Room [REDACTED] PT unit bed room
	111	“ “	1782	44	SMG	Room [REDACTED] Desk in bed room
	112	“ “	1783	15	SMG	Room [REDACTED] Back bed room head board
	113	“ “	1784	57	SMG	Room [REDACTED] Bed room cabinet
	114	“ “	1786	326	SMG	Room [REDACTED] bed room head board
	116	“ “	1787	11	SMG	Room [REDACTED] Living room table
	117	“ “	1788	8	SMG	Room [REDACTED] living room ptac unit
44	118	“ “	1789	27	SMG	Room [REDACTED] bed room table
	119	“ “	1690	3	SMG	Room [REDACTED] bed room table
	120	“ “	1691	110	SMG	Room [REDACTED] living room table
47	121	“ “	1692	38	SMG	Room [REDACTED] cabinet bed room
	122	“ “	1693	69	SMG	Room [REDACTED] living room table
	123	“ “	1694	8	SMG	Room [REDACTED] table leg
	124	“ “	1695	264	SMG	Room [REDACTED] table leg
51	125	“ “	1696	92	SMG	Room [REDACTED] Chair fabric and wood
	126	“ “	1697	51	SMG	Room [REDACTED] table leg
	127	“ “	1698	82	SMG	Room [REDACTED] table leg

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	128	“ “	1699	69	SMG	Room [REDACTED] table leg
	129	“ “	1700	5	SMG	Room [REDACTED] table leg
	130	“ “	1701	4	SMG	Room [REDACTED] table leg
	131	“ “	1702	8	SMG	Room [REDACTED] table leg
	132	“ “	1703	81	SMG	Room [REDACTED] table leg
	133	“ “	1704	3	SMG	Room [REDACTED] couch
	134	“ “	1705	30	SMG	Room [REDACTED] table
	135	“ “	1706	518	SMG	An interfering false positive reaction was noted on this piece of furniture in Room [REDACTED] table (thought to be due to the type of antimicrobial that was used).

Bio-Surface Surface Swab Sample #99 (Bio-Test #) is the control (blank) was 0 RLU.

Visible SMG & High RLU=Bio-Surface Swab Sample#115 & 124 =The visual inspection reveals the presences of SMG and the high results of Bio-Surface Sample Swab# suggest an **Atypical** amount of active microbial(s) on the surface within the structure’s envelope tested and considered **Abnormal**. This is an IICRC-S520 Condition 3 environment status and requires remediation/cleaning to bring the surfaces back to being an IICRC-S520 Condition 1 environment status.

Visible SMG & Low RLU=Bio-Surface Swab Sample#102-113,1126-123 and 125-134 =There was visual SMG and a lower than 150 RLU in the Bio-Surface Swab# test results suggest an **Atypical** amount of microbes on the surface within the structure’s envelope tested and considered **Abnormal**. The lower results (<150 RLU) indicate a lack of or (dormant) microbial activity. The microbes are still present but NOT actively reproducing and growing at this time. This is an IICRC-S520 Condition 2 environment status and requires remediation/cleaning to bring the surfaces back to being an IICRC-S520 Condition 1 environment status.

HVAC=Bio-Surface Swab Sample#100, 101, 102 & -103=The HVAC units appear to be dirty. NOTE: High moisture and RH can contribute to the coagulation of dust and debris which tends to collect/adhere on surfaces and minimize the effectiveness of the HVAC system as well as accentuates odor and can be a health nuisance factor which suggest an **Atypical** amount of materials on the surface within the structure’s envelope tested and considered **Abnormal**.

## **Non-viable Slit Impactor (Air-O-Cell Cassette Spore Trap) Analysis for Total - Spore Trap-Fungal Spores or counts and Other Airborne Particulates- (Optical Microscopy)**

### **Air-O-Cell Cassette Spore Trap (Optical Microscopy)**

Air samples for fungal (mold) spores or counts were collected using an Air-O-Cell Cassette Spore Trap operating at flow rate of 15 liters (L) per minute (M or min) for five minutes depending on sampling location. NOTE: Flow rates were calibrated between each sample and/or runs [if electronic]. Air samples were transported to an independent analytical laboratory for analysis. The collected samples were examined by direct microscopy in laboratory. Fungal spores or counts were identified to morphological genera and results were expressed as spore count per cubic meter (Spore Count/M<sup>3</sup>).

EAQP’s established minimum criterion for initial investigation is to perform air sampling. This includes the use of an outdoor ambient air samples as a reference standard. A method of collecting air samples is to use the Non-viable Slit Impactor or Spore Trap, etc. EAQP wants the indoor /outdoor [ambient] spore count fungi

microbial air ratio (I/O) to be generally equal to or less than ( $\leq$ ) 1.0 assuming the ambient outdoor total fungi is greater than ( $>$ ) 1,000 spores/m<sup>3</sup> and without significant amounts of specific genus/species of concern. The types and percentage of specific genus/species of concern inside the structure should be similar or less than for outdoor ambient air. One such common genus of concern is *Penicillium*/ *Aspergillus*-like [Pen/Asp]. EAQP would like the Pen/Asp spore count to be less than ( $\leq$ ) 1,000 spores/m<sup>3</sup> and prefers  $<$  500 spores/m<sup>3</sup> in certain situations etc. along with less than ( $\leq$ ) 42 spores/m<sup>3</sup> for certain fungi [ $\sim$ 3 actual spores], etc.).

**NOTE:** EAQP's Indoor Air Quality criteria: Generally, greater than ( $>$ )1,000 spores/m<sup>3</sup> of *Penicillium*/ *Aspergillus* (Pen/Asp) is generally indicative of poor air quality.

The Photos showing the sample locations are in Appendix B and Laboratory Data results, etc. located in back of Report.

## Air Samples Flow Rate (Q) = Liters/minute (L/M) / Air-O-Cell (AoC)

Yellowed areas contain significant concentrations of genus of concern, wood decay genus of concern. Gray areas contain slightly elevated or elevated concentrations of genus of concern.

Investigation- Air Samples						
Photo #	Sample #	Sample Type AoC#	Standardized		Vol in L	Sampling Area
			Q=L/M Before	Q=L/M After		
	1	AoC#25324402	15	15	75 L	Outside Front
9	2	AoC#25318312	15	15	75 L	Room living room
	3	AoC#256319347	15	15	75 L	Room living room
13	4	AoC#25319224	15	15	75 L	Room living room
	5	AoC#25319337	15	15	75 L	Room living room
18	6	AoC#25318314	15	15	75 L	Room bed room
	7	AoC#25319300	15	15	75 L	Room living room
21	8	AoC#25319298	15	15	75 L	Room living room
	9	AoC#25319342	15	15	75 L	Room Bed room
	10	AoC#25319343	15	15	75 L	Room living room
25	11	AoC#25319293	15	15	75 L	Room living room
	12	AoC#25319275	15	15	75 L	Room bed room
	13	AoC#25318316	15	15	75 L	Room bed room
	14	AoC#25319345	15	15	75 L	Room living room
	15*	AoC-not tested	15	15	75 L	Room
31	16	AoC#25318311	15	15	75 L	Room bed room
	17	AoC#25319295	15	15	75 L	Room bed room
	18	AoC#25319344	15	15	75 L	Room living room
	19	AoC#25319296	15	15	75 L	Room living room
34	20	AoC#25319280	15	15	75 L	Room living room
	21	AoC#25319346	15	15	75 L	Room living room
40	22	AoC#25329264	15	15	75 L	Room bed room



	23	AoC#25324398	15	15	75 L	Room [REDACTED] living room
	24	AoC#25324404	15	15	75 L	Room [REDACTED] living room
43	25	AoC#25324393	15	15	75 L	Room [REDACTED] living room
	26	AoC#25324392	15	15	75 L	Room [REDACTED] bed room
	27	AoC#25324396	15	15	75 L	Room [REDACTED] living room
48	28	AoC#25324386	15	15	75 L	Room [REDACTED] bed room
	29	AoC#25324390	15	15	75 L	Room [REDACTED] living room
	30	AoC#25324540	15	15	75 L	Room [REDACTED] living room
	31	AoC#25324391	15	15	75 L	Room [REDACTED] living room
50	32	AoC#25324384	15	15	75 L	Room [REDACTED] living room
	33	AoC#25324394	15	15	75 L	Room [REDACTED] living room
	34	AoC#25324388	15	15	75 L	Room [REDACTED] living room
	35	AoC#25324395	15	15	75 L	Room [REDACTED] living room
	36	AoC#25324400	15	15	75 L	Room [REDACTED] living room
	37	AoC#25324387	15	15	75 L	Room [REDACTED] living room
	38	AoC#25324383	15	15	75 L	Room [REDACTED] living room
	39	AoC#25324385	15	15	75 L	Room [REDACTED] living room
	40	AoC#25324389	15	15	75 L	Room [REDACTED] living room
	41	AoC#25324406	15	15	75 L	Room [REDACTED] living room

-There is no #15 AoC air sample data

The average (39) Independent Laboratory *Penicillium/Aspergillus*-like (Pen/Asp) Air Data within the 1615 Laurel Avenue dormitory (minus the high and low) yields 8,729 spores/m<sup>3</sup> per sample which is higher than EAQP's minimum established criteria. No *Stachybotrys* fungi was detected in the air.

*Penicillium/Aspergillus*-like (Pen/Asp-like=Pen/Asp), hyphae, *Cladosporium*, *Ascomycetes-unspecified*, *Basidiomycetes-unspecified* were present.

The "soil and litter types" in the form of *Penicillium/Aspergillus*-like=Pen/Asp=Pen/Asp-like fungi generally indicate humidity and/or water problems, Hyphae\* (fungal gathering/feeding root system) indicating fungi (mold activity and growth) also indicate water problems and/or repetitive water issue/s Low or medium to high concentrations of other fungi (*Cladosporium*, *Ascomycetes-unspecified*, *Basidiomycetes-unspecified* and *Hyphomycetes-unspecified*, etc.) matter also generally indicate humidity and/or water problems.

The fungal classification and genus amount in the air within the [REDACTED] area tested are **NOT** remarkable in the air at this time and is considered as having a typical amount of fungi amplification and from a microbial aspect is considered at a IICRC-Condition 1.

**HOWEVER**, the fungal classification and genus amounts in the air within the following air tested units [REDACTED]

[REDACTED] were **Remarkable**. The air results within these areas suggest an Atypical amount of fungi amplification within the structure's envelope tested and considered **Abnormal**. These air results within these areas would contribute to other areas to become an IICRC-S520 Condition 2 or 3. Clean and remediate the air to become an IICRC-S520 Condition 1 environment status after all the moisture and fungi source/s are determined and corrected. The remediator may also use proper

sanitizing and disinfectant agents within the air if required. EAQP's PRV criterion is to become an IICRC-S520 Condition 1.

## **Microscopic Screen and Fungi Identification:**

Microscopic screen and fungi identification were performed on swab surface samples. EAQP, Inc. collected Direct Swab samples and transported them to an independent analytical laboratory for analysis.

Photographs in Appendix B, Bldg. Sketch with Sample location and Laboratory Data in back of this Report.

## **Direct Surface Swabs Samples** Area= 3.23 cm<sup>2</sup> or 0.5 inch<sup>2</sup>

Yellowed areas contain significant concentrations of genus of concern, wood decay genus of concern. Gray areas contain slightly elevated or elevated concentrations of genus of concern.

Investigation Samples-				
Photo#	Sample#	Test Type	SMG	Sampling Area & IICRC S520 Condition Status
				Note if IICRC Condition 1, 2 or 3 or Combination or is it a combination
7	200	Surface Swab	SMG	Inside PTAC unit in Shop dirty- IICRC-Condition
	201	Surface Swab	SMG	Inside PTAC unit in Shop clean- IICRC-Condition
10/11	202/202a	Surface Swab	SMG	Room on couch / dirty PTAC unit
14/15	203	Surface Swab	SMG	Room living room PTAC unit and table
17	204	Surface Swab	SMG	Room bed room light fixture
	205	Surface Swab	SMG	Room bed room cabinet
	206	Surface Swab	SMG	Room bed room cabinet
26	207	Surface Swab	SMG	Room desk
	208	Surface Swab	SMG	Room desk
28	209	Surface Swab	SMG	Room Kitchen table
	211	Surface Swab	SMG	Room Bed room desk
	212	Surface Swab	SMG	Room Head board
38	214	Surface Swab	SMG	Room Stained ceiling tile

Visual microbial growth was observed on the surfaces inside ~56.5% of the units investigated. Independent Laboratory data verified that 100% of the direct surface samples analyzed contained microbials. They consisted of "soil and litter types" in the form of *Penicillium/Aspergillus*-like=Pen/Asp=Pen/Asp-like fungi generally indicate humidity and/or water problems, *Stachybotrys*, etc. fungi area indicate water problems and/or repetitive water issue/s, Hyphae\* (fungal gathering/feeding root system) indicating fungi (mold activity and growth) also indicate water problems and/or repetitive water issue/s, Low or medium to high concentrations of other fungi (*Cladosporium* and *Hyphomycetes-unspecified*, etc.) matter also generally indicate humidity and/or water problems. *Stachybotrys* was found in dirty PTAC and in the bed room (L/S) in .

The amount of fungi was **Remarkable** and suggest an **Atypical** amount of fungi amplification within the structure's envelope and considered **Abnormal**. The areas are at IICRC-Condition 2 and/or 3 Environment Status and require removal and/or remediation and cleaning with proper sanitizers/disinfectant after all the source/s are determined and corrected. EAQP's PRV criterion is to become an IICRC-Condition 1 Environment Status and meet EAQP minimum criteria.

## **General Comments**

Ambient (outside air) Measurements are normally collected for two reasons: 1) to provide baseline levels for the air contaminants being monitored inside a structure and 2) to identify excessive air contaminant concentrations existing outside that could be entering the structure. The ambient air measurements for this survey were collected outside the structure.

Chemical and/or odor levels in structure are affected by and dependent on ventilation rates, the quality of outdoor air, chemical-producing activities, emissions from indoor sources, and human activities. These levels vary depending on specific activities occurring and ventilation in the structure.

Suspected environmental types and levels in structure vary according to the presence of moisture, the level of maintenance and ventilation, and human activities in the structure. There is no single sampling or analytical technique by which all suspected environmental types can be detected and identified.

After the correction work has been completed, have EAQP, Inc. (EAQP) retest the space for proper repairs. Retest after thirty (30) days and one year to ensure all issues were addressed for adequate long-term prevention.

The analyses and opinions expressed in this report are based upon the best data available in light of the scope of work. This data obtained and relied upon is in accomplishing the scope of work as is described in this report.

Environmental Air Quality Professionals, Inc. (EAQP) analysis herein provides only an assessment of the condition of the property on the date of the investigation and only in regard to the locations investigated. EAQP makes no guarantee regarding additional changes that may occur as a result of any source present or not present at the time of Professional's investigation.

Note that this report does not contain a guaranteed list of all potential hazards in the structure. While efforts were made to make the inspection process as complete as possible no potentially dangerous sampling methods were used. Some issues or materials may not be found or sampled because they were hidden from view or otherwise inaccessible. Therefore, there can be no assurance that untested materials do not contain suspected environmental types or elevated levels. EAQP's analysis herein provides only an assessment of the condition of the structure on the date of sampling and only in regard to the locations sampled. EAQP makes no guarantee regarding additional microbiological growth or other areas of concern that may occur as a result of any source present or not present at the time of EAQP's investigation.

EAQP, Inc. hereby certifies the expressed opinions and conclusions have been formulated within a reasonable degree of professional certainty. They are based upon all of the information known by EAQP, Inc. as of the time this report was issued, as well as knowledge, skill, experience, training, and/or education. Should additional information become available, we reserve the right to determine the impact, if any, of the new information on our opinions and conclusions, and to revise our opinions and conclusions if necessary as warranted by the discovery of additional information. EAQP reserves the right to supplement or amend these findings and conclusions if additional information becomes available or based upon additional work or analysis in this matter.

**Limitations-** Environmental Air Quality Professionals, Inc. (EAQP) warrants that the findings and conclusions contained herein have been transmitted in accordance with generally accepted methodology and only for the site described in this report.

This report was prepared pursuant to the contact EAQP has with Belfor-Mr. Bryan Goldberg for the University of Tennessee Knoxville University Housing-Division of Student Life (client). That contact relationship included an exchange of information about the site that was unique and between EAQP and the client and serves as the basis upon which this report was prepared. Because of the importance of the communication between EAQP and the client, reliance or any use of this report by anyone other than the client, for whom it was prepared, is

prohibited and therefore not foreseeable to EAQP. Furthermore, no warranties, expressed or implied, are intended or made. In the event that any changes in the nature or location of suspected sources of contamination as outlined in this report are observed, the conclusions and recommendations contained in this report shall not be valid unless these changes are reviewed and the opinions of this report are modified and verified in writing.

Reliance or use by any such third party without explicit authorization in the report does not make said third party a third-party beneficiary to EAQP contract with the client. The information contained in this report was prepared based upon specific parameters and regulations in force at the time of this report. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. EAQP accepts no responsibility for the use, interpretation, or reliance by other parties on the information contained herein, unless written authorization has been obtained from EAQP. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

This scope of work was developed to provide the client with information regarding apparent conditions relating to the subject property. Although EAQP believes that the findings and conclusions provided in this report are reasonable, the work is limited to the conditions observed and to the information available at the time of the work. Due to the nature of the work, there is a possibility that conditions may exist which could not be identified within the scope of the work or which were not apparent at the time of our site work. The work is also limited to information available from the client at the time the inspection was conducted. The field and testing methods employed at the time of the report may later be superseded by other methods. EAQP does not accept responsibility for changes in the state of the art/technology. No other warranties are implied or expressed.

This communication is intended for the exclusive use of the individual or entity to which it is directed and is not intended for any other purpose. It may contain information that is privileged, confidential or otherwise exempt from disclosure under applicable law. Dissemination, distribution, or copying of this communication by anyone other than the intended recipient, or a duly designated employee or agent of such recipient, is prohibited.

ENVIRONMENTAL AIR QUALITY PROFESSIONALS, INC.

*Walter H. Carter*

Walter H. Carter Asbestos-Inspector # 1857, REM<sup>1</sup> # 5873, RPIH<sup>2</sup> # 08490902, CIEC<sup>3</sup> # 0607135, CMRS<sup>4</sup>, CIAQP<sup>5</sup>#17638, EP<sup>6</sup>, FL<sup>7</sup> MRSA#1967 & MRSR#2304, TN Asbestos Accreditation, etc.  
Senior Advisor-IH, Investigator, Consultant and Building Scientist

<sup>1</sup>Registered Environmental Manager with NREP (National Registered Environmental Professionals), <sup>2</sup>Registered Professional Industrial Hygienist (RPIH), <sup>3</sup>CIEC-Council-certified Indoor Environmental Consultant-American Council for Accredited Certification (ACAC-was AmIAQ Council), <sup>4</sup>Council-certified Mold Remediation Supervisor through ACAC, <sup>5</sup>Certified Indoor Air Quality Professional AEE (Association of Energy Engineers), <sup>6</sup>Environmental Professional (Environmental Professional as per 40 CFR Part 312 [312.10]-AAI rule-US congress), <sup>7</sup>FL-Mold Assessor License# MRSA 1967, <sup>7</sup>FL-Mold Remediator License# MRSR 2304.



## **APPENDIX A - CREDENTIALS**

\* Walter H. Carter: REM # 5873<sup>1</sup>, RPIH<sup>2</sup> # 08490902, <sup>12</sup>CIEC # 0607135, AIHA<sup>3</sup> # 151419, ACGIH<sup>4</sup>, IOHA<sup>5</sup> # 303527, IAQA<sup>6</sup>, ISIAQ<sup>7</sup> #0567, CIAQP<sup>8</sup> # 17638, ICCI<sup>9</sup> # 5131030, CMRS<sup>10</sup>, MLP<sup>11</sup>, EP<sup>13</sup>, IEP<sup>14</sup>, FL<sup>15</sup> MRSA#1967& FL<sup>16</sup>MRSR#2304, TN<sup>17</sup> Asbestos

<sup>1</sup>Registered Environmental Manager with NREP (National Registered Environmental Professionals), <sup>2</sup>Registered Professional Industrial Hygienist (RPIH) with the Association of Professional Industrial Hygienists, <sup>3</sup>American Industrial Hygiene Association, <sup>4</sup>American Conference of Governmental Industrial Hygienists, <sup>5</sup>International Occupational Hygiene Association, <sup>6</sup>IAQA (Indoor Air Quality Association), <sup>7</sup>International Society of Indoor Air Quality and Climate, <sup>8</sup>Certified Indoor Air Quality Professional AEE (Association of Energy Engineers), <sup>9</sup>International Code Council, Inc. <sup>10</sup>Council-certified Mold Remediation Supervisor through American Council for Accredited Certification (ACAC[was AmIAQ Council] adheres to ANSI/NOCA Standard 1100 published in 3/2009 & recognized by the Council of Engineering and Scientific Specialty Boards), <sup>11</sup>Mold Loss Prevention-Indoor Air Quality Association (IAQA), <sup>12</sup>CIEC-Council-certified Indoor Environmental Consultant-ACAC, EP<sup>13</sup> Environmental Professional as per 40 CFR Part 312 (312.10)-AAI rule-US congress and <sup>14</sup>Indoor Environmental Professionals [IEP]-IICRC, <sup>15</sup>FL-Mold Assessor License# MRSA 1967, <sup>16</sup>FL-Mold Remediator License# MRSR 2304, <sup>17</sup>TN Asbestos Inspection Accreditation

### **IAQ/IEQ (Indoor Air/Environment Quality) INDUSTRIAL/ COMMERCIAL/ RESIDENTIAL HYGIENISTS**

#### **NATIONAL CERTIFICATIONS, REGISTRATIONS, SOCIETIES, AND MEMBERSHIPS (present & past)**

- ◆ Registered Professional Industrial Hygienist (RPIH) with the Association of Professional Industrial Hygienists (APIH), RPIH # 08490902
- ◆ Registered Environmental Manager and Property Assessor with NREP (National Registered Environmental Professionals), REM # 5873, REPA # 2844
- ◆ Council-certified Indoor Environmental Consultant-ACAC (American Council for Accredited Certification-was AmIAQ-American Indoor Air Quality Council)
- ◆ Council-certified Microbial Remediation Supervisor (CMRS) -ACAC
- ◆ Indoor Air Quality Association- (IAQA)
- ◆ American Industrial Hygiene Association, AIHA # 151419
- ◆ American Conference of Governmental Industrial Hygienists, ACGIH # 303527
- ◆ Certified Indoor Air Quality Professional (CIAQP) #17638 with The Association of Energy Engineers
- ◆ Mold Loss Prevention (MLP) with Indoor Air Quality Association (IAQA)
- ◆ EPA Visible Emissions
- ◆ Lead Safety for Renovation, Repair & Painting Refresher (RRP) Refresher (Expiration Date for GA&AL=12/01/2019 & EPA is 12/01/2021)
- ◆ Texas Mold Assessment Consultant Licensed# MAC 122(2011-15)&TX Asbestos Inspector #603122-\*p
- ◆ REA-California-Registered Environmental Assessor (REA<sup>15</sup>#06954)-\*p

#### **INTERNATIONAL REGISTRATIONS, SOCIETIES AND MEMBERSHIPS**

- ◆ International Society of Indoor Air Quality and Climate, ISIAQ # 0567
- ◆ International Occupational Hygiene Association, IOHA

#### **OTHER CERTIFICATIONS, QUALIFICATIONS (FEDERAL, STATE, etc.) & DESIGNATIONS**

Asbestos; Lead; Radon; Environmental Audits Phase I, II, III; VOC's; Particles; Bioaerosols (Fungi, Bacteria, etc.); Environmental and Property Inspections and Assessments Code Certified Building Inspector (IRC)., Licensed TN Asbestos& HI, Lead Safety RRP Certified Number:R-R-1123-126-00133-etc.


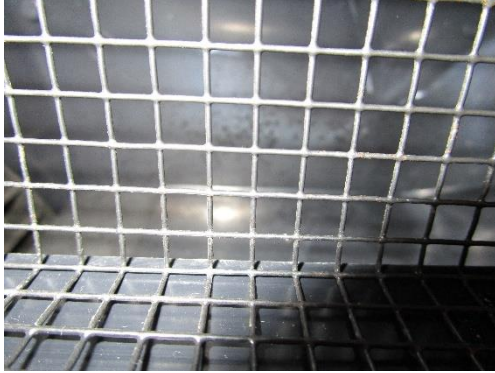


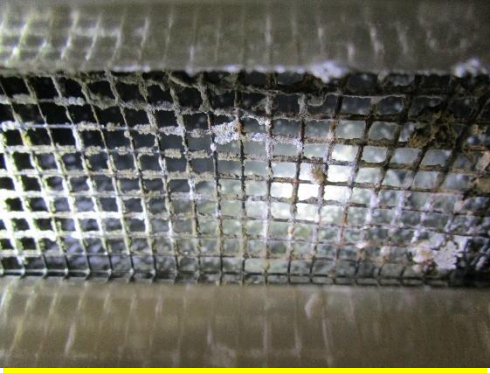

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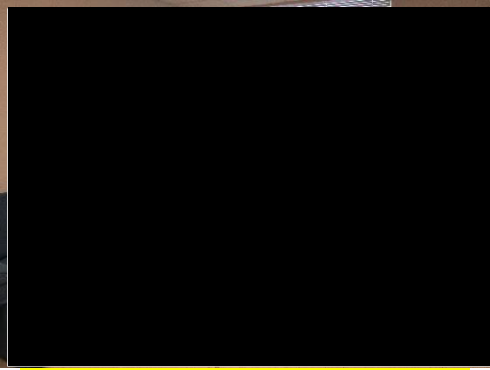



[www.healthyairquality.com](http://www.healthyairquality.com)

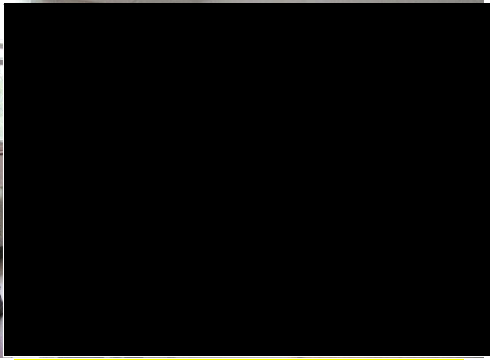


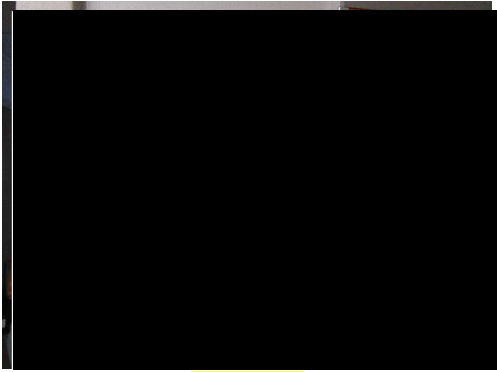

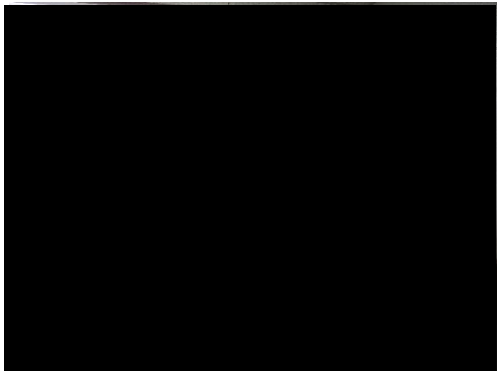


## APPENDIX B-PHOTOGRAPHS-on Friday, September 28, 2018 at 1615 Laurel Avenue Knoxville, TN 37916



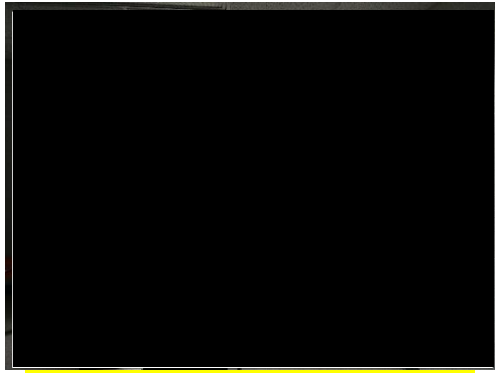



Directions are from looking at the front of structure and B=back, F=front, R=right, L=left, S=side i.e. (F/S=Front side)  
Bio-Surface (Bio) Sample # / Surface Direct Swab Sample # / Air Sample (AoC) # (These are representative photos) Suspected  
Microbial Growth (SMG) or areas of concern and/or wood decay genus of concern. Gray indicate area of concern and/or contain  
slightly or elevated amount or genus of SMG. EAQP ID#180928a-xx and EAQP ID#180928b-xx represent EAQP Internal Photo IDs





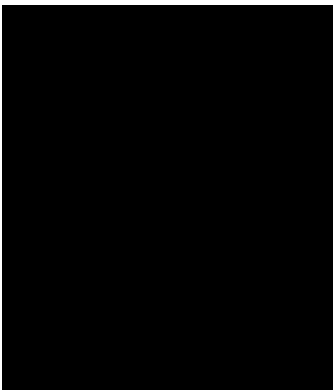

1.	 Cleaned PTAC unit located in the maintenance shop. EAQP ID#180928a-02	2.	 Cleaned PTAC unit located in the maintenance shop. EAQP ID#180928a-02
3.	 Cleaned PTAC unit located in the maintenance shop. EAQP ID#180928a-04	4.	 Dirty PTAC unit located in the maintenance shop. EAQP ID#180928a-05
5.	 Dirty PTAC unit located in the maintenance shop- Suspected Microbial Growth (SMG). EAQP ID#180928a-07	6.	 Dirty PTAC unit located in the maintenance shop. EAQP ID#180928a-08

7.	 <p>Dirty PTAC unit located in the maintenance shop. Swab (#200) and Bio sample (#100) taken from unit EAQP ID# 180928a-09</p>	8.	 <p>Room [REDACTED] EAQP ID#180928a-11</p>
9.	 <p>Air sample#2 taken in the living room of room [REDACTED] EAQP ID# EAQP ID#180928a- EAQP ID#180928a- 180928a-11a</p>	10.	 <p>Surface sample taken in the living room of room [REDACTED] -SMG --SMG-Surface samples-BioSwab#102 &amp;DirectSwab#202 EAQP ID# 180928a-12</p>
11.	 <p>PTAC -Surface sample taken in the living room of room [REDACTED] -SMG (DSwab#202a &amp; Bio#102a) EAQP ID#180928a-13</p>	12.	 <p>Room [REDACTED] EAQP ID#180928a-14</p>

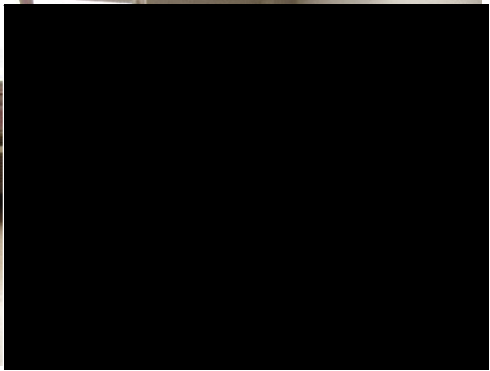


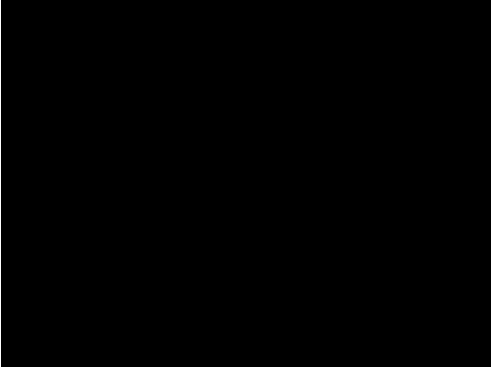


13.	 <p>Air sample#4 taken in the living room of room [REDACTED] EAQP ID#180928a-15</p>	14.	 <p>Composite Sample-Took 1 sample (Direct Swab#203 &amp; Bio#103) of 2 different surfaces-one living room of room [REDACTED] &amp; other from table leg EAQP ID#180928a-16</p>
15.	 <p>Composite Sample-Took 1 sample (Direct Swab#203 &amp; Bio#103) of 2 different surfaces-one living room of room [REDACTED] &amp; other from table leg in the living room of room [REDACTED]-SMG EAQP ID#180928a-17</p>	16.	 <p>Room [REDACTED] EAQP ID#180928a-18</p>
17.	 <p>Surface sample taken-DSwab#204 &amp; Bio#104 in the living room of room [REDACTED]-SMG EAQP ID#180928a-21</p>	18.	 <p>Air sample#6 taken in the living room of room [REDACTED] EAQP ID#180928a-20</p>



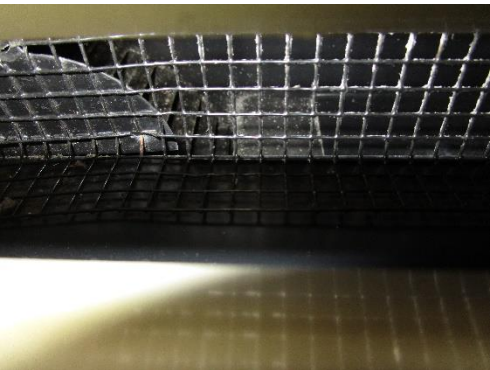
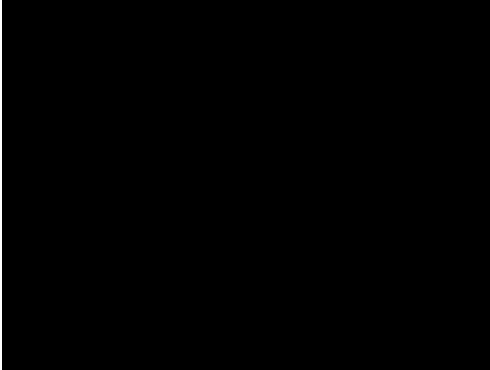
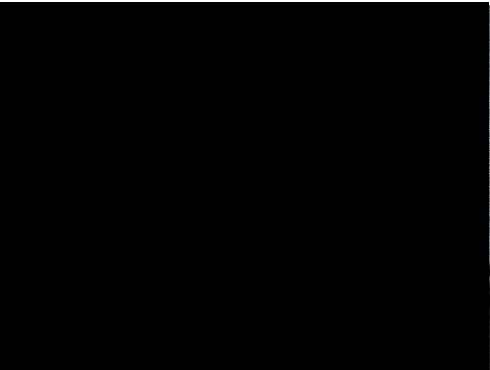



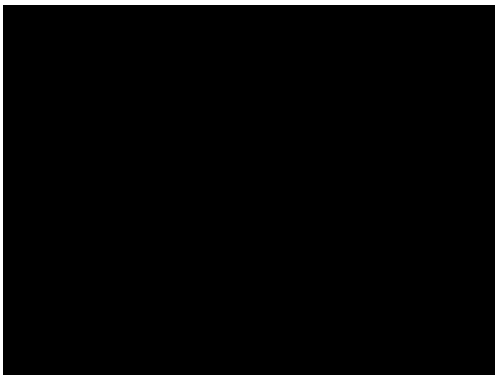
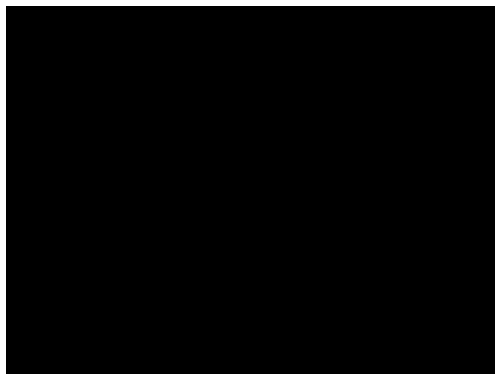
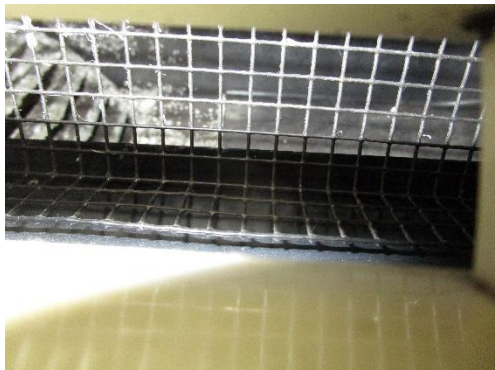

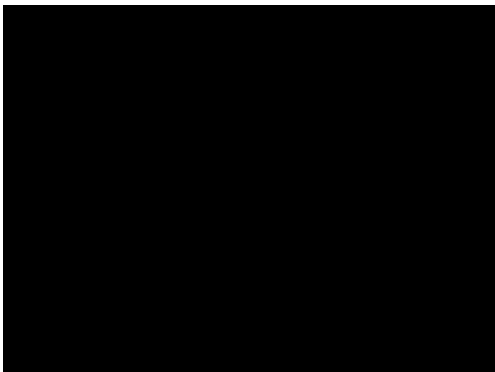
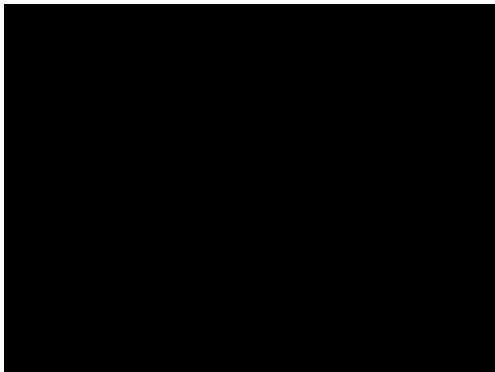
19.	 <p>Ceiling stain in room [REDACTED] EAQP ID#180928a-23</p>	20.	 <p>Room [REDACTED] EAQP ID#180928a-28</p>
21.	 <p>Air sample#8 taken in the living room of room [REDACTED] EAQP ID#180928a-29</p>	22.	 <p>Example of an Elevated Relative Moisture Content (RMC) measurement taken in room [REDACTED] EAQP ID#180928a30-</p>
23.	 <p>Another example of an Elevated Relative Moisture Content (RMC) measurement taken in room [REDACTED] EAQP ID#180928a-31</p>	24.	 <p>Room [REDACTED] EAQP ID#180928a-35</p>





25.	 Air sample#11 taken in the living room of room [REDACTED] EAQP ID#180928a-36	26.	 Surface samples (DirectSwab#207 & Bio#107) taken in the living room of room [REDACTED] EAQP ID#180928a-37
27.	 Room [REDACTED] EAQP ID#180928b-04	28.	 Surface samples (Direct#209 & Bio#109) taken in the living room of room [REDACTED]-SMG EAQP ID#180928b-09
29.	 Suspected Mold Growth (SMG) on the Desk in room [REDACTED] EAQP ID#180928b-05	30.	 Room [REDACTED] EAQP ID#180928b-10



31.	 <p>Air sample#16 taken in the living room of room [REDACTED] EAQP ID#180928b-11</p>	32.	 <p>PTAC unit in room [REDACTED]-SMG EAQP ID#180928b-12</p>
33.	 <p>Room [REDACTED] EAQP ID#180928b-24</p>	34.	 <p>Air sample#20 taken in the living room of room [REDACTED] EAQP ID#180928b-25</p>
35.	 <p>Surface sample-Bio#112 &amp; Direct Swab#212 taken in the bed room of room [REDACTED]-SMG EAQP ID#180928b-26</p>	36.	 <p>PTAC unit in room [REDACTED]-SMG EAQP ID#180928b-28</p>

37.	 <p>Room [REDACTED] EAQP ID#180928b-32</p>	38.	 <p>Surface samples (DirectSwab#214 &amp; Bio#114) taken on the ceiling tile of room [REDACTED]-SMG EAQP ID#180928b-34</p>
39.	 <p>PTAC unit in room [REDACTED]-SMG EAQP ID#180928b-23</p>	40.	 <p>Air sample#22 taken in the bed room of room [REDACTED]</p>
41.	 <p>SMG on the table in the bed room of room [REDACTED] EAQP ID#180928b-37</p>	42.	 <p>Room# [REDACTED] EAQP ID#180928b-54</p>

43.	 Air sample#26 taken in the bed room of room [REDACTED] EAQP ID#180928b-55	44.	 Surface sample Bio#118 taken in bed room off table in room [REDACTED]-SMG EAQP ID#180928b-56
45.	 PTAC unit in room [REDACTED] SMG EAQP ID#180928b-60	46.	 Room [REDACTED] EAQP ID#180928b-73
47.	 Surface sample taken in room [REDACTED] on the cabinet in the bed room EAQP ID#180928b-76	48.	 Air sample#28 taken in the bed room of room [REDACTED] EAQP ID#180928b-74

49	 <p>Room [REDACTED] EAQP ID#180928b-92</p>	50	 <p>Air sample#32 taken in the living room of room [REDACTED] EAQP ID#180928b-96</p>
51	 <p>Surface sample (Bio#125) taken in room [REDACTED] on the Chair-SMG EAQP ID#180928b-97</p>	52	 <p>PTAC unit-SMG EAQP ID#180928b-95</p>

## **APPENDIX C-1=Conditions & Definitions**

EAQP may also incorporate The Institute of Inspection Cleaning and Restoration (IICRC) S-520 to identify the current condition based on three possible levels of indoor contamination.

\*The Institute of Inspection Cleaning and Restoration (IICRC)

**Condition**= for the purpose of this report, Conditions 1, 2 & 3 are defined for indoor environments relative to mold.

**IICRC S-520 Condition 1** = (normal fungal ecology): an indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity; location and quantity are reflective of a normal fungal ecology for a similar indoor environment.

**IICRC S-520 Condition 2** = (settled spores): an indoor environment which is primarily contaminated with settled spores that were dispersed directly or indirectly from a Condition 3 area, and which may have traces of actual growth.

**IICRC S-520 Condition 3** = (actual growth): an indoor environment contaminated with the presence of actual mold growth and associated spores. Actual growth includes growth that is active or dormant, visible or invisible.

This investigation was conducted in accordance with the above scope of work as per EAQP and contact/s with Belfor-Mr. Bryan Goldberg for the University of Tennessee Knoxville University Housing-Division of Student Life and in accordance with current EAQP work order/contract. Use of this investigation in any way constitutes acceptance of these terms and conditions as outlined in EAQP work order/contract.

**DEFINITIONS:** The Institute of Inspection Cleaning and Restoration (IICRC); Suspected Microbial Growth (SMG); HEPA Sandwich technique or HEPA Sandwich remediation techniques=(HEPA vacuum followed by remediation and cleaning with proper sanitizers/disinfectant and HEPA vacuum again); Microbial Growth (MG); Heat, Ventilation & Air Conditioning (HVAC); Air Handler (AH); Package Terminal Air Condition (PTAC), National Duct Cleaning Association (NADCA), Relative Humidity (RH); American Lung Association (ALA), Volatile Organic Compounds (VOC); Total VOC (TVOC); Microbial Volatile Organic Compounds (MVOC); Relative Moisture Content (RMC) or Wood Moisture Equivalent (WME); Dew Point (DP), Carbon Dioxide (CO<sub>2</sub>), Carbon Monoxide (CO), Hydrogen Sulfide (H<sub>2</sub>S), Oxygen (O<sub>2</sub>) and Lower Explosion Limits (LEL); nanograms (ng-[10<sup>-9</sup>]) per Liter (ng/L=1x10<sup>-9</sup> grams/L) and units of micrograms (ug-[10<sup>-6</sup>]) per meter cubed (ug/M<sup>3</sup>)=nano gram per liter (ng/L) and generally can be equated to 1.5 to 6 x ng/L~ Parts per Billion (ppb-[10<sup>-9</sup>]) depending on the chemical continent's molecular weight; American Society of Heating Refrigeration and Air Conditioning Engineers(ASHRAE), Occupational Safety & Health Administration (OSHA), Action Limit(AL), Permissible Exposure Limit(PEL), Time Weighted Average(TWA) generally means 8-hours work day; American Conference of Governmental Industrial Hygienists(ACGIH) with Adopted Values-Threshold Limit Value(TLV)-TWA, TLV-Short-Term Exposure Limit(STEL)generally means 15 minutes; National Institute for Occupational Safety and Health(NIOSH), Recommended Exposure Limit(REL), Parts per Million(ppm),; Directions are from looking at the front of structure, Back (B); Front (F); Left (L); Right ( R); Side (S); Water Stains (WS); Moisture Related Issues (MRI); Oriented strand board (OSB)& Medium Density Fiber (MDF) are engineered wood particle board formed; light fixtures and associated items (luminaires); "Sandwich remediation techniques"=High Efficiency Particulate Air (HEPA) vacuum followed by remediation and cleaning with proper sanitizers/disinfectant and HEPA vacuum again; "air washing"=after the above work is completed, arrange the Portable High Efficiency Air Filtration ([PHEAF©]=OEHCS) Portable High Efficiency Air Filtration Equipment ([PHEAFE©]=OEHCS) or HEPA units [Negative Air Machines (NAM)] to sweep the remediated areas with HEPA filtered air at one end (Air Washing) pushing the air towards and through to the exhausted air side/end. The opposite end is to be equipped with a HEPA or equivalent filter or filters and secured to prevent unwanted materials. The air is to be released through the HEPA or equivalent filters or NAM/s. Air-wash for a few hours or longer depending on the confidence of the remediator. Use an electric leaf blower to aerosolize the particles that may have been missed while Air Washing the inside of the structure; HEPA Negative Air Machines (HEPA-NAMS). Quantitative, Real-Time Polymerase Chain Reaction DNA Analysis (QRTPCRA-DNA) with Survey of Indoor Molds<sup>(R)</sup> (SIM). Species Identification of Airborne Molds (SIAM).





## Assured Bio Labs, LLC

### Direct Examination Analysis

228 Midway Lane, Suite B  
Oak Ridge, TN 37830

[www.assuredbio.com](http://www.assuredbio.com)

**REVIEWED**

*by Edward A. Sobek, Ph.D. at 09:47 AM, Oct 02, 2018*

Inspector:	Walter Carter	Date Collected:	Sep/28/2018
Project:	180928-Project	Date Received:	Oct/01/2018
Job Number:	180928	Date Reported:	Oct/02/2018
Assured Bio Identifier:	WC100118-1	Analyst:	J. Birkebak, D. Graves

#### Methods of Analysis

Assured Bio Labs, LLC uses the following Standard Operating Procedures for the analysis of samples:

- Spore Traps - Assured Bio Labs, LLC Document Number 105
- Swabs - Assured Bio Labs, LLC Document Number 106
- Tape Lifts - Assured Bio Labs, LLC Document Number 107
- Bulk Material - Assured Bio Labs, LLC Document Number 108

#### Interpretation of Spore Trap Results

**The Interior vs. the Outside Control:** There are currently no national guidelines or standards for the acceptable number of mold spores present in indoor air. It has become the industry standard for professionals to do a comparison between samples collected on the interior of a home or building and the outside control. The fungal spores recovered indoors should be similar in type and number to those collected outside. When this occurs the area is considered to be in equilibrium or is seen as a normal indoor environment. It is very common for multiple samples to be collected on the interior. This is done to pinpoint any problem areas where air quality may be abnormal.

**Limit of Detection:** This number is the lowest number of spores that can be detected based on the volume of the sample collected.

**Background Particulate Density:** This rating indicates the presence of airborne particulates other than mold (pollen, dander, insects, etc.). As the Background Particulate Density increases, the ability to visually detect smaller mold spores (such as *Penicillium*/*Aspergillus* or *Acremonium*) decreases. The Level of Debris can be interpreted using the following scale:

- Low - Very little particulate present. Virtually no spores undetectable.
- Low-Medium - Little particulate present. 97% likelihood that all spores have been counted.
- Medium - Moderate level of particulate present. 95% likelihood that all spores have been counted.
- Medium-High - Increased level of particulate present. 75% likelihood that all spores have been counted.
- High - Very heavy particulate. Less than a 75% likelihood that all spores have been counted.

**Raw Count:** This number is the total number of fungal spores counted under the microscope.

**Total Mold Spores:** This is an estimate of the fungal spores present per cubic meter of air sampled within that particular sampling location. This number is derived by multiplying the total spores counted on the spore trap by a conversion factor involving the volume of air sampled.

### **Interpretation of Tape Lift, Swab, or Bulk Material Results**

Assured Bio Labs, LLC quantifies the presence of mold spores detected on a tape lift, swab, or bulk sample using the following scale:

Low - Less than 1/3 of the microscopic field of view is obscured by the identified mold spore.

Moderate - Between 1/3 and 2/3 of the microscopic field of view is obscured by the identified mold spore.

High - Over 2/3 of the microscopic field of view is obscured by the identified mold spore.

### **Abbreviations**

ND = None Detected

BDL = Below Detectable Limits

AB Identification Number:	WC100118-1-2	WC100118-1-1
Sample Identification Number:	2	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25318312	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	8	107	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	436	5813	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	4	53	136	1813
Basidiomycetes-unspecified	20	267	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	468	6240	1772	23626

AB Identification Number:	WC100118-1-3	WC100118-1-1
Sample Identification Number:	3	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319347	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	64	853	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	4	53	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	896	11947	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	24	320	136	1813
Basidiomycetes-unspecified	28	373	560	7467
Hyphomycetes-unspecified	4	53	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	1020	13599	1772	23626

AB Identification Number:	WC100118-1-4	WC100118-1-1
Sample Identification Number:	4	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319224	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	88	1173	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	5180	69067	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	16	213	136	1813
Basidiomycetes-unspecified	8	107	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	4	53	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	5296	70613	1772	23626



AB Identification Number:	WC100118-1-5	WC100118-1-1
Sample Identification Number:	5	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319337	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	32	427	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	208	2773	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	16	213	136	1813
Basidiomycetes-unspecified	56	747	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	312	4160	1772	23626

AB Identification Number:	WC100118-1-6	WC100118-1-1
Sample Identification Number:	6	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED] Middle B Rm	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25318314	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrrium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	632	8427	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	1252	16693	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	24	320	136	1813
Basidiomycetes-unspecified	116	1547	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	8	107	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Clamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	2032	27094	1772	23626

AB Identification Number:	WC100118-1-7	WC100118-1-1
Sample Identification Number:	7	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319300	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	20	267	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	196	2613	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	8	107	136	1813
Basidiomycetes-unspecified	48	640	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	272	3627	1772	23626

AB Identification Number:	WC100118-1-8	WC100118-1-1
Sample Identification Number:	8	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319298	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	44	587	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	192	2560	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	40	533	136	1813
Basidiomycetes-unspecified	100	1333	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	376	5013	1772	23626

AB Identification Number:	WC100118-1-9	WC100118-1-1
Sample Identification Number:	9	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319342	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	16	213	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	2912	38827	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	24	320	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	2952	39360	1772	23626



AB Identification Number:	WC100118-1-10	WC100118-1-1
Sample Identification Number:	10	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319343	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	4	53	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	88	1173	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	304	4053	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	20	267	136	1813
Basidiomycetes-unspecified	68	907	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	484	6453	1772	23626

AB Identification Number:	WC100118-1-11	WC100118-1-1
Sample Identification Number:	11	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED] Liv Rm	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319293	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	12	160	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	324	4320	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	24	320	136	1813
Basidiomycetes-unspecified	32	427	560	7467
Hyphomycetes-unspecified	4	53	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	396	5280	1772	23626

AB Identification Number:	WC100118-1-12	WC100118-1-1
Sample Identification Number:	12	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319275	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	8	107	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	4	53	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	104	1387	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	8	107	136	1813
Basidiomycetes-unspecified	24	320	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	148	1974	1772	23626

AB Identification Number:	WC100118-1-13	WC100118-1-1
Sample Identification Number:	13	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25318316	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	28	373	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	292	3893	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	28	373	136	1813
Basidiomycetes-unspecified	92	1227	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	440	5866	1772	23626

AB Identification Number:	WC100118-1-14	WC100118-1-1
Sample Identification Number:	14	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319345	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	52	693	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	164	2187	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	12	160	136	1813
Basidiomycetes-unspecified	24	320	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	252	3360	1772	23626



AB Identification Number:	WC100118-1-15	WC100118-1-1
Sample Identification Number:	16	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25318311	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	584	7787	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	832	11093	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	104	1387	136	1813
Basidiomycetes-unspecified	204	2720	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	1724	22987	1772	23626

AB Identification Number:	WC100118-1-16	WC100118-1-1
Sample Identification Number:	17	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319295	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	4	53	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	68	907	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	144	1920	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	4	53	136	1813
Basidiomycetes-unspecified	12	160	560	7467
Hyphomycetes-unspecified	4	53	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	236	3146	1772	23626

AB Identification Number:	WC100118-1-17	WC100118-1-1
Sample Identification Number:	18	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319344	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	28	373	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	356	4747	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	12	160	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	396	5280	1772	23626

AB Identification Number:	WC100118-1-18	WC100118-1-1
Sample Identification Number:	19	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319296	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	20	267	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	232	3093	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	12	160	136	1813
Basidiomycetes-unspecified	40	533	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	304	4053	1772	23626

AB Identification Number:	WC100118-1-19	WC100118-1-1
Sample Identification Number:	20	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319280	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	16	213	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	8	107	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	72	960	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	16	213	136	1813
Basidiomycetes-unspecified	24	320	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	136	1813	1772	23626



AB Identification Number:	WC100118-1-20	WC100118-1-1
Sample Identification Number:	21	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25319346	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	4	53	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	40	533	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	120	1600	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	48	640	136	1813
Basidiomycetes-unspecified	40	533	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	252	3359	1772	23626

AB Identification Number:	WC100118-1-21	WC100118-1-1
Sample Identification Number:	22	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25329264	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	8	107	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	684	9120	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	692	9227	1772	23626

AB Identification Number:	WC100118-1-22	WC100118-1-1
Sample Identification Number:	23	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324398	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	4	53	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	4	53	1772	23626

AB Identification Number:	WC100118-1-23	WC100118-1-1
Sample Identification Number:	24	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324404	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	ND	BDL	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	24	320	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	24	320	1772	23626

AB Identification Number:	WC100118-1-24	WC100118-1-1
Sample Identification Number:	25	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324393	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	4	53	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	12	160	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	16	213	1772	23626

AB Identification Number:	WC100118-1-25	WC100118-1-1
Sample Identification Number:	26	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324392	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	332	4427	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	332	4427	1772	23626



AB Identification Number:	WC100118-1-26	WC100118-1-1
Sample Identification Number:	27	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324396	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	236	3147	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	1932	25760	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	92	1227	136	1813
Basidiomycetes-unspecified	156	2080	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	8	107	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	2424	32321	1772	23626

AB Identification Number:	WC100118-1-27	WC100118-1-1
Sample Identification Number:	28	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324386	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	1076	14347	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	4	53	136	1813
Basidiomycetes-unspecified	28	373	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	1108	14773	1772	23626

AB Identification Number:	WC100118-1-28	WC100118-1-1
Sample Identification Number:	29	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324390	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	24	320	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	424	5653	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	8	107	136	1813
Basidiomycetes-unspecified	28	373	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	484	6453	1772	23626

AB Identification Number:	WC100118-1-29	WC100118-1-1
Sample Identification Number:	30	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324540	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	24	320	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	108	1440	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	72	960	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	4	53	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Clamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	208	2773	1772	23626

AB Identification Number:	WC100118-1-30	WC100118-1-1
Sample Identification Number:	31	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324391	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	124	1653	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	8	107	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	132	1760	1772	23626

AB Identification Number:	WC100118-1-31	WC100118-1-1
Sample Identification Number:	32	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324384	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	8	107	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	1556	20747	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	8	107	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	1572	20961	1772	23626



AB Identification Number:	WC100118-1-32	WC100118-1-1
Sample Identification Number:	33	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324394	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	12	160	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	280	3733	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	8	107	136	1813
Basidiomycetes-unspecified	8	107	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	4	53	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	312	4160	1772	23626

AB Identification Number:	WC100118-1-33	WC100118-1-1
Sample Identification Number:	34	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324388	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	4	53	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	1160	15467	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	56000	746667	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	44	587	136	1813
Basidiomycetes-unspecified	72	960	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	12	160	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	57292	763894	1772	23626

AB Identification Number:	WC100118-1-34	WC100118-1-1
Sample Identification Number:	35	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324395	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	3612	48160	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	3612	48160	1772	23626

AB Identification Number:	WC100118-1-35	WC100118-1-1
Sample Identification Number:	36	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324400	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	8	107	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	376	5013	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	4	53	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	4	53	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	392	5226	1772	23626

AB Identification Number:	WC100118-1-36	WC100118-1-1
Sample Identification Number:	37	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324387	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	ND	BDL	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	48	640	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	8	107	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	56	747	1772	23626

AB Identification Number:	WC100118-1-37	WC100118-1-1
Sample Identification Number:	38	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324383	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	20	267	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	736	9813	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	16	213	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	772	10293	1772	23626



AB Identification Number:	WC100118-1-38	WC100118-1-1
Sample Identification Number:	39	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324385	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	12	160	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	180	2400	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	ND	BDL	560	7467
Hyphomycetes-unspecified	4	53	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	4	53	4	53
Miscellaneous structures				
Hyphae	Present		Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low Medium		Medium	
Total Spore Count	200	2666	1772	23626

AB Identification Number:	WC100118-1-39	WC100118-1-1
Sample Identification Number:	40	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324389	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	12	160	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	692	9227	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	4	53	136	1813
Basidiomycetes-unspecified	4	53	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	ND	BDL	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Low		Medium	
Total Spore Count	712	9493	1772	23626

AB Identification Number:	WC100118-1-40	WC100118-1-1
Sample Identification Number:	41	1
Date Collected:	Sep/28/2018	Sep/28/2018
Description:	Room [REDACTED]	Outside
Sample Type:	Spore Trap	Spore Trap
Sample Condition:	Intact	Intact
Comments:	25324406	25324402
Volume/Area Sampled:	75 L	75 L
Reporting Limit:	13	13

Spore Identifications	Raw Count	Spores/m3	Raw Count	Spores/m3
Acremonium-like	ND	BDL	80	1067
Alternaria	ND	BDL	ND	BDL
Arthrinium	ND	BDL	ND	BDL
Aspergillus	ND	BDL	ND	BDL
Aureobasidium	ND	BDL	ND	BDL
Botrytis	ND	BDL	ND	BDL
Cercospora-like	ND	BDL	8	107
Chaetomium	ND	BDL	ND	BDL
Cladosporium	40	533	304	4053
Coprinus	ND	BDL	ND	BDL
Curvularia	ND	BDL	4	53
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND	BDL	ND	BDL
Epicoccum	ND	BDL	ND	BDL
Fusarium	ND	BDL	4	53
Ganoderma	ND	BDL	ND	BDL
Memnoniella	ND	BDL	ND	BDL
Nigrospora	ND	BDL	ND	BDL
Penicillium	ND	BDL	ND	BDL
Penicillium / Aspergillus - like	164	2187	672	8960
Pithomyces	ND	BDL	ND	BDL
Scopulariopsis-like	ND	BDL	ND	BDL
Spegazzinia	ND	BDL	ND	BDL
Stachybotrys	ND	BDL	ND	BDL
Tetraploa	ND	BDL	ND	BDL
Torula	ND	BDL	ND	BDL
Trichoderma-like	ND	BDL	ND	BDL
Ulocladium	ND	BDL	ND	BDL
Ascomycetes-unspecified	ND	BDL	136	1813
Basidiomycetes-unspecified	12	160	560	7467
Hyphomycetes-unspecified	ND	BDL	ND	BDL
Zygomycetes-unspecified	ND	BDL	ND	BDL
Myxomycetes/Perconia/Smuts/Rusts	8	107	4	53
Miscellaneous structures				
Hyphae	ND	BDL	Present	
Chlamydospores	ND	BDL	ND	BDL
Perithecia	ND	BDL	ND	BDL
Sclerotia	ND	BDL	ND	BDL
Background Particulate Density	Medium		Medium	
Total Spore Count	224	2987	1772	23626

## Frequently Occurring Fungi

<b><i>Acremonium</i></b>	This organism grows on dead plant material and soil. For growth indoors, it requires very wet conditions. The pathology to humans on exposure includes allergies (eg. hay fever, asthma), pneumonia, and subcutaneous infection.
<b><i>Alternaria</i></b>	This can be found on dead and dying plant material. It is easily blown by wind and found in house dust, carpets, textiles, and horizontal surfaces indoors. It can be considered a water impact mold. The pathology to humans on exposure includes allergies and asthma. Other diseases linked to <i>Alternaria</i> include mycotic keratitis, skin infections, and osteomyelitis.
<b>Ascomycetes</b>	This group includes over 3,000 species of fungi which mature in a sack-like structure. They are found everywhere in nature. This group includes <i>Chaetomium</i> and <i>Ascotricha</i> which can frequently found growing indoors on damp substrates. The pathology to humans on exposure is mostly allergenic.
<b><i>Aspergillus</i></b>	This can be found growing on forage products, grains, nuts, organic debris and water damaged organic building materials. Pathology to humans includes asthma, but it is less allergenic than other molds. Infections from <i>Aspergillus</i> happen mostly to persons with compromised immune systems. Aspergillosis is the second most common fungal infection requiring hospitalization in US.
<b><i>Aspergillus</i> <i>/Penicillium</i></b>	This group of fungal spores includes both the <i>Aspergillus</i> and <i>Penicillium</i> genera. This is because microscopically the two can not be differentiated unless conidiophores (fungal fruiting bodies) are present in the sample. These organisms are very common in the environment; however, an elevated presence can be indicative of a water intrusion event.
<b>Basidiomycetes</b>	This group of fungal spores originates from mushrooms and plant pathogens. They are found in gardens, forests, and woodlands, but basidiomycetes can grow indoors. <i>Serpula lacrimans</i> or "dry rot" and other fungi cause white and brown wood rot. They grow and destroy the structural wood of buildings. The pathology to humans on exposure is mostly allergenic (eg. hay fever, asthma).
<b><i>Chaetomium</i></b>	This organism grows on substrates containing cellulose, including paper and plant compost. It is found commonly on damp sheetrock paper. Spores are distinctively shaped and resemble a lemon or a football and mature in a sack-like structure called perithecia. The pathology to humans on exposure includes Type I and III allergens and can produce a mycotoxin shown to cause kidney and liver damage in laboratory animals.
<b><i>Cladosporium</i></b>	This genus grows on living and dead plant material, soil, paint, and textiles. It can be found growing in dirty refrigerators and on air conditioning vents. It grows especially well in reservoirs where condensation collects. Often it is found on the surface of fiberglass duct liners in the interior of supply ducts. The spores are generally dispersed by the wind. Water conditions of <i>Cladosporium</i> include houses in damp areas with poor ventilation. It can also be found living on textiles or paper under humid conditions and on moist window frames. Human exposure is rarely pathogenic, but can cause skin lesions, sinusitis, and pulmonary infections. Airborne spores can be significant allergens.
<b><i>Curvularia</i></b>	This grows on plant debris and soil. It is a facultative plant pathogen of tropical or subtropical plants and can grow indoors on a variety of substrates, usually under high humidity. The pathology to humans on exposure includes allergies (eg. hay fever, asthma). It is a relatively common cause of allergic fungal sinusitis.

### Frequently Occurring Fungi (cont.)

<b>Hyphal Fragments</b>	This is the growing part of fungi. Hyphal fragments present in air samples can be indicative of actively occurring mold growth within the indoor environment.
<b><i>Memnoniella</i></b>	This organism is closely related to <i>Stachybotrys</i> and grows on soil, many types of plants, and trees. It is associated often with water intrusion and can grow indoors on many different substrates. It is found frequently in conjunction with <i>Stachybotrys</i> .
<b><i>Myxomycetes, Periconia, etc.</i></b>	This group includes Myxomycetes, Rusts, Smuts, and the genus <i>Periconia</i> . These types of fungi are typically found outdoor. Rusts and smuts are often considered plant pathogens or parasites, while myxomycetes are slime molds. These spores are difficult to differentiate microscopically and normally are quantified together.
<b><i>Penicillium</i></b>	This fungus grows on materials such as soil, food cellulose, paint, grains, and compost piles. Spores are commonly found in carpet, wallpaper, and in interior fiberglass duct insulation. <i>Penicillium</i> can grow indoors in water-damaged buildings on wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint. The pathology to humans includes allergies (eg. hay fever, asthma), moldy wall hypersensitivity, and hypersensitivity pneumonitis.
<b><i>Stachybotrys</i></b>	This can be found growing on sheet rock, paper, ceiling tiles, cellulose containing insulation backing, and wallpaper. It is a sooty black fungus occasionally accompanied by a thick mass of white mycelia. Conditions for growth include areas subject to temperature fluctuations that also have a relative humidity above 55%. The pathology to human exposure may include allergies, dermatitis, cough, rhinitis, nose bleeds, cold and flu symptoms, headache, general malaise and fever, and diarrhea. It produces mycotoxins which are extremely potent. Toxins produced by the fungus may suppress the immune system-affecting the lymphoid tissue and the bone marrow. Exposure via inhalation, ingestion, or dermal/skin should be avoided.
<b><i>Ulocladium</i></b>	This organism grows on plant materials and soils, rotten woods, paper, textiles, and water-damaged building materials. It can be found in dust and air samples. Growth indoors is widespread. It has a high water requirement. The pathology to humans on exposure includes allergies (eg. hay fever, asthma). When this organism is in the presence of <i>Alternaria</i> , symptoms may compound.

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General Chain of Custody

Inspector: Walter Carter, Joshua Miller &

Address:

EAQP (Environmental Air Quality Professionals, Inc.) PO Box 889 Dalton, GA 30729

Phone: (706) 278-3202

E-mail: walter@healthyairquality.com

Turn Around Time

Direct Exam: 24 hours

ERM/DNA: 72 hours

Culture: 7-14 days

Sample Codes (SC)

MT - MIRAP®

SP - Spore Trap

SW - Swab

TL - Tape Lift

D - Dust

W - Water

Outside Conditions (Circle One)

C - Clear

R - Rain

W - Wind

TS - Thunderstorm

Description

SC Total Volume x Area

Comments

Project Name:

Project Number:

Project Date:

Temperature

%RH

Inside

Outside

AB Identifier: (for internal use only)

WC100118-1

Big 2 (Pen/Asp and Stachybotrys)	
Species Identification of Airborne Molds	
MoldScan	
ViaScan Genus ID Fungi	
ViaScan Species ID Fungi*	
ViaScan Bacterial Colony Count	
ViaScan Species ID Bacteria*	
ERMI	
ARMI	
Legionella (Culture)	
Legionella (qPCR)	
FHAVA Water Test	
Coliform/E. coli Test (+/-)	
MPN (quantitative Coliform/E. coli)	
Other:**	

1	Outside	SP	75L	2532 4402
2	Room			2531 8312
3	1			2531 9347
4	1			2531 9224
5	1			2531 9337
6	1	Middle B.R.		2531 8314
7	1			2531 9300
8	1			2531 9298
9	1			2531 9342
10	1	Living Room		2531 9343
11	1			2531 9293

Relinquished By:

Date:

9/28/18

9145

Received By:

Walter

9:00

Date:

9/10/18

\*Culture: 1st PCR done at Assured Bio Labs, sequencing subcontracted to ELIM Bio. \*\*Please specify other analysis. Miscellaneous (i.e. nonstandard) analyses may be subcontracted to SCS (Gaston, WA) Lab, or ELIM Bio.



## General Chain of Custody

Christina + sister

EAQP (Environmental Air Quality Professionals, Inc.) PO Box 889 Dalton, GA 30729

**E-mail:** [walter@healthyairquality.com](mailto:walter@healthyairquality.com)

**Sample Codes (SC)**

MT - MTRAP®

SP - Spore Trap

SW - Swab

Description

al Volume x Area

Comments

## Species Identification of Airborne Molds

MoldScan

ViaScan Genus ID Fungi

ViaScan Species ID Fungi\*

## ViaScan Bacterial Colony Count

ViaScan Species ID Bacteria\*

**ERM**

ARMİ

Legionella (Culture)

Legionella (qPCR)

## FHAVA Water Test

Coliform/E. coli Test (+/-)

MPN (quantitative Coliform/E. coli)

Other: \*\*

Project Name:

Project Name: ~~180928-Project~~

Project Number:

1807

%RH

15

701

97

2013/2

Temperature

4

05.7

**AB Identifier: (for internal use only)**

WC 100118-1

15

\*Culture and PCR done at Assured Bio Labs, sequencing subcontracted to ELM Bio. \*\*Please specify other analysis. Miscellaneous (i.e. nonstandard) analyses may be subcontracted to SIG (Gaston, Wigg's Lab, or ELM Lab).

Relinquished By:

Date: 7/28/15

72

Received By:

1

7.3

Date: 10/1/18





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General Chain of Custody

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Turn Around Time	Sample Codes (SC)	Outside Conditions (Circle One)
Direct Exam : 24 hours	MT - MTRAP®	TL - Tape Lift
ERM/DNA: 72 hours	SP - Spore Trap	D - Dust
Culture: 7-14 days	SW - Swab	W - Water
Sample ID	Description	SC

Big 2 (Pen/Asp and Stachybotrys)	Species Identification of Airborne Molds	MoldScan	ViaScan Genus ID Fungi	ViaScan Species ID Fungi*	ViaScan Bacterial Colony Count	ViaScan Species ID Bacteria*	ERMI	ARMI	Legionella (Culture)	Legionella (qPCR)	FHA/VA Water Test	Coliform/E. coli Test (+/-)	MPN (quantitative Coliform/E. coli)	Other:**
----------------------------------	--	----------	------------------------	---------------------------	--------------------------------	------------------------------	------	------	----------------------	-------------------	-------------------	-----------------------------	-------------------------------------	----------

24	Room	SP	75	2532	4404	4393	4392	4396	4386	4390	4540	4391	4384	4394	4388
25															
26															
27															
28															
29															
30															
31															
32															
33															
34															

Project Name:

180928-Project

Project Number:

180928

Project Date:

9/28/2018

%RH

62%

73%

AB Identifier: (for internal use only)

W400118-1

Inside

Outside

Temperature

65.7

\*Culture and PCR done at Assured Bio Labs, sequencing subcontracted to ELM Bio. \*\*Please specify other analysis. Miscellaneous (i.e. nonstandard) analyses may be subcontracted to SCS Galson, W. G. Lab, or ELM Bio

Relinquished By: L. H. Carter

Date: 9/28/18

Received By: CMN

Date: 10/1/18



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Phone: (706) 278-3202

E-mail: walter@healthyairquality.com

Turn Around Time

Direct Exam : 24 hours

ERM/DNA: 72 hours

Culture: 7-14 days

Sample Codes (SC)

MT - MTRAP®

SP - Spore Trap

SW - Swab

Outside Conditions (Circle One)

TL - Tape Lift

D - Dust

W - Water

SC

C - Clear

R - Rain

W - Wind

Sample ID

Description

Total Volume x Area

Comments

Project Name:

180928-Project

Project Number:

180928

Project Date:

9/26/2018

%RH

Inside

Outside

Temperature

62.1

73.8

AB Identifier: (for internal use only)

WC100118-1

Big 2 (Pen/Asp and Stachybotrys)

Species Identification of Airborne Molds

MoldScan

ViaScan Genus ID Fungi

ViaScan Species ID Fungi\*

ViaScan Bacterial Colony Count

ViaScan Species ID Bacteria\*

ERMI

ARMI

Legionella (Culture)

Legionella (qPCR)

FHA/VA Water Test

Coliform/E. coli Test (+/-)

MPN (quantitative Coliform/E. coli)

Other:\*\*

35 Room SP 75L 2532 4395

36 4400

37 4387

38 4383

39 4385

40 4389

41 75L 4400

Relinquished By:

W. Carter

Date:

9/26/18

Page 4 of 6

Received By:

W. Carter

Date:

10-1-18

\*Culture: 7d PCR done at Assured Bio Labs, sequencing subcontracted to ELM Bio. \*\*Please specify other analysis. Miscellaneous (i.e. nonstandard) analysis may be subcontracted to SCS Galsen, WJG Lab, or EMLab

4 of 6



## Assured Bio Labs, LLC

### Direct Examination Analysis

228 Midway Lane, Suite B  
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[www.assuredbio.com](http://www.assuredbio.com)

**REVIEWED**

*by Edward A. Sobek, Ph.D. at 01:38 PM, Oct 01, 2018*

Inspector:	Walter Carter	Date Collected:	Sep/28/2018
Project:	180928-Project	Date Received:	Oct/01/2018
Job Number:	180928	Date Reported:	Oct/01/2018
Assured Bio Identifier:	WC100118-2	Analyst:	G. McPeak

#### **Methods of Analysis**

Assured Bio Labs, LLC uses the following Standard Operating Procedures for the analysis of samples:

- Spore Traps - Assured Bio Labs, LLC Document Number 105
- Swabs - Assured Bio Labs, LLC Document Number 106
- Tape Lifts - Assured Bio Labs, LLC Document Number 107
- Bulk Material - Assured Bio Labs, LLC Document Number 108

#### **Interpretation of Spore Trap Results**

**The Interior vs. the Outside Control:** There are currently no national guidelines or standards for the acceptable number of mold spores present in indoor air. It has become the industry standard for professionals to do a comparison between samples collected on the interior of a home or building and the outside control. The fungal spores recovered indoors should be similar in type and number to those collected outside. When this occurs the area is considered to be in equilibrium or is seen as a normal indoor environment. It is very common for multiple samples to be collected on the interior. This is done to pinpoint any problem areas where air quality may be abnormal.

**Limit of Detection:** This number is the lowest number of spores that can be detected based on the volume of the sample collected.

**Background Particulate Density:** This rating indicates the presence of airborne particulates other than mold (pollen, dander, insects, etc.). As the Background Particulate Density increases, the ability to visually detect smaller mold spores (such as *Penicillium*/*Aspergillus* or *Acremonium*) decreases. The Level of Debris can be interpreted using the following scale:

- Low - Very little particulate present. Virtually no spores undetectable.
- Low-Medium - Little particulate present. 97% likelihood that all spores have been counted.
- Medium - Moderate level of particulate present. 95% likelihood that all spores have been counted.
- Medium-High - Increased level of particulate present. 75% likelihood that all spores have been counted.
- High - Very heavy particulate. Less than a 75% likelihood that all spores have been counted.

**Raw Count:** This number is the total number of fungal spores counted under the microscope.

**Total Mold Spores:** This is an estimate of the fungal spores present per cubic meter of air sampled within that particular sampling location. This number is derived by multiplying the total spores counted on the spore trap by a conversion factor involving the volume of air sampled.

### **Interpretation of Tape Lift, Swab, or Bulk Material Results**

Assured Bio Labs, LLC quantifies the presence of mold spores detected on a tape lift, swab, or bulk sample using the following scale:

Low - Less than 1/3 of the microscopic field of view is obscured by the identified mold spore.

Moderate - Between 1/3 and 2/3 of the microscopic field of view is obscured by the identified mold spore.

High - Over 2/3 of the microscopic field of view is obscured by the identified mold spore.

### **Abbreviations**

ND = None Detected

BDL = Below Detectable Limits

AB Identification Number:	WC100118-2-1
Sample Identification Number:	200
Date Collected:	Sep/28/2018
Description:	Clean PTAC Shop Clean
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	ND
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	ND
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium



AB Identification Number:	WC100118-2-2
Sample Identification Number:	201
Date Collected:	Sep/28/2018
Description:	PTAC Dirty Shop
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	ND
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	High
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium High

AB Identification Number:	WC100118-2-3
Sample Identification Number:	202
Date Collected:	Sep/28/2018
Description:	PTAC Unit Dirty
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	High
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	Medium
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium

AB Identification Number:	WC100118-2-4
Sample Identification Number:	202a
Date Collected:	Sep/28/2018
Description:	
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	High
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	ND
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	High
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium High

AB Identification Number:	WC100118-2-5
Sample Identification Number:	203
Date Collected:	Sep/28/2018
Description:	Room [REDACTED] L/R
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	High
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	ND
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	High
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium High

AB Identification Number:	WC100118-2-6
Sample Identification Number:	204
Date Collected:	Sep/28/2018
Description:	Room [REDACTED] Light Fixture MBR
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrini	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	High
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	ND
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	High
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Chlamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium High

AB Identification Number:	WC100118-2-7
Sample Identification Number:	205
Date Collected:	Sep/28/2018
Description:	Room [REDACTED] BR Cabinet L.S.
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	Medium
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	Medium
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Low Medium

AB Identification Number:	WC100118-2-8
Sample Identification Number:	206
Date Collected:	Sep/28/2018
Description:	Room [REDACTED] MBR
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrini	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	Low
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	High
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Chlamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Low Medium

AB Identification Number:	WC100118-2-9
Sample Identification Number:	207
Date Collected:	Sep/28/2018
Description:	Room [REDACTED] Desk L.S.
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	High
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Low Medium



AB Identification Number:	WC100118-2-10
Sample Identification Number:	208
Date Collected:	Sep/28/2018
Description:	Room [REDACTED]
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	High
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Low Medium

AB Identification Number:	WC100118-2-11
Sample Identification Number:	209
Date Collected:	Sep/28/2018
Description:	Rm [REDACTED] Kitchen Table
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	High
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Low

AB Identification Number:	WC100118-2-12
Sample Identification Number:	211
Date Collected:	Sep/28/2018
Description:	Rm [REDACTED] Desk B/R
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	Low
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	ND
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium High

AB Identification Number:	WC100118-2-13
Sample Identification Number:	212
Date Collected:	Sep/28/2018
Description:	Rm [REDACTED] BR Wood
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	ND
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	Low
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	ND
Clamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Medium High

AB Identification Number:	WC100118-2-14
Sample Identification Number:	214
Date Collected:	Sep/28/2018
Description:	Rm [REDACTED] R Bed Rm
Sample Type:	Swab
Sample Condition:	Intact
Comments:	
Spore Identifications	Spore Concentration
Acremonium-like	ND
Alternaria	ND
Arthrrium	ND
Aspergillus	ND
Aureobasidium	ND
Botrytis	ND
Cercospora-like	ND
Chaetomium	ND
Cladosporium	High
Coprinus	ND
Curvularia	ND
Drechslera/Bipolaris Helminthosporium/Exserohilum	ND
Epicoccum	ND
Fusarium	ND
Ganoderma	ND
Memnoniella	ND
Nigrospora	ND
Penicillium	ND
Penicillium / Aspergillus - like	ND
Pithomyces	ND
Scopulariopsis-like	ND
Spegazzinia	ND
Stachybotrys	ND
Tetraploa	ND
Torula	ND
Trichoderma-like	ND
Ulocladium	ND
Ascomycetes-unspecified	ND
Basidiomycetes-unspecified	ND
Hyphomycetes-unspecified	ND
Zygomycetes-unspecified	ND
Myxomycetes/Perconia/Smuts/Rusts	ND
Miscellaneous structures	
Hyphae	Present
Chlamydospores	ND
Perithecia	ND
Sclerotia	ND
Background Particulate Density	Low Medium

### Frequently Occurring Fungi

<b><i>Acremonium</i></b>	This organism grows on dead plant material and soil. For growth indoors, it requires very wet conditions. The pathology to humans on exposure includes allergies (eg. hay fever, asthma), pneumonia, and subcutaneous infection.
<b><i>Alternaria</i></b>	This can be found on dead and dying plant material. It is easily blown by wind and found in house dust, carpets, textiles, and horizontal surfaces indoors. It can be considered a water impact mold. The pathology to humans on exposure includes allergies and asthma. Other diseases linked to <i>Alternaria</i> include mycotic keratitis, skin infections, and osteomyelitis.
<b>Ascomycetes</b>	This group includes over 3,000 species of fungi which mature in a sack-like structure. They are found everywhere in nature. This group includes <i>Chaetomium</i> and <i>Ascotricha</i> which can frequently found growing indoors on damp substrates. The pathology to humans on exposure is mostly allergenic.
<b><i>Aspergillus</i></b>	This can be found growing on forage products, grains, nuts, organic debris and water damaged organic building materials. Pathology to humans includes asthma, but it is less allergenic than other molds. Infections from <i>Aspergillus</i> happen mostly to persons with compromised immune systems. Aspergillosis is the second most common fungal infection requiring hospitalization in US.
<b><i>Aspergillus</i> <i>/Penicillium</i></b>	This group of fungal spores includes both the <i>Aspergillus</i> and <i>Penicillium</i> genera. This is because microscopically the two can not be differentiated unless conidiophores (fungal fruiting bodies) are present in the sample. These organisms are very common in the environment; however, an elevated presence can be indicative of a water intrusion event.
<b>Basidiomycetes</b>	This group of fungal spores originates from mushrooms and plant pathogens. They are found in gardens, forests, and woodlands, but basidiomycetes can grow indoors. <i>Serpula lacrimans</i> or "dry rot" and other fungi cause white and brown wood rot. They grow and destroy the structural wood of buildings. The pathology to humans on exposure is mostly allergenic (eg. hay fever, asthma).
<b><i>Chaetomium</i></b>	This organism grows on substrates containing cellulose, including paper and plant compost. It is found commonly on damp sheetrock paper. Spores are distinctively shaped and resemble a lemon or a football and mature in a sack-like structure called perithecia. The pathology to humans on exposure includes Type I and III allergens and can produce a mycotoxin shown to cause kidney and liver damage in laboratory animals.
<b><i>Cladosporium</i></b>	This genus grows on living and dead plant material, soil, paint, and textiles. It can be found growing in dirty refrigerators and on air conditioning vents. It grows especially well in reservoirs where condensation collects. Often it is found on the surface of fiberglass duct liners in the interior of supply ducts. The spores are generally dispersed by the wind. Water conditions of <i>Cladosporium</i> include houses in damp areas with poor ventilation. It can also be found living on textiles or paper under humid conditions and on moist window frames. Human exposure is rarely pathogenic, but can cause skin lesions, sinusitis, and pulmonary infections. Airborne spores can be significant allergens.
<b><i>Curvularia</i></b>	This grows on plant debris and soil. It is a facultative plant pathogen of tropical or subtropical plants and can grow indoors on a variety of substrates, usually under high humidity. The pathology to humans on exposure includes allergies (eg. hay fever, asthma). It is a relatively common cause of allergic fungal sinusitis.

### Frequently Occurring Fungi (cont.)

<b>Hyphal Fragments</b>	This is the growing part of fungi. Hyphal fragments present in air samples can be indicative of actively occurring mold growth within the indoor environment.
<b><i>Memnoniella</i></b>	This organism is closely related to <i>Stachybotrys</i> and grows on soil, many types of plants, and trees. It is associated often with water intrusion and can grow indoors on many different substrates. It is found frequently in conjunction with <i>Stachybotrys</i> .
<b><i>Myxomycetes, Periconia, etc.</i></b>	This group includes Myxomycetes, Rusts, Smuts, and the genus <i>Periconia</i> . These types of fungi are typically found outdoor. Rusts and smuts are often considered plant pathogens or parasites, while myxomycetes are slime molds. These spores are difficult to differentiate microscopically and normally are quantified together.
<b><i>Penicillium</i></b>	This fungus grows on materials such as soil, food cellulose, paint, grains, and compost piles. Spores are commonly found in carpet, wallpaper, and in interior fiberglass duct insulation. <i>Penicillium</i> can grow indoors in water-damaged buildings on wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint. The pathology to humans includes allergies (eg. hay fever, asthma), moldy wall hypersensitivity, and hypersensitivity pneumonitis.
<b><i>Stachybotrys</i></b>	This can be found growing on sheet rock, paper, ceiling tiles, cellulose containing insulation backing, and wallpaper. It is a sooty black fungus occasionally accompanied by a thick mass of white mycelia. Conditions for growth include areas subject to temperature fluctuations that also have a relative humidity above 55%. The pathology to human exposure may include allergies, dermatitis, cough, rhinitis, nose bleeds, cold and flu symptoms, headache, general malaise and fever, and diarrhea. It produces mycotoxins which are extremely potent. Toxins produced by the fungus may suppress the immune system-affecting the lymphoid tissue and the bone marrow. Exposure via inhalation, ingestion, or dermal/skin should be avoided.
<b><i>Ulocladium</i></b>	This organism grows on plant materials and soils, rotten woods, paper, textiles, and water-damaged building materials. It can be found in dust and air samples. Growth indoors is widespread. It has a high water requirement. The pathology to humans on exposure includes allergies (eg. hay fever, asthma). When this organism is in the presence of <i>Alternaria</i> , symptoms may compound.

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Turn Around Time	Sample Codes (SC)	Outside Conditions (Circle One)	Comments
Direct Exam: 24 hours	MT - MTRAP®	TL - Tape Lift	
ERM/DNA: 72 hours	SP - Spore Trap	D - Dust	
Culture: 7-14 days	SW - Swab	W - Water	
Sample ID	Description	SC	Total Volume x Area
200	Clean PTHC Shop Clean	SW	0.5 in <sup>2</sup>
201	PTAC Dirty Shop		
202	PTAC Unit Dirty		
203			
204			
205			
206			
207			
208			
209			

Project Name: 180928-Project

Project Number: 180928

Project Date: 9/28/2018

%RH	Inside	Outside
73	62%	70%
Temperature	73	65.7

AB Identifier: (for internal use only)

WC 100118-2

A

Big 2 (Pen/Asp and Stachybotrys)	
Species Identification of Airborne Molds	
MoldScan	
ViaScan Genus ID Fungi	
ViaScan Species ID Fungi*	
ViaScan Bacterial Colony Count	
ViaScan Species ID Bacteria*	
ERMI	
ARMI	
Legionella (Culture)	
Legionella (qPCR)	
FHA/VA Water Test	
Coliform/E. coli Test (+/-)	
MPN (quantitative Coliform/E. coli)	
Other:**	

Relinquished By:

Walter Carter

Date: 9/28/18

Received By:

Walter Carter

Date: 10-1-18

Culture and PCR done at Assured Bio Labs, sequencing subcontracted to ELM Bio. \*Please specify other analysis. Miscellaneous (i.e. nonstandard) analyses may be subcontracted to SGS (Gallatin, WA) Lab, or ELM Bio.





## Environmental Air Quality Professionals, Inc. (EAQP)

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### **APPENDIX C-2=Recommendations and Cleaning Protocol** for Belfor-Mr. Bryan Goldberg for the University of Tennessee Knoxville University Housing-Division of Student Life t 1615 Laurel Avenue Knoxville, TN 37916 on Friday, September 28, 2018

Identify, remediate and perform water related damages and perform other corrections of the structure at 1615 Laurel Avenue Knoxville, TN 37916 including drying, cleaning, water damage and/or associated microbial residue. The building corrections are to be performed by qualified contractor/s and workers with training (licensing required if appropriate) in the profession required for the corrections being made. The water and remediation work is to be performed by qualified contractor/s that adheres to the principles of the IICRC S-500, S520, returning the affected areas to a Condition 1 environment and agrees to EAQP's minimum established criteria as stated in the report. The qualified and specializing contractor and technicians/workers are to be licensed & members in good standing in their professional organization/s and are knowledgeable, trained and skilled in the techniques within their profession in the use of containment, air pressure management and mold remediation techniques in the event microbial activity is present. Based on the results of our observations and limited sampling collected during our investigation on Friday, September 28, 2018, the recommendations and remediation of the structure should follow the University of Tennessee Knoxville University Housing-Division of Student Life 's or insured's health care provider professional health care provider recommendations and/or protocol and industry-accepted guidelines some of which are listed below:

- a) United States Environmental Protection Agency (EPA) "Mold Remediation in Schools and Commercial Buildings" (EPA 402-K-01-001).
- b) EPA "A Brief Guide To Mold, Moisture and Your Commercial Buildings" (EPA 402-K-02-003)
- c) American Conference of Governmental Industrial Hygienists (ACGIH) in Cincinnati Ohio "Bioaerosols Assessment and Control ".
- d) New York City Department of Health (NYCDH) in New York City, New York "Assessment and Remediation of Fungi in Indoor Environments". Issued by the New York City Department of Health, Bureau of Environmental and Occupational Disease Epidemiology.
- e) IICRC [Institute of Inspection, Cleaning and Restoration Certification] (Formally "**the clean trust**" and prior to this was formally IICRC), Vancouver, WA 98661 "Mold Remediation Standard and Reference Guide" referred to as the S520 and IICRC "Standard and Reference Guide for Professional Water Damaged Restoration" referred to as the S500).
- f) Current applicable state Building Code, all federal, county and city codes and ordinances when applicable and good construction/remodeling practices and precautions.
- g) Other standards will apply which incorporates the requirements of the like remediation work involved such as Occupational Safety and Health Administration (OSHA) [such as Respiratory Standards-29CFR 1910.134, Confined Space Program: 1910.146, Hazard Communication Program: 1910.120, Lock Out-Tag Out Program: 1910.147, Blood borne Pathogens: 1910.1030, Fall Protection: 1910 (Sub-Part D) etc.] and civil, state, federal or other pertinent organizations for such work.
- h) Applicable Personal Protection Equipment (PPE) such as Eye Protection, Protective Clothing, Respiratory Protection, etc.
- i) It is the responsibility of the contractor to ensure that all techniques used while installing, demolition or repairing components or systems in the building conform to published standards and local building codes.
- j) Contractor (remediator, etc.) Responsibilities-Will provide and is solely responsible: for means and methods or in adverted damage or contamination during remediation, cleaning, drying, construction, etc.;

S:\Data\EAQP\UNIVERSITY of TN-Knox\180928-615 Laurel Ave.Student housingr\APPENDIX C-2=Recommendations and Cleaning Protocol for Belfor-.docx

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NIOSH approved respirator; abide by all applicable federal, state, city and community regulations based on hazards which workers are exposed; provide clean air within respirator at all times; naming a safety representative before commencing work, is responsible for safety and having a competent person on-site.

**GENERAL DEFINITIONS and OBSERVATION NOTES:** (If applicable, use this information or points brought out in the RESULT section to assist in completing the objective)

EAQP may also incorporate The Institute of Inspection Cleaning and Restoration (IICRC) S-520 to identify the current condition based on three possible levels of indoor contamination.

\*The Institute of Inspection Cleaning and Restoration (IICRC)

**Condition**= for the purpose of this report, Conditions 1, 2 & 3 are defined for indoor environments relative to mold.

**IICRC S-520 Condition 1** = (normal fungal ecology): an indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity; location and quantity are reflective of a normal fungal ecology for a similar indoor environment.

**IICRC S-520 Condition 2** = (settled spores): an indoor environment which is primarily contaminated with settled spores that were dispersed directly or indirectly from a Condition 3 area, and which may have traces of actual growth.

**IICRC S-520 Condition 3** = (actual growth): an indoor environment contaminated with the presence of actual mold growth and associated spores. Actual growth includes growth that is active or dormant, visible or invisible.

Once the space has met all of EAQP's PRV criteria and recommendations, maintain the building/structure to be free of water entry with good housekeeping and maintenance practices and to insure that no pipe or roof leaks, high humidity, moisture intrusions, etc. occurs. Condition air within the structures at all times by maintaining 45 to 55% RH (50% +/-5%) and maintain appropriate temperatures as well as facilitating appropriate filtered conditioned air movement.

Contain/Containment=Contain all areas and surrounding areas with using appropriate method/s (see paragraph below-EPA 402-K-01-001) with SMG (Suspected Microbial Growth), potential SMG or potential hidden or unforeseen SMG, microbial(s), etc. for remediation using appropriate pressure (negative, positive or neutral) to maximize containment of particulates and minimize contaminates outside of the containment.

Block all supply and return air vents within containment areas and see other pertinent information such as is published in United States Environmental Protection Agency (EPA) "Mold Remediation in Schools and Commercial Buildings" (EPA 402-K-01-001). A quick overview is on pages 6-24, 27& 28.

Clean<sup>3</sup> the HVAC or Air Handling (AH) system by a certified and licensed company and personnel. Insulate where appropriate and **seal all joints**, gaps, non-functional openings, and holes (plenum, ducts and AH unit/s and housing) with **proper tape and mastic** as applicable and balance. Clean HVAC System<sup>2</sup> as directed by contractor (beginning or end).

Replace the stained ceiling tile if present and re-evaluate the water source then corrected as needed.

Elevated moisture and health related triggers can form and be deposited on surfaces. This is unacceptable in maintaining good health and hygiene. Moisture problems must be fixed. The underlying cause of the water or stains (vapor, liquid, etc.) accumulation must be identified and rectified. If the underlying cause of the moisture

is not rectified prior to remediation, detrimental effects of water and health related concerns (negative health triggers) growth or surface deposition will likely recur.

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### **-See INITIAL RESULTS and Appendix B for Photos)**

Weather conditions at time of investigation were sunny with clouds with a temperature of 65.7°F and relative humidity 70.9%RH with a slight breeze.

The 14-story student housing with 3 wings or T shaped apartment units. The foundation supports a brick veneer outside exterior cladding. The lot is generally sloped from front to rear and from left to right. AC and Heat is being used via PTAC units to service apartments.

Objectionable odors\* (Microbial Volatile Organic Compounds [MVOC]-like, etc.) were detected in a few apartments with mildew like microbial growth. The Temperature within the building survey and other measurements showed temperature, Dew Point, CO<sub>2</sub> and CO were in the normal range normal range considering the PTAC set points and ambient weather conditions. **However**, the Relative Humidity (RH) varied greatly depending on the occupants mid 50's to 65-72% in those units that had visible microbial growth-mildew on the contents and a microbial odor. The 65% to 72% RH is unacceptable and is considered higher than recommended for environmental comfort, EAQP considers a RH over 60% to be considered high and is a concern. The ALA (American Lung Association) environmental comfort range is considered to be 50 %. EAQP has found the preferred RH range to be 45 to 55% RH (50%+/-5%) to maximum environmental comfort for most individuals in the indoor building envelope.

\*to the investigators

Recommend thermal seals (insulation) around outlets, receptacles, etc. around exterior walls inside to improve energy conservation and control air flow from unconditioned spaces.

### **Observations**

- SMG on wooden furniture
- SMG and/or on ceiling tiles
- SMG on furniture with textiles
- Dirty HVAC system (PTAC)

**EAQP's hypothesis is that these unhealthy conditions within the structure are a result of elevated to high %RH due to students preferences, inadequate dehumidification, etc. which in part over loads the buildings dehumidification ability to control the RH within these spaces resulting in microbial mildew growth on furniture and building components.**

Have the structure checked by a qualified HVAC company and personnel to assure you that all design criteria is within the ASHRAE standards and operating efficiently. Recommend an HVAC company that its personnel are well acquainted, trained and specializing in working with and performing work for sensitized/sensitive individuals.

# **-EXECUTIVE SUMMARY for FINDINGS & CONCLUSIONS WITH RECOMMENDATIONS**

## **FINDINGS & CONCLUSIONS**

EAQP Inspectors noted the following:

Forty-six apartment dormitory units were inspected by EAQP personnel. Air and surface samples were collected in most of these rooms. The samples revealed that fungi(mold) were present in excess in a majority of the areas tested (~92.5%). Due to the types and amount of fungi present along with a cost benefit ratio we suggest the best approach is to clean and remediated all the dorm units after the students are relocated to another area.

Microbial Volatile Organic Compound [MVOC]-like odors were detected during the inspection process in a significant number of dorm units within the structure. The Relative Humidity (RH) measurements within the structure showed the Relative Humidity (RH) to be in the moderate to high range considering the ambient weather conditions. There were a number of rooms within the building where the windows were open and/or the Portable Terminal Air Conditioning (PTAC) fans were in the “on fan” position.

The average for the rooms tested standard % Relative Humidity (RH) environmental conditions were 62.8% and EAQP’s comfort range is 45-55% RH. The % Relative Humidity measurements were above EAQP’s environmental comfortable range and are considered unacceptable for optimum environmental comfort.

The rooms HVAC systems are PTAC units most of which are unclean. NOTE: High moisture and RH contributes to the coagulation of dust and debris which tends to collect/adhere on surfaces of the HVAC system and minimize its effectiveness as well as accentuates odor and can be a health nuisance factor.

There is visible Microbial Growth (MG) on wood furniture within the structure. Some wood furniture within the dorm rooms have a white film. The white film may contain Suspected Microbial Growth (SMG).

This situation appears to have been caused by high moisture levels (%RH) within the structure. Some of the occupants have their fans on their HVAC units allowing hot moist air into the building. The PTAC units dehumidify the air and help control the relative humidity (RH). Most of the students tend to take long hot showers adding more moisture to the air. Over the past several months we have experienced an unusual amount of rain and the exterior humidity has been high adding to the problems within the building.

### **SURFACES**

Visual microbial growth was observed on the surfaces inside ~56.5% of the rooms investigated. The Independent Laboratory data verified that 100% of the direct surface samples analyzed contained microbials. The amount of fungi was **Remarkable** and suggest an **Atypical** amount of fungi amplification within the structure’s envelope and considered **Abnormal**. The areas are at IICRC-Condition 2 and/or 3 Environment Status and require removal and/or remediation and cleaning with proper sanitizers/disinfectant after all the source/s are determined and corrected. EAQP’s PRV criterion is to become an IICRC-Condition 1 Environment Status and meet EAQP minimum criteria.

### **AIR**

Significant fungal amplification of a potentially unhealthy genus of molds (>1,000 spores/m<sup>3</sup>) is present in 87.2% of the units tested. Remediation/Clean/Correction and/or repairs are required at this time to bring these areas to IICRC-Condition 1 with normal fungal ecology and meet EAQP’s other PRV criteria. Generally, greater than (>)1,000 spores/m<sup>3</sup> of Penicillium/Aspergillus (Pen/Asp) is indicative of poor air quality.

## **EAQP's hypothesis is that these unhealthy conditions within the structure are a result of the high relative humidity\* within the building resulting in microbial growth.**

**\*Contributing factors:** The Knoxville region has recently experienced significant rain and high humidity.

### **RECOMMENDATIONS:** (See separate ATACHMENT C-2 for recommendation details)

(This remediation protocol is good for at least 15 days from date on subject EAQP report from when it was derived and assuming the points below are corrected, maintained and no unknown moisture or unusual event occurred).

The building will need to be remediated/cleaned and the fungi removed from the contents and environment as well as implement a system within the building to maintain %RH between 30-60% and prefer 45 to 55% if possible.

1. Remove the occupants from the building prior to remediation.
2. Discard any item that cannot be properly cleaned.
3. Remove and clean all PTAC units.
4. Remediate/Disinfect with Antimicrobials/Clean or Discards surfaces/ceiling tiles/contents/etc. that cannot be cleaned or deodorize properly.
5. Remove and replace any stained ceiling tiles.
6. Wipe down all surfaces within each room.

**-PRIMARY ITEMS**=EAQP recommends the use of the "HEPA Sandwich remediation techniques" (HEPA vacuum followed by remediation and cleaning with proper sanitizers/disinfectant and HEPA vacuum again) on all walls, ceilings, personal contents (do a "cost-benefit analyses" then followed by "air washing" at the very end after all areas are remediation.: #1 Repairing & remediate/clean (remove and/or sanitizers/disinfectant) and/or Replace the PTAC/HVAC systems (PTAC/AH, duct & plenum if present, etc.) because the PTAC/HVAC system propels particulates, microbial(s), odors and acting as a secondary reservoir and odor source. #2 Remove and replace all (stained) ceiling tiles, clean and remediate as needed within the structure to arrive at an IICRC Condition 1 normal fungal ecology. #3 "Air Wash" the building and surrounding area.

**NOTE:** Make correction and/or repairs using present day building, mechanical, electrical, etc. codes. At the property's owner/s and/or remediators discretion as to how and when the PTAC/HVAC work is to be performed, Repair/Clean/Remediate or Replace the PTAC/HVAC and its air delivery systems and/or Clean, remediate (remove and/or sanitizers/disinfectant). Use the "HEPA Sandwich remediation techniques" (HEPA vacuum followed by remediation and cleaning with proper sanitizers/disinfectant and HEPA vacuum again) then followed by "air washing" at the very end after all areas are remediation. Leave HEPA units on till EAQP performs their PRV investigation and testing. EAQP further recommends: Use containment under neutral pressure, introduce HEPA filtered air into remediation space/s and remove air out the opposite end through a HEPA filter.

### **"MICROBIAL INFORMATION on genus and/or species detected"**.

Based on the results of our observations and data from limited sampling, EAQP recommends that the structure located at 1615 Laurel Avenue Knoxville, TN 37916 should have correction and repairs made on the property ("cost-benefit-ratio") followed by remediation and cleaning. This work is to be performed under containment and managed (+/-) pressure in the event microbial activity is present behind the walls, ceiling and miscellaneous

components such as luminaries, shelving, etc. This work is to be performed by qualified contractors that adheres to the principles of the IICRC S-500, S520, returning the affected areas to a Condition 1 with normal microbial ecology and meets EAQP's minimum established criteria as stated on page 2. The qualified and specializing contractor with technicians/workers are to be licensed & members in good standing in their professional organization/s and are knowledgeable, trained and skilled in the techniques within their profession in the use of containment, air pressure management and mold remediation techniques in the event microbial activity is present.

**The minimum objective for the remediator is to meet EAQP's PRV criteria as stated above under the scope of work**

If you have medical questions or other medical situations, EAQP recommends that your health care provider review EAQP's report.

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After identifying and performing water related damages, all corrections and microbial remediation if present, have EAQP, Inc. (EAQP) retest\* (Post Remediation Verification\* [PRV\*]) the spaces for proper recommendation and/or treatment. After the restoration work has been completed, have EAQP, Inc. re-investigate\* and re-test\* the space(s) for proper implementation of the recommendation and/or restoration. Retest\* after thirty (30) days and after one year ensure all issues were addressed for adequate long-term moisture and health (asthma, etc.) related particulates, deposition, residue and target organisms of concern prevention.

\*PRV= EAQP's minimum established criteria includes space/s being at IICRC Environmental Condition 1 plus having environmental surfaces clean, dry and free of active particulates/microbial/fungi or significant microbial deposition and target organisms within the areas tested and air sampling includes the use of an outdoor ambient air samples as a reference standard. When using the Mycometer Air Value technology, the average inside value is required to be equal/less than ( $=/ <$ ) 200 MAV<sup>1</sup> (prefer  $=/ <$  150 MAV<sup>1</sup>) &\*\*\* and  $=/ <$  75 MAV<sup>2</sup> for mechanically ventilated areas. Another method of collecting air samples is to use the Non-viable Slit Impactor or Spore Trap, etc. EAQP wants the indoor /outdoor [ambient] spore count fungi microbial air ratio (I/O) to be generally equal to or less than ( $<$ ) 1.0 assuming the ambient outdoor total fungi is greater than ( $>$ ) 1,000 spores/m<sup>3</sup> and without significant amounts of specific genus/species of concern. The types and percentage of specific genus/species of concern inside the structure should be similar or less than for outdoor ambient air. One such common genus of concern is *Penicillium/ Aspergillus*-like [Pen/Asp]. EAQP would like the Pen/Asp spore count to be less than ( $<$ ) 1,000\*\* spores/m<sup>3</sup> and prefers  $<$  500 spores/m<sup>3</sup> in certain situations etc. along with less than ( $<$ ) 42 spores/m<sup>3</sup> for certain fungi [ $\sim$ 3 actual spores], etc.) and conversely, greater than ( $>$ ) 1,000 spores/m<sup>3</sup> of *Penicillium/Aspergillus* (Pen/Asp) is generally is indicative of poor air quality.

MAV<sup>1</sup>=Mycometer Air Value (dynamic/aggressive-Air moving machine/s turned off just prior to testing)

MAV<sup>2</sup>=Mycometer Air Value (quiescence/static)

\*\* equal/greater than ( $=/ >$ ) 1,000-EAQP may consider depending on sampling technique and other influences

\*\*\* equal/less than ( $=/ <$ ) 150 MAV<sup>1</sup> and equal/less than ( $=/ <$ ) 300 MAV may be used in certain unusual isolated cases

EAQP incorporate "The Institute of Inspection Cleaning and Restoration" (IICRC) S-520 to identify the current condition based on three possible levels of indoor contamination.



IICRC-S520 Condition 1 = (normal fungal ecology): an indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity; location and quantity are reflective of a normal fungal ecology for a similar indoor environment. See other EAQP's minimum established criteria for surfaces and air.

Once the space has met all of EAQP's PRV minimum criteria, maintain the building/structure to be free of water entry with good housekeeping and maintenance practices and to insure no pipe or roof leaks, high humidity, moisture intrusions, etc. Condition air within the structures at all times by maintaining 45 to 55% RH (50% +/-5%) and maintain appropriate temperatures as well as facilitating appropriate filtered conditioned air movement.

As a general recommendation, recommend a periodic yearly inspection by EAQP (qualified Environmental Professional [EP], Indoor Environmental Professionals [IEP], Industrial Hygienist, IRC-Code Certified Building Inspector and Building Scientist) to minimize future reoccurrences and assist in identifying potential small issues before they become major.

To remove possible water damage, microbial (fungi, etc.) and/or reservoirs and other stress vectors, EAQP recommends:

### **SHORT NOTES and OVERVIEW:-Locate sensitizing source and remove**

(This remediation protocol is good for at least 15 days from date on subject EAQP report from when it was derived and assuming the first two bullet points below are corrected, maintained and no unknown moisture or unusual event occurred).

### **SEE RECOMMENDATION & PRIMARY ITEMS**=SEE above-page

- **Identify and correct all water (gas or liquid phase, etc.) and air gap intrusions (external & internal). Identify, repair and/replace building components as deemed appropriate. De-clutter as needed. See Photos in Appendix B for some areas of concern & interest. (Contact EAQP to discuss further)**
- Always maintain the RH between 45 to 55% RH (50% +/-5%) inside the structural building envelope and building materials to contain less than (<) 16% Relative Moisture Content (RMC) is acceptable in most cases. (NOTE: For colder weather [winter times] maintain a minimum temperature of 60°F).
- **SPECIAL NOTE: If there is a fuel (gas, wood or other hydrocarbon source) furnace or heating unit in the remediated space, check that back drafting so flame out does not occur when area is under negative pressure).**
- See Photos in Appendix B and RESULTS above for example areas to investigate and correct.
- Seal all non-functioning gaps, holes, etc. There may be holes/gaps connecting these areas to other areas, area under the sinks in general and miscellaneous opening, etc. and seal.
- Use the "HEPA Sandwich remediation techniques" (HEPA vacuum followed by remediation and cleaning with proper sanitizers/disinfectant and HEPA vacuum again) on all walls, ceilings, personal contents (do a "cost-benefit analysis" then followed by "air washing" at the very end after all areas are remediation.
- **INSIDE**- Seal all non-functioning gaps, holes, etc. There may be holes/gaps connecting these areas to other areas, area under the sinks in general and miscellaneous opening, etc. and seal. Clean/Remediate/ Sanitize/Disinfect Units and/or System as directed by contractor (beginning or end).
- At a minimum, maintain the %RH inside the building between 40 to 60%RH. In **the warmer months**, maintain the HVAC<sup>2</sup> AC set point at 77°F (25°C) when the building is not occupied and maintain the %RH inside the building at equal to or less than (=/<) 60% RH.

- Setup of critical barriers as deemed appropriate. In this situation, the remediator might want to consider placing individual units, floors and/or “wings” under negative pressure. NOTE: Place under positive pressure when removing/remediating/cleaning/repairing, etc. PTACs.

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- **INSIDE Structure-1:** NOTE= May have to go beyond what is stated in this section as the situation dictate. May have to go beyond what is stated in this section as the situation dictates (at least 2 feet beyond visible mold/fungi). Corrected by professionals and performed in a good workmanship manner. Correct any and all potential **SAFETY HAZARDS**. Contain and Create **a neutral or slightly negative pressure** inside the structure to be remediated by introducing a calculated amount (PHEAFE© or HEPA Air Machine/s) of fresh HEPA filtered air into the structure while **simultaneously** exhausting air out the structure (**when exhausting air outside the structure -Safety concern**-exhaust the air via PHEAFE© or HEPA Negative Air Machines [NAM])-i.e. the air that is exhausted to the outside [filters out 99.97% of all particulate in excess of 0.3 microns) **NOTE:** The air should be exhausted out the opposite end of the structure from the air that is being introduced into the structure if at all possible. Structure should be under a net neutral pressure. Other configuration may work as good as or better than the previously stated set up depending on the remediator and situation but the principle should remain the same and met EAQP’s exiting PRV criteria.
  - (a) Remove and dispose properly of certain contents (based on a “cost to benefit ratio” that are judged to be unrecoverable or may be kept based on sentimental nature of the items). (b)Another option is to “Pack-out” and use proper disinfectant/ sanitize & remediate/clean<sup>3</sup> on the contents or & (c) Or proper disinfectant/ sanitize & remediate/clean<sup>3</sup> contents “in-place” and this too is to be based on a “cost to benefit ratio” & and kept based on the sentimental nature of items to be clean/disinfectant/ sanitize /remediate.
  - After the above work is completed, arrange the PHEAFE© or HEPA units [Negative Air Machines (NAM)] to sweep the remediated areas with HEPA filtered air at one end (Air Washing) pushing the air towards and through to the exhausted air side/end. The opposite end is to be equipped with a HEPA or equivalent filter or filters and secured to prevent unwanted materials. The air is to be released through the HEPA or equivalent filters or NAM/s. Air-wash for a few hours or longer depending on the confidence of the remediator. Use an electric leaf blower to aerosolize the particles that may have been missed while Air Washing the inside of the structure. Maintain the pressure regime (negative, positive or neutral) as stated above during the remediation/cleaning<sup>3</sup> phase for a few hours or longer before having EAQP Perform PRV testing. EAQP will turn off the air during the PRV phase and will turn them back on until the test results are available and the home meets EAQP PRV criteria. Other configuration may work as good as or better than the previously stated set up depending on the remediator and situation but the principle should remain the same and meet EAQP’s other PRV criteria.
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- After the remediation recommendation work has been completed, have EAQP, Inc. (EAQP) retest\* the space for proper recommendation and/or treatment. After the restoration work has been completed, have EAQP, Inc. re-investigate\* and re-test\* the space(s) for proper implementation of the recommendation and/or and restoration. Retest\* after thirty (30) days and after one year to ensure all issues were addressed for adequate long-term moisture and health (asthma, etc.) related particulates, deposition, residue and target organisms of concern prevention.

\*PRV= EAQP’s minimum established criteria includes space/s being at IICRC Environmental Condition 1 plus having environmental surfaces clean, dry and if present-free of active particulates/microbial/fungi or significant microbial deposition for target organisms & meet the requirements for the IICRC-Condition 1 along with meeting EAQP’s air sampling criteria within the areas tested. One method of collecting air samples is to use the Non-viable Slit Impactor or Spore Trap, etc. EAQP wants the indoor /outdoor [ambient] spore count fungi microbial air ratio

(I/O) to be generally equal to or less than ( $\leq$ ) 1.0 assuming the ambient outdoor total fungi is greater than ( $>$ ) 1,000 spores/m<sup>3</sup> and without significant amounts of specific genus/species of concern. The types and percentage of specific genus/species of concern inside the structure should be similar or less than for outdoor ambient air. One such common genus of concern is *Penicillium*/*Aspergillus*-like [Pen/Asp]. EAQP would like the Pen/Asp spore count to be less than ( $\leq$ ) 1,000\*\* spores/m<sup>3</sup> and prefers  $< 500$  spores/m<sup>3</sup> and conversely, greater than ( $>$ ) 1,000 spores/m<sup>3</sup> of *Penicillium*/*Aspergillus* (Pen/Asp) is generally indicative of poor air quality. As well as having less than ( $\leq$ ) 42 spores/m<sup>3</sup> for certain fungi [ $\sim 3$  actual spores], etc.). Another method for PRVs is to use the Mycometer Air Value technology, the average inside value is required to be equal/less than ( $\leq$ ) 200 MAV<sup>1</sup> (prefer  $\leq 150$  MAV<sup>1</sup>) &\*\*\* and  $\leq$  75 MAV<sup>2</sup> for mechanically ventilated areas. Both of these sampling methods can be used together in tandem. In certain situation both air sampling methods can be used as well as the mTRAP® (DNA) can be used.

MAV<sup>1</sup>=Mycometer Air Value (dynamic/aggressive-Air moving machine/s turned off just prior to testing)

MAV<sup>2</sup>=Mycometer Air Value (quiescence/static)

\*\* equal/greater than ( $\geq$ ) 1,000-EAQP may consider depending on sampling technique and other influences

\*\*\* equal/less than ( $\leq$ ) 150 MAV<sup>1</sup> and equal/less than ( $\leq$ ) 300 MAV may be used in certain unusual isolated cases

- If by doing these recommendations, the problems persist; there are other recommendation which are more extensive and expensive.

See following Protocol for details.

## **CLEANING and/or REMEDIATION PROTOCOL:**

1. *NOTE: SPECIAL WORKER RISK* - The potential health risk for Contractor's supervisors and workers during microbial cleaning/remediation is exposure to, or contact with, massive concentrations of bacteria or potential fungi. Individual workers with known allergy or respiratory disease (for example, asthma and hypersensitivity pneumonitis) or individuals who have pre-existing chronic disease (i.e. those with compromised immune systems) are precluded from working within recognized areas of bacteria and mold contamination.

A contractor experienced in the cleaning/remediation of microbial contaminated structure/s material should clean/remediate contaminated materials and clean the residence following industry-accepted guidelines. (optional- outlines in the remediation technical specification found in Appendix C).

All suggestions are from the limited investigation of the property and existing conditions at the time of inspection. As cleaning/remediation of the property proceeds, additional areas of cleaning/remediation may be encountered and thus extend the scope of work.

The goal of cleaning/recommendations/remediation is to remove or clean affected contaminated materials in a way that prevents the emission of dust contaminated from leaving a work area and entering an occupied or non-abatement area. EAQP, Inc. offers cleaning/recommendations/remediation guidelines that are based on applicable provisions from current indoor air quality publications referenced above.

1. Minimize dust release and spore dissemination to limit bioaerosol generation. Maintain 40 to 50 Grains Per Pound of water in the air using appropriate safety measures and techniques \*(humidity

lower than 55% RH) during the remediation process through a dehumidification system. The HVAC system should be shut down in the mold remediation areas prior to any remedial activity and seal vents and/or return openings. **Have a heater in the appropriate areas to prevent freezing if applicable** (do not allow the structure and/or contents temperature to fall below 55°F and prefer >60°F).

2. Place materials containing microbial(s) (mold/fungi, etc.) and potentially wetted materials, etc. in plastic bags and/or in closed plastic container and discard in an appropriate manner.
3. See **SHORT NOTES and OVERVIEW** for particulars.

## **PROJECT MONITORING RECOMMENDATIONS:**

Recommend performing on-going verification of the effectiveness of the Environmental Controls in isolating the work zone and confirm that the Project Specifications are being adhered to by the Cleaning/Remediation Contractor. Recommend post remediation inspection and re-sampling prior to re-occupancy.

## **PROJECT TESTING and RE-OCCUPATION CRITERIA:**

### **Post-Remediation/Cleaning/Restoration Verification (PRV)**

Recommend post remediation inspection and re-sampling prior to occupancy. PRV is recommended after the inside of the containment is clean and before containment is removed. After the above work is completed, arrange the PHEAFE© or HEPA units [Negative Air Machines (NAM)] to sweep the remediated areas with HEPA filtered air at one end (Air Washing) pushing the air towards and through to the opposite end and/or lower and use an electric leaf blower to aerosolize the particles that may have been missed while Air Washing the inside (if not already performed). Maintain the pressure regime (negative, positive or neutral) as stated above during the remediation/cleaning<sup>3</sup> phase for 12 to 24 hours before having EAQP Perform PRV testing. EAQP will turn off the air during the PRV phase and will turn them back on until the test results are available and areas meet EAQP PRV criteria. Other configuration may work as good as or better than the previously stated set up depending on the remediator and situation but the principle should remain the same and met EAQP's exiting PRV criteria.

After identifying and performing water related damages, corrections and if required-microbial remediation, have EAQP, Inc. (EAQP) retest\* (Post Remediation Verification\* [PRV\*]) the spaces for proper recommendation and/or treatment. After the restoration work has been completed, have EAQP, Inc. re-investigate\* and re-test\* the space(s) for proper implementation of the recommendation and/or restoration. Retest\* after thirty (30) days and after one year to ensure all issues were addressed for adequate long-term moisture and health (asthma, etc.) related particulates, deposition, residue and target organisms of concern prevention.

\*\*PRV= EAQP's minimum established criteria includes space/s being at IICRC Environmental Condition 1 plus having environmental surfaces clean, dry and if present-free of active particulates/microbial/fungi or significant microbial deposition for target organisms & meet the requirements for the IICRC-Condition 1 along with meeting EAQP's air sampling criteria within the areas tested. One method of collecting air samples is to use the Non-viable Slit Impactor or Spore Trap, etc. EAQP wants the indoor /outdoor [ambient] spore count fungi microbial air ratio (I/O) to be generally equal to or less than ( $\leq$ ) 1.0 assuming the ambient outdoor total fungi is greater than ( $>$ ) 1,000 spores/m<sup>3</sup> and without significant amounts of specific genus/species of concern. The types and percentage of specific genus/species of concern inside the structure should be similar or less than for outdoor ambient air. One such common genus of concern is *Penicillium/Aspergillus*-like [Pen/Asp]. EAQP would like the Pen/Asp spore count to be less than ( $<$ ) 1,000\*\* spores/m<sup>3</sup> and prefers  $<$  500 spores/m<sup>3</sup> and conversely, greater than ( $>$ ) 1,000 spores/m<sup>3</sup> of *Penicillium/Aspergillus* (Pen/Asp) is generally indicative of poor air quality. As

well as having less than ( $<$ ) 42 spores/m<sup>3</sup> for certain fungi [ $\sim$ 3 actual spores], etc.). Another method for PRVs is to use the Mycometer Air Value technology, the average inside value is required to be equal/less than ( $=/ <$ ) 200 MAV<sup>1</sup> (prefer  $=/ <$  150 MAV<sup>1</sup>) &\*\*\* and  $=/ <$  75 MAV<sup>2</sup> for mechanically ventilated areas. Both of these sampling methods can be used together in tandem. In certain situation both air sampling methods can be used as well as the mTRAP® (DNA) can be used.

MAV<sup>1</sup>=Mycometer Air Value (dynamic/aggressive-Air moving machine/s turned off just prior to testing)

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\*\*\* equal/less than ( $=/ <$ ) 150 MAV<sup>1</sup> and equal/less than ( $=/ <$ ) 300 MAV may be used in certain unusual isolated cases

EAQP also incorporates The Institute of Inspection Cleaning and **Restoration (IICRC)** S-520 to identify the current condition based on three possible levels of indoor contamination. An EAQP PRV criterion is to return the environment to an IICRC-S520 Condition 1 and after the sources are determined and corrected.

IICRC-S520 Condition 1 = (normal fungal ecology): an indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity; location and quantity are reflective of a normal fungal ecology for a similar indoor environment. See EAQP's minimum established other criteria for surfaces and air.

Once the space has met all of EAQP's PRV (minimum) criteria, maintain the building/structure to be free of water entry with good housekeeping and maintenance practices and insure no condensation, pipe or roof leaks, high humidity, moisture intrusions, nor moisture in any form, etc. Condition air within the structures at all times by maintaining 45 to 55% RH (50% $\pm$ 5%) and maintain appropriate temperatures as well as facilitating appropriate filtered conditioned air movement.

As a general recommendation, recommend a periodic yearly inspection by EAQP (qualified Environmental Professional [EP], Indoor Environmental Professionals [IEP], Industrial Hygienist, IRC-Code Certified Building Inspector and Building Scientist) to minimize future reoccurrences and assist in identifying potential small issues before they become major.

Rooms checked by UT  
 Rooms checked by EAPQ

Rm. No.	Ptac Unit Dirty	SMG	Air sample	Surface sample		
				Swab	Bio	
[REDACTED]	Yes	Yes	Yes	Yes	Yes	Couch stained
	Yes	Yes	Yes	Yes	Yes	
	Yes	Yes	Yes	Yes	Yes	Ceiling Stain
	Yes	Yes	Yes	Yes	Yes	
	Yes	Yes	Yes			Moisture reading 20.3 wall no
	Yes		Yes			
	Yes		Yes	Yes	Yes	



ext to window





Investigation Samples					
Photo #	Sample #	Bio-Swab	Standardized		Visible SMG
			Unit ID# 1 or #2		
			Test #	RLU	
-	99	Bio-Swab	1669	0	-
	100	“ “	1662	0	Clean
	101	“ “	1663	4	dust
	102	“ “	1664	4	SMG
	103	“ “	1666	9	SMG
	104	“ “	1675	83	SMG
	105	“ “	1776	0	SMG
	106	“ “	1777	48	SMG
	107	“ “	1778	7	SMG
	108	“ “	1779	59	SMG
	109	“ “	1780	83	SMG
	110	“ “	1781	14	SMG
	111	“ “	1782	44	SMG
	112	“ “	1783	15	SMG
	113	“ “	1784	57	SMG
	115	“ “	1786	326	SMG
	116	“ “	1787	11	SMG
	117	“ “	1788	8	SMG
	118	“ “	1789	27	SMG
	119	“ “	1690	3	SMG
	120	“ “	1691	110	SMG
	121	“ “	1692	38	SMG
	122	“ “	1693	69	SMG
	123	“ “	1694	8	SMG
	124	“ “	1695	264	SMG
	125	“ “	1696	92	SMG
	126	“ “	1697	51	SMG
	127	“ “	1698	82	SMG
	128	“ “	1699	69	SMG
	129	“ “	1700	5	SMG
	130	“ “	1701	4	SMG
	131	“ “	1702	8	SMG
	132	“ “	1703	81	SMG
	133	“ “	1704	3	SMG
	134	“ “	1705	30	SMG
	135	“ “	1706	518	SMG

**Sampling Area & IICRC-S520  
Condition 1,2,3  
environmental status**

Control/Blank

PT Unit in shop clean

Dirty PT unit in shop

Dirty PT unit in room

Dirty PT unit in room

Room Light Fixture in bed room

Room Bed room cabinet left side

Room Bed room

Room Desk left side

Room Desk

Room Kitchen Table

Room PT unit bed room

Room Desk in bed room

Room Back bed room head board

Room Bed room cabinet

Room bed room head board

Room Living room table

Room living room ptac unit

Room bed room table

Room bed room table

Room living room table

Room cabinet bed room

Room living room table

Room table leg

Room table leg

Room Chair fabric and wood

Room table leg

Room table leg

Room table leg

Room table leg

Room table leg

Room table leg

Room table leg

Room couch

Room table

Room table



**Investigation- Air Samples**

Photo #	Sample #	Sample Type AoC#	Standardized		Vol in L
			Q=L/M Before	Q=L/M After	
	1	AoC#25324402	15	15	75 L
	2	AoC#25318312	15	15	75 L
	3	AoC#256319347	15	15	75 L
	4	AoC#25319224	15	15	75 L
	5	AoC#25319337	15	15	75 L
	6	AoC#25318314	15	15	75 L
	7	AoC#25319300	15	15	75 L
	8	AoC#25319298	15	15	75 L
	9	AoC#25319342	15	15	75 L
	10	AoC#25319343	15	15	75 L
	11	AoC#25319293	15	15	75 L
	12	AoC#25319275	15	15	75 L
	13	AoC#25318316	15	15	75 L
	14	AoC#25319345	15	15	75 L
	16	AoC#25318311	15	15	75 L
	17	AoC#25319295	15	15	75 L
	18	AoC#25319344	15	15	75 L
	19	AoC#25319296	15	15	75 L
	20	AoC#25319280	15	15	75 L
	21	AoC#25319346	15	15	75 L
	22	AoC#25329264	15	15	75 L
	23	AoC#25324398	15	15	75 L
	24	AoC#25324404	15	15	75 L
	25	AoC#25324393	15	15	75 L
	26	AoC#25324392	15	15	75 L
	27	AoC#25324396	15	15	75 L
	28	AoC#25324386	15	15	75 L
	29	AoC#25324390	15	15	75 L
	30	AoC#25324540	15	15	75 L
	31	AoC#25324391	15	15	75 L
	32	AoC#25324384	15	15	75 L
	33	AoC#25324394	15	15	75 L
	34	AoC#25324388	15	15	75 L
	35	AoC#25324395	15	15	75 L
	36	AoC#25324400	15	15	75 L
	37	AoC#25324387	15	15	75 L
	38	AoC#25324383	15	15	75 L
	39	AoC#25324385	15	15	75 L

	40	AoC#25324389	15	15	75 L
	41	AoC#25324406	15	15	75 L

[illegible]



Room		living room
Room		living room