AdvanceRestoration & Maintenance

"Our Integrity is Your Satisfaction"

P.O. Box 3326 Kalispell MT, 59903-
-Email: accounting@advancedrestoremt.com-
~Office: (406) 858-0054 Cell: (406)-885-1113~
Licensed*Insured***Certified WRT—IICRC-NET**

CERTIFICATE OF COMPLETION AND SATISFACTION

Customer: Justin Sorensen

Job Address: 140 Granite Hill Rd Kalispell MT
City State

Date of Service: February 2023

Insurance Claim: ☐ Yes If yes, Claim #: _____ ☑ No

Type of work: ☐ Mold Remediation ☑ Water Damage ☐ Fire/Smoke

☐ Other: _____

This document certifies that the work performed by ADVANCED RESTORATION & MAINTENANCE LLC at the property listed above and at the request of the customer listed above has been completed 100% to satisfaction of the customer.

Advanced Restoration & Maintenance

Denise L. Belt
Authorized Representative

Business Manager
Title

Denise L. Belt
Authorized Signature

3/20/23
Date

D. Quinn Const., Inc.
Certified Residential Mold Inspector

Asbestos Certification #1113A23-02
Contractor Registration #22561
AmIAQ/CRMI Certified Inspector number #12177
ESA CRMI/CMI/CMA Inspector #1729
ACAC American Council for Accredited Certification #12277
Certified Indoor Air Quality Technician #0607019
Pesticide Operator's License. #1-07-15650-12
Certified ASHI Home Inspector #248251
Certified Residential Measurement Provider NRHA 10667ort

Limited Microbial Investigation

Prepared for: Advanced Restoration

(406) 858-0054

Prepared by: Kinkade O. Quinn
D. Quinn Const., Inc.
1820 Columbia Falls Stage Road
Columbia Falls, Montana 59912
406 755-5322

Report #2385-A

This report was prepared by D. Quinn Const., Inc. under the professional direction and review of the named person listed above. The conclusions and professional opinions presented herein are based on available information and within the limits prescribed by the client and are according to generally accepted industrial hygiene practices. There is no other warranty either expressed or implied. This document was prepared for the sole use of **Advanced Restoration** in regard to the limited fungal investigation, microbiological (mold spore) sampling and remediation specifications for **140 Granite Rd, Kalispell** and may not be duplicated or used by any other party without expressed written consent of D. Quinn Const., Inc... Any modifications to this report or protocol that are not made by D. Quinn Const. Inc. voids the signature of the consultant and releases D. Quinn Const., Inc. from any liabilities associated with the changes.

1.0 Overview

On April 7, 2023 D. Quinn Const Inc. performed limited fungal pre-investigation and testing for microbiological (fungal spore) sampling sufficient to establish possible fungal remediation work performed at the above referenced location. Note weather conditions at time of testing were 44°(F) and clear. This limited investigation and sampling was at your request to evaluate the interior spaces of the structure for possible microbial growth and possible microbial spores in air. The investigation and sampling procedures were general and limited to the specific areas where prior water and/or moisture intrusion and/or evidence of microbial growth were observed. Representative samples were collected in separately chosen areas in the crawlspace area and outdoors to help assess the airborne types and concentrations of fungal spores.

1.1 **Pre-testing procedures: to be Used Before a Mold Cleanup/Remediation Project**

There are no single accepted "pass-fail" criteria pre-testing inspections. I examine areas for fungal growth or other allergens and look in other building areas for evidence of spread of fungal growth and contaminated debris. Our Evaluation combines a visual inspection of the extent of infected materials/areas with a microscopic examination of surface, dust, air and/or vacuum samples collected at the property. We will collect mold inspection test samples of physical surfaces which appear to be moldy or dirty. We will also collect samples from surface areas which appear to be clean (non-suspect) on settled surface samples from a representative cleaned surface in each major area. We may also collect other screening samples by using air or vacuum sampling methods. But beware; air sampling alone is not a reliable means of screening a building for problems. A general inspection protocol includes, but is not limited to, locating the mold and moisture, assessing the mold and moisture to determine the source, performing measurements (temperature, humidity, etc.), and conducting mold sampling, if appropriate. After the inspection is completed, a comprehensive report is prepared. The report includes an explanation of the extent and location of any fungal growth or moisture, location of any active leaks, interpretation of the sampling data and recommendations for the remediation of the fungal growth problem

2.0 **Investigation Parameter:**

Attached are the laboratory analytical reports (see test results) from the analysis of samples collected during our investigation on April 7, 2023. In addition to a detailed visual investigation of the suspect areas, humidity readings and moisture measurements, our investigation included the collection of the following:

2 Non-Viable air samples:	(microbial spore identification in air)
0 Non-Viable wall cavity check:	(microbial spore identification in the wall cavity)
1 Direct surface Swab samples	(microbial spore identification of surface)
0 Direct surface Tape sample	(microbial spore identification of surface)
8 Digital Photos:	(photographic log of investigation)
0 FLIR Digital Photos:	(infrared photographic log of investigation)

Investigative Work

Kinkade Quinn visited the site on April 7, 2023. The conclusions and recommendations contained in this report are based on information obtained during D. Quinn Inspection Inc. mold assessment, which included:

- Interviews of property representatives
- Visual observations
- A moisture surveys
- Measurement of temperature and relative humidity
- Collection and laboratory analysis of spore trap air samples.
- Collection and laboratory analysis of direct samples.

3.0 **Visual Inspection:**

3.1 **Main level:**

A visual inspection of the main level area was conducted to identify signs of evidence of past or on-going water intrusions, visible evidence of microbial growth or noticeable musty like odors. **Upon entering the main level no musty odor was observed.**
A closer inspection of this area did not reveal any visual evidence of fungal growth and/or water staining. Note that this limited investigation is not intended to identify every area of microbial growth in the living area, but to provide a general overview of its condition related to possible microbial growth found in living room. Since it was not possible for our company to investigate the losses at the time of occurrence, it was necessary to rely on visual determinations, supplied information from the current homeowners and laboratory analysis.

3.2 **Crawl-space underfloor:**

A visual inspection of the crawl-space underfloor area was conducted to identify evidence of past or on-going water intrusions, visible evidence of microbial growth or noticeable musty like odors. **Upon entering the crawl-space underfloor area a slight musty odor was observed. Further inspection of the crawl-space underfloor area revealed evidence of lite staining, perhaps caused damaged vapor barrier installed and/or prior or ongoing water intrusion in crawl-space underfloor space. Also, upon further investigation it appears that there is adequate ventilation in the crawl-space underfloor area, however, the 6-mil visqueen ground cover has been damaged in multiple locations. The ground cover that has been installed in this area is recommended to have some repair in order to help prevent and reduce moisture in the crawl space area. Note dry conditions did exist at time of this inspection and no visual evidence of past and/or ongoing moisture was found in the basement crawl-space underfloor area. Also, note the history of this structure is not known and/or if past moisture issues may have occurred which are no longer visible to inspection.** Also, note that this limited investigation is not intended to identify every area of microbial growth in the crawl-space underfloor area, but to provide a general overview of its condition related to possible microbial growth found in crawlspace area. Since it was not possible for our company to investigate the losses at the time of occurrence, it was necessary to rely on visual determinations, supplied information from the current homeowners and laboratory analysis.



4.0 Temperature:

For comfort, most buildings are maintained at temperatures of 65° to 75°F. This temperature range is also hospitable to many environmental microorganisms, some of which can even survive at temperatures below 50°F and others above 50°F. However, temperature and water availability are related, and water availability is critical. Temperature can often be controlled in water systems, that is, it may be possible to maintain water at temperatures above or below those that encourage microbial growth. Moisture is essential to all life, and the chemical reactions that lead to biological growth depend on an adequate water supply.

5.0 Relative Humidity:

Understanding the significance of RH in an occupied space & the related concept of substrate is critical to controlling microbial growth indoors. Relative humidity is a ratio (expressed as a percentage) of the amount of moisture in the air to the maximum amount the air could hold. Warmer air has a greater capacity to hold water in its vapor form than cooler air. Although the relative humidity of the rooms' air plays a role in the water content of materials in the room, it is the available moisture in a substrate, not the relative humidity of the room air, that determines if microorganisms can grow and the types of organisms that colonize material. By keeping relative humidity values between 30% to 50%, it is logical to assume that corresponding values in materials would be limited. However, this assumption may not hold because microorganisms grow on surfaces and in materials, not in air. Therefore, it is the RH in the air adjacent to a surface, not ambient RH that must be controlled to prevent microbial growth. Maintaining room RH below 50% may keep materials fairly dry but does not eliminate the possibility of microbial growth because local cold spots and water intrusion may allow the RH of air adjacent to a surface to exceed 70%.

Location	Relative Humidity	Temperature
Crawlspace area	34 Percent	64 Degrees Fahrenheit

6.0 Moisture Measurements:

During our inspection moisture measurements were taken using a *Surveymaster* Moisture Protimeter penetrating and non-penetrating moisture meter. It was used to determine if the crawlspace underfloor area was retaining excessive absorbed moisture where the water staining was present. Moisture measurements are obtained by inserting the pins of the meter into the material being tested (invasive mode) or by placement of the flat surface of the meter onto the material being tested (non-invasive mode). Twelve individual locations were measured during this inspection. The moisture meter uses an analog scale with relative readings from 0% to 99%. On these scales, readings from 0% to 16% are considered normal for wood, 17% to 22% are considered damp, and 23% to 99% are considered substantially wet. Note drywall more than 1% could support moisture. All locations tested had readings in the 0% to 11% range indicating normal moisture levels.

7.0 Sampling Methodologies

7.1 Non-viable Air Sample

Based on the detailed visual inspection and your request for mold spore sampling I recommended that non-viable air samples be collected to determine the distribution and concentration of airborne mold spores be taken both inside this structure and outdoor and/or non-complaint for comparison. The purpose of spore trap air sampling is to provide an approximation of the airborne microbial (fungal) spore concentrations inside and outside the building. Elevated airborne spore concentrations may indicate an indoor microbial reservoir(s), or that cleaning of personal effects or the HVAC system(s), is a necessary component of a microbial remediation plan.

7.2 Quick Surface Swab

Based on the detailed visual inspection I recommended that quick surface swab sampling be collected to determine the distribution and concentration of possible fungal growth at suspect areas in crawlspace area. one direct surface swab samples were collected with a moistened cotton swab removed from a sealed container. An area of six square inches was swabbed using a clean disposable template. After swabbing with a rolling motion, the swab was placed back into its original container, sealed and uniquely labeled.

8.0 Sampling was conducted in the following areas:

8.1 Non-Viable Spore Trap:

Sample #	Sample type	Location	Area
#1	ST (Non-Viable Bioaerosol Analysis)	Outside	Front Patio
#2	ST (Non-Viable Bioaerosol Analysis)	Crawlspace	NW Wing

8.2 Direct surface swab:

Sample #	Sample type	Location	Area
#3	SWB (Direct Microscopic Examination)	Crawlspace	Floor Joist Suspect

9.0 Conclusions:

I have interpreted the laboratory data for the air samples and concur with the laboratory results; that the sample collected indicates that there are;

1. **No elevated fungal spores** present in the NW wing crawlspace area suspect air sample #2 when compared to the baseline (outside) sample. Indicating that the remediation process was successful.

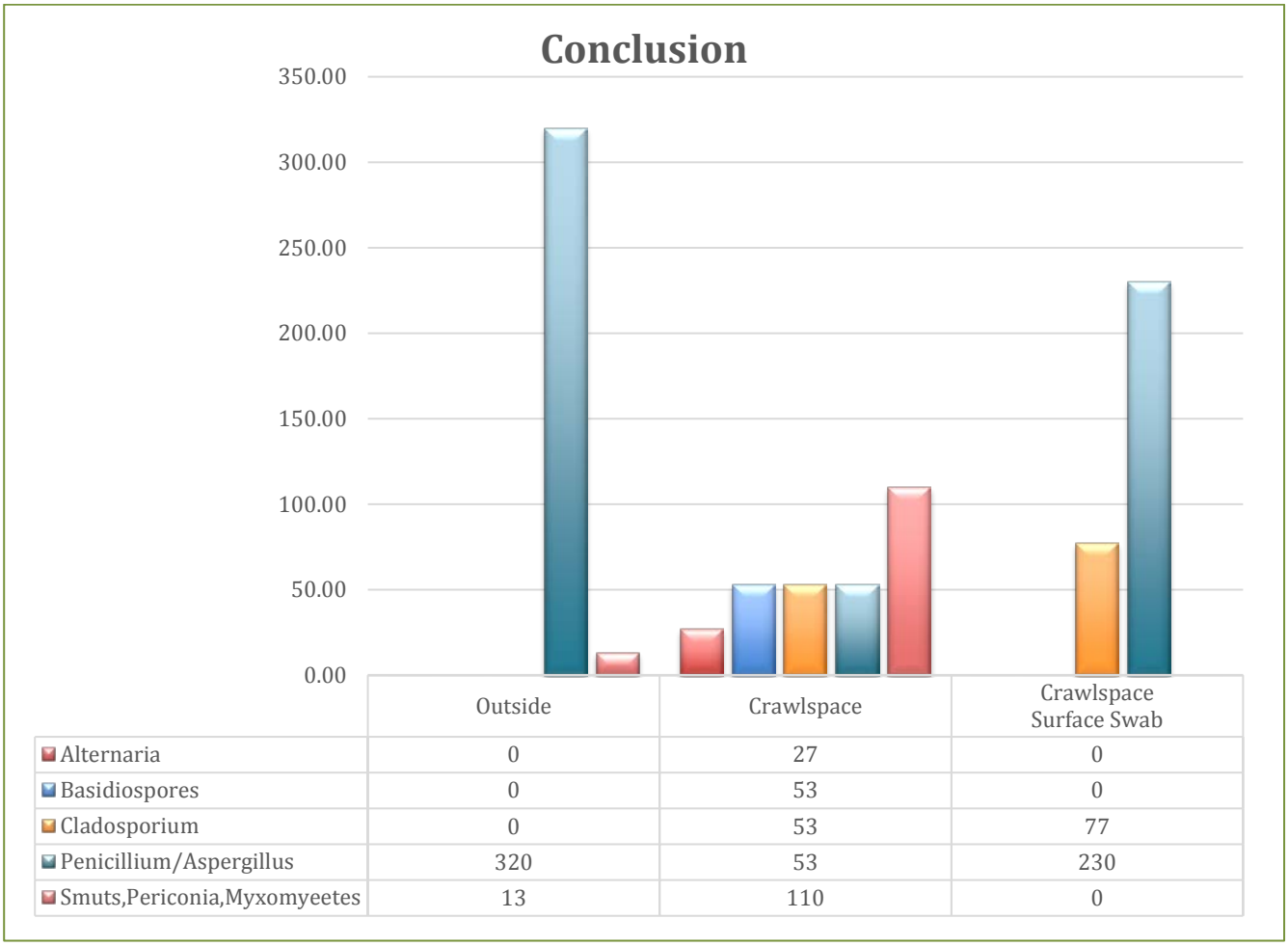
Additionally, in this case there are:

2. **No elevated fungal growth** present on the crawlspace floor joist suspect area swab surface sample #3. Indicating that the remediation process was successful.

The laboratory data also reported:

3. **No elevated hyphal fragments** on the swab suspect sample #3; this typically indicates potential sources of moisture and/or microbial growth. Indicating that the remediation process was successful.

The remainder of the fungal spores identified are very common environmental molds that grow on a wide variety of natural materials including living and decaying plant materials such as leaves and wood. These conclusions have been based on an extrapolation of the data gathered from the non-viable sampling of the water loss areas: therefore, it is possible that isolated pockets of fungal growth are within enclosed cavities areas not visible to inspection and have not yet been discovered. The following scopes of work and remediation recommendations have been made on the basis of the extrapolation. **All non-distinctive unidentifiable colorless spores seen on spore trap samples are placed into this category. These are all the genera described by the sentence: Spores do not have distinctive morphology and would be categorized as "other colorless" on spore trap samples.**



	Outside	Crawlspace	Crawlspace Surface Swab
Alternaria	0	27	0
Basidiospores	0	53	0
Cladosporium	0	53	77
Penicillium/Aspergillus	320	53	230
Smuts,Periconia,Myxomyeetes	13	110	0

10 Limitations:

The visual inspection is limited to readily accessible areas only. We do not remove floor and wall coverings or move furniture, open walls or perform any type of destructive inspection, unless the client has signed a waiver. Certain structural areas are considered inaccessible and impractical to inspect including but not limited to: the interiors of walls and inaccessible areas below; areas beneath wood floors over concrete; areas concealed by floor coverings; and areas to which there is no access without defacing or tearing out lumber, masonry, roofing or finished workmanship; structures; portions of the attic concealed or made inaccessible by insulation, belongings, equipment or ducting; portions of the attic or roof cavity concealed due to inadequate crawl space; areas of the attic or crawl space made inaccessible due to construction; interiors of enclosed boxed eaves; portions of the sub area concealed or made inaccessible by ducting or insulation; enclosed bay windows; portions of the interior made inaccessible by furnishings; areas where locks prevented access; areas concealed by appliances; areas concealed by stored materials; and areas concealed by heavy vegetation. Note: there is no economically practical method to make these areas accessible. However, they may be subject to attack by microbial organisms. No opinion is rendered concerning the conditions in these aforementioned or other inaccessible areas. Our findings and conclusions must be considered probabilities based upon professional judgment concerning the significance of the limited data gathered during the course of the investigation. You understand and agree that any claim(s) or complaint(s) arising out of or related to any alleged act or omission in connection with the inspection shall be reported to us, in writing, within ten (10) business days of discovery. Unless there is an emergency condition, you agree to allow us a reasonable period of time to investigate the claim(s) or complaint(s) by, among other things, re-inspection before you, or anyone acting on your behalf, repairs, replaces, alters or modifies the system or component that is the subject matter of the claim. You understand and agree that any failure to timely notify us and allow adequate time to investigate as stated shall constitute a complete bar and waiver of any and all claims you may have against us related to the alleged act or omission unless otherwise prohibited by law. Any dispute arising from the Inspection and/or Report (unless based on payment of fee) shall be resolved by binding, non-appealable arbitration conducted in accordance with the rules of the American Arbitration Association, except that the parties shall mutually agree upon an Arbitrator who is familiar with the home inspection industry. Any legal action arising from the Inspection and/or Report, including (but not limited to) the arbitration proceeding, must be commenced within one (1) year from the date of the Report. Failure to bring such an action within this time period shall be a complete bar to any such action and a full and complete waiver of any rights or claims based thereon. This time limitation period may be shorter than provided by state law. It is understood and agreed that we and the lab are not insurers and, that the inspection and report to be provided under this indemnification shall not be construed as a guarantee or warranty of the adequacy, performance or condition of any structure, item, or system at the subject property. You hereby release and exempt us, the lab and our respective agents and employees of and from all liability and responsibility for the cost of repairing or replacing property damage or personal injury of any nature. In the event that we, the lab or our respective agents or employees are found liable due to breach of contract, breach of warranty, negligent misrepresentation, negligent hiring or any other theory of liability, then the cumulative aggregate total liability of us, the lab and our respective agents and employees shall be limited to a sum equal to the amount of the fee paid by you for the inspection and report. You understand that the inspection is being performed (and the report is being prepared) for your sole, confidential and exclusive benefit and use. The report, or any portion thereof, is not intended to benefit any person not a party to this indemnification, including (but not limited to) the seller or the real estate agent(s) involved in the real estate transaction ("third party"). If you directly or indirectly allow or cause the report or any portion thereof to be disclosed or distributed to any third party, you agree to indemnify, defend, and hold us harmless for any claims or actions based on the inspection or the report brought by the third party. We do not warrant that the assessment requested would satisfy the dictates of, or provide a legal defense in connection with, environmental laws or regulations.

The Purpose of Remediation

- "The purpose of mold remediation is to remove the mold to prevent human exposure and damage to building materials and furnishings. It is necessary to clean up mold contamination, not just to kill the mold. Dead mold is still allergenic, and some dead molds are potentially toxic. The use of a biocide, such as chlorine bleach, is not recommended as a routine practice during mold remediation, although there may be instances where professional judgment may indicate its use."

-EPA Mold Remediation in Schools and Commercial Buildings, (emphasis added)

eurofins | Built Environment Testing

Report for:

Mr. David Quinn
D. Quinn Construction, Inc.
1820 Columbia Stage Road
Columbia Falls, MT 59912

Regarding: Eurofins Aerotech Built Environment Testing, Inc.
Project: 2385-A; 140 Granite Hills Rd, Kalispell
EML ID: 3223665

Approved by:

Operations Manager
Joshua Cox

Dates of Analysis:
Quantitative spore count direct exam: 04-11-2023

Service SOPs: Quantitative spore count direct exam (EM-MY-S-1041)
AIHA-LAP, LLC accredited service, Lab ID #102297

Eurofins Aerotech Built Environment Testing, Inc.
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 www.eurofinsus.com/Built

Client: D. Quinn Construction, Inc.
C/O: Mr. David Quinn
Re: 2385-A; 140 Granite Hills Rd, Kalispell

Date of Sampling: 04-07-2023
Date of Receipt: 04-10-2023
Date of Report: 04-11-2023

QUANTITATIVE SPORE COUNT REPORT

Location:	#3: Surface Swab #1953 Crawl Space			
Comments (see below)	None			
Sample type	Swab sample			
Lab ID-Version‡:	15618172-1			
Analysis Date:	04/11/2023			
Background debris (1-4+)	2+			
Sample size	51.6 cm2			
Reporting unit	1 cm2			
Dilution	1:40			
	Count	Count/sample	Count/unit	%
Hyphal fragments		< 40	< 1	n/a
§ TOTAL FUNGAL SPORES	4	310	6	100
Cladosporium	1	77	2	25
Curvularia				
Epicoccum				
Fusarium				
Myrothecium				
Nigrospora				
Other colorless				
Penicillium/Aspergillus types	3	230	5	75
Pithomyces				
Rusts				
Smuts, Periconia, Myxomycetes				
Stachybotrys				
Stemphylium				
Torula				
Ulocladium				
Zygomycetes				

Comments:

‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Fungal Spores has been rounded to two significant figures to reflect analytical precision.
Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

The limit of detection is 1 spore per area analyzed; Analytical Sensitivity is 1 spore per unit times the dilution factor.

Where tape lifts are performed for bulk sample analysis, the unit reported is specific to the area of tape analyzed.

eurofins | Built Environment Testing

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1820 Columbia Stage Road
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Regarding: Eurofins Aerotech Built Environment Testing, Inc.
Project: 2385-A; 140 Granite Hills Rd, Kalispell
EML ID: 3223665

Approved by:

Operations Manager
Joshua Cox

Dates of Analysis:
Spore trap analysis: 04-11-2023

Service SOPs: Spore trap analysis (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #102297

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received and tested. Information supplied by the client which can affect the validity of results: sample air volume.

Eurofins Aerotech Built Environment Testing, Inc. ("the Company"), a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.
Eurofins Aerotech Built Environment Testing, Inc.'s LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.

Eurofins Aerotech Built Environment Testing, Inc.
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 www.eurofinsus.com/Built

Client: D. Quinn Construction, Inc.
C/O: Mr. David Quinn
Re: 2385-A; 140 Granite Hills Rd, Kalispell

Date of Sampling: 04-07-2023
Date of Receipt: 04-10-2023
Date of Report: 04-11-2023

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	#1: Air-O-Cell #3587 3575 Outside				#2: Air-O-Cell #3587 3574 Crawl Space			
Comments (see below)	None				None			
Lab ID-Version‡:	15618173-1				15618174-1			
Analysis Date:	04/11/2023				04/11/2023			
Sample volume (liters)	75				75			
Background debris (1-4+)††	3+				3+			
	raw ct.	Count/m3	DL/m3*	%	raw ct.	Count/m3	DL/m3*	%
Hyphal fragments	1	13	13	n/a	8	110	13	n/a
Pollen								
§ TOTAL FUNGAL SPORES	7	330	n/a	100	13	290	n/a	100
Alternaria					2	27	13	9
Ascospores								
Basidiospores					1	53	53	18
Chaetomium								
Cladosporium					1	53	53	18
Penicillium/Aspergillus types	6	320	53	96	1	53	53	18
Pithomyces								
Rusts								
Smuts, Periconia, Myxomycetes	1	13	13	4	8	110	13	36
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3, per spore and per sample.

*The detection limit/limit of detection (DL) per cubic meter (m3) has been rounded to two significant figures to reflect analytical precision.

††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Fungal Spores has been rounded to two significant figures to reflect analytical precision.

Introduction

Molds are a natural and important part of our environment. They are ubiquitous and are found virtually everywhere. Molds produce tiny spores to reproduce. These spores can be found in both indoor and outdoor air and on indoor and outdoor surfaces. When mold spores land on a damp spot, they may begin growing and digesting whatever they are growing on in order to survive, leading to adverse conditions. In response to increasing public concern, a number of government authorities, including the United States EPA, California Department of Health Services and New York City Department of Health, have developed recommendations and guidelines for assessment and remediation of mold. Websites for these organizations can be found at the end of this report.

While it is generally accepted that molds can be allergenic and can lead to adverse health conditions in susceptible people, unfortunately there are no widely accepted or regulated interpretive standards or numerical guidelines for the interpretation of microbial data. The absence of standards often makes interpretation of microbial data difficult and controversial. This report has been designed to provide some basic interpretive information using certain assumptions and facts that have been extracted from a number of peer reviewed texts, such as the American Conference of Governmental Industrial Hygienists (ACGIH). In the absence of standards, the user must determine the appropriateness and applicability of this report to any given situation. Identification of the presence of a particular fungus in an indoor environment does not necessarily mean that the building occupants are or are not being exposed to antigenic or toxic agents.

None of the information contained herein should be construed as medical advice or a call to action for evacuation or remediation. Only a qualified physician should make any decision relative to medical significance.

EMLab P&K did not conduct the site investigation, provide consulting or collect the samples referenced in this report. EMLab P&K's primary involvement in this project is to provide analytical results for the samples submitted. The data presented in this report are based on the samples and accompanying information provided and represents concentrations at a point in time under the conditions sampled.

EMLab P&K's standard terms and conditions govern all aspects of this report.

Materials

Please refer to the chain of custody included with this report.

Methods

1. **Surface Samples – Swab, Dust, Tape and Bulk Samples**
   Swab, Dust and Tape samples are mounted on a glass slide and observed under a bright field microscope for either Qualitative or Quantitative Examination. A bulk sample is also simultaneously observed under a stereomicroscope to look for signs of any visible discoloration or fungal growth, which is then mounted and observed under a bright field microscope for either Qualitative or Quantitative Examination. The samples are analyzed at a minimum of 200X magnification and up to a 1000X magnification. In the qualitative

examination, the prepared samples are observed for the presence of any structures or skewing of spore distribution that may indicate growth in the sample being analyzed. In the quantitative examination, the mold spores detected in the sample are counted and reported as spores per cm^2, spores per gram (or 1000mg), or spores per swab/wipe, etc depending on the sample type. These methodologies do not differentiate between viable and non-viable fungal spores.

2. Air Samples- Spore Trap Device

Spore traps are a unique sampling device designed for the rapid collection and analysis of a wide range of airborne particulates, including fungal spores. While analyzing the sample, the analyst takes a number of variables into account to select the proper analytical method to accurately determine the densities of the various spores on the trace. The densities of the debris and the spores on the trace will determine the approach to analyzing the sample. In general, the sample is directly mounted under the microscope and the various airborne particles detected are counted at a minimum of 200X magnification and up to 1000X magnification, with the entire trace (100% of the sample) being analyzed at 200X or 600X. This method does not differentiate between viable and non-viable fungal spores. This technique does not allow for the differentiation between *Aspergillus* and *Penicillium* spores. Additionally, depending on morphology, other non-distinctive spores are reported in categories such as ascospores or basidiospores. All slides are graded with the following debris scale for data qualification.

Debris Rating	Description	Interpretation
None	No particles detected.	No particulates on slide. The absence of particulates could indicate improper sampling as most air samples typically capture some particles.
<1+	Good visibility. A few particles detected.	Reported values are not affected by debris.
1+	Good visibility. No crowding of particles.	
2+	Decent visibility. Particles beginning to crowd.	Non-microbial particulates can mask the presence of fungal spores. As a result, actual values could be higher than the numbers reported. Higher debris ratings increase the probability of this bias.
3+	Decent visibility. Particles beginning to crowd.	
4+	Poor visibility. Particles beginning to overlap.	Excessive debris detected in the sample. Counts reported may vary drastically and actual values could be higher than the numbers reported. The sample should be collected at a shorter time interval, or other measures taken to reduce the collection of non-microbial debris. In addition, a >4+ rating will only allow for a count from the perimeter of the slide.
>4+	Poor visibility. Particles overlapping.	

3. Comments

Comments identify issues or events that are relevant to your analytical results. A comment includes information about any peculiar observation or situation encountered while analyzing the sample. In each case, the comments provide significant information vital to the interpretation of the laboratory data.

4. Data Interpretation

According to ACGIH, "Data from individual sampling episodes is often interpreted with respect to baseline data from other environments or the same environment under anticipated low exposure conditions." In the absence of established acceptable exposure limits, it is often necessary to use a comparison standard when interpreting data. In this instance, it will be necessary to sample the suspect area as well as a non-suspect area.

According to ACGIH, "...active fungal growth in indoor environments is inappropriate and may lead to exposure and adverse health effects."

a. Total Fungal Spores

According to ACGIH, ".... differences that can detected with manageable sample sizes are likely to be in 10- fold multiplicative steps (e.g., 100 versus 1000...)". Following this logic, if total fungal spores are ten (10) times greater in the sample from a suspect area than in the negative control sample collected from a non-suspect area, then that sample area may be a fungal amplification site.

b. Mycelial Fragments

Mycelium is a fungal mass that constitutes the vegetative or living body of a fungus. Following the same logic above, if total mycelial fragments are ten (10) times greater in the suspect sample than in the negative control, then the sample area is considered to be a fungal amplification site. The presence of mycelial fragments provides evidence of microbial growth.

c. Mycotoxins

Molds can produce toxic substances called mycotoxins. More than 200 mycotoxins have been identified from common molds, and many more remain to be identified. Some of the molds that are known to produce mycotoxins are commonly found in moisture-damaged buildings. Exposure pathways for mycotoxins can include inhalation, ingestion, or skin contact. Although some mycotoxins are well known to affect humans and have been shown to be responsible for human health effects, for many mycotoxins, little information is available, and in some cases research is ongoing. Some molds can produce several toxins, and some molds produce mycotoxins only under certain environmental conditions. The presence of mold in a building does not necessarily mean that mycotoxins are present or that they are present in large quantities.

d. Water Indicator Molds

Certain authorities identify certain molds whose presence indicates excessive moisture. The presence of a few spores of indicator mold should be interpreted with caution. Additionally, it should be recognized that these named molds are not necessarily the only ones of potential significance.

e. Mold Glossary

Specific characteristics of the individual molds listed in the report are presented in Table 1.

f. Useful Resources

i. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health. www1.nyc.gov/assets/doh/downloads/pdf/epi/epi-mold-guidelines.pdf

ii. Facts about Mold, New York City Department of Health.www1.nyc.gov/assets/doh/downloads/pdf/epi/mold-brochure.pdf

iii. Mold Resources, United States Environmental Protection Agency. http://www.epa.gov/mold/moldresources.html
iv. Mold in My Home, What do I do? California Department of Health Services. http://www.lapublichealth.org/eh/docs/housing/brochure/moldhome.pdf

Table 1: Summary of Specific Mold Characteristics

Fungi	Environmental Indicator		Typically Found
Alternaria			*Alternaria* is one of the more common fungi found in nature. It is found growing indoors on a variety of substrates including wallboards, painted walls, etc.
Arthrinium			*Arthrinium* is a saprobe and is found on plants. It is rarely found growing indoors.
Ascospores			Ascospores are ubiquitous in nature and are commonly found in the outdoor environment. Some fungi that belong to the ascomycete family include the sexual forms of *Penicillium/ Aspergillus*, *Chaetomium*, etc that may be frequently found growing on damp substrates.
Aureobasidium			*Aureobasidium* is commonly found in a variety of soils. Indoors, it is commonly found where moisture accumulates, especially bathrooms, and kitchens, on shower curtains, tile grout, windowsills, textiles, and liquid waste materials.
Basidiospores			Basidiospores are Saprophytes and plant pathogens and are commonly found in gardens, forests, and woodlands. They also include organisms that are the agent of "dry rot," and other fungi that cause white and brown wood rot, which may grow and destroy the structural wood of buildings.
Bipolaris/ Dreschlera			*Bipolaris* and *Dreschlera* are usually found associated with plant debris, and soil. They are plant pathogens of numerous plants, particularly grasses. *Bipolaris* and *Dreschlera* can grow indoors on a variety of substrates.
Botrytis			*Botrytis* is commonly found in tropical and temperate climates growing on vegetative matter. They may be found indoors in conjugation with indoor plants, fruits and vegetables.
Chaetomium			*Chaetomium* is often found on materials containing cellulose such as sheetrock paper, or other wet materials.
Cladosporium			*Cladosporium* is a common outdoor mold. They are commonly found on dead plants, food, textiles, and a variety of other surfaces. Indoors, they can grow on a variety of substrates including textiles, wood, moist windowsills, etc. It can grow at 0°C and is associated with refrigerated foods.
Curvularia			*Curvularia* is found on plant materials and is considered a saprobe. Indoors, they can grow on a variety of substrates.
Epicoccum			*Epicoccum* is a saprophyte and considered a weekly parasitic secondary invader of plants. They tend to colonize continuously damp materials such as damp wallboard and fabrics.
Fusarium			*Fusarium* requires very wet conditions and is frequently isolated from plants and grains. They colonize continuously damp materials such as damp wallboard and water reservoirs for humidifiers and drip pans.

Memnoniella			*Memnoniella* can be found growing on a variety of cellulose-containing materials.
Nigrospora			*Nigrospora* is especially abundant in warm climates and is rarely found growing indoors.
Oidium/ Peronospora			*Oidium* and *Peronospora* are plant pathogens and are not found growing indoors.
Penicillium/ Aspergillus			*Penicillium* and *Aspergillus* are ubiquitous in environment. *Aspergillus* tends to colonize continuously damp materials such as damp wallboard and fabrics. *Penicillium* is commonly found in house dusts, wallpaper, decaying fabrics, moist clipboards, etc.
Pithomyces/ Ulocladium			*Pithomyces* is commonly found on grass and decaying plant material and are rarely found growing indoors. *Ulocladium* has a high water requirement and therefore colonizes continuously damp materials such as damp wallboard and fabrics.
Rusts			Rusts are plant pathogens and only grow on host plants.
Smuts/ *Periconia*/ Myxomycetes			Smuts and Myxomycetes are parasitic plant pathogens that require a living host. Smuts do not usually grow indoors. *Periconia* are rarely found growing indoors. Myxomycetes are occasionally found indoors, but rarely growing.
Stachybotrys			*Stachybotrys* are commonly found indoors on wet materials containing cellulose, such as wallboard, jute, wicker, straw baskets, and other paper materials.
Stemphylium			*Stemphylium* is either parasitic or saprophytic and is rarely found growing indoors.
Torula			*Torula* can grow indoors on cellulose containing materials such as wallboard, jute, wicker, straw baskets, and other paper materials.
Other brown/ colorless			An uncharacteristic fungal spore that does not lend itself to classification via direct microscopy.

 Potential Water Intrusion/Indicator Mold Capable of Mycotoxin Production

 Potential Water Intrusion/Indicator Mold

Quality Programs

The EMLab P&K's laboratory network is staffed with highly trained analysts, the majority of which hold advanced degrees. The reliability of test results depends on many factors such as the personnel performing the tests, environmental conditions, selection and validation of test methods, equipment functioning, as well as the sampling, storage and handling of test items, all of which are a reflection of the overall quality system of the laboratory.

EMLab P&K has modeled its quality system after ISO 17025, General Requirements for the Competence of Testing and Calibration Laboratories, one of the most stringent sets of standards in the industry, to ensure that its customers receive the highest standard of accuracy, reliability, and impartiality that they have come to expect from the leader in the environmental industry. EMLab P&K's laboratories adherence to the standards set forth in ISO 17025 has been validated and formally recognized through accreditations granted by an independent outside agency, American Industrial Hygiene Association Laboratory Accreditation Program, LLC (AIHA-LAP, LLC), on a site by site basis. As an additional measure to demonstrate its competency to perform the analyses it offers to its clients, EMLab P&K laboratories

also participate in a variety of different proficiency testing programs, including the Environmental Microbiology Proficiency Analytical Testing Program (EMPAT) sponsored by the American Industrial Hygiene Association Proficiency Analytical Testing Programs.

As part of our continuous commitment to excellence, EMLab P&K laboratories are also inspected, licensed and/or accredited by a number of governmental agencies and independent associations in addition to those already mentioned above. The scope of services, accreditation certificates, and proficiency results can all be accessed at www.emlabpk.com.

References

1. Bioaerosols: Assessment and Control. Janet Macher, Ed., American Conference of Government Industrial Hygienists, Cincinnati, OH (1999).

2. EPA: The Inside Story. A Guide to Indoor Air Quality, United States Environmental Protection Agency and the United States Consumer Product Safety Commission, Washington DC (1995).

3. Health Canada: Exposure Guidelines for Residential Indoor Air Quality. Environmental Health Directorate. Health Protection Branch, Health Canada, Ottawa, Ontario (1989).

4. IIRC: Standard and Reference Guide for Professional Water Damage Restoration, 2nd Ed. Institute of Inspection, Cleaning and Restoration, Vancouver, WA (1999).

5. Field Guide for the Determination of Bio logical Contaminants in Environmental Samples. American Industrial Hygiene Association, Fairfax, VA (1996).

6. Standards of Practice for the Assessment of Indoor Environmental Quality, Volume I: Mold Sampling, Assessment of Mold Contamination. Indoor Environmental Standards Organization (2002).

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1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 www.eurofinsus.com/Built

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C/O: Mr. David Quinn
Re: 2385-A; 140 Granite Hills Rd, Kalispell

Date of Sampling: 04-07-2023
Date of Receipt: 04-10-2023
Date of Report: 04-11-2023

MoldRANGE™, Local Climate; Extended Outdoor Comparison

Outdoor Location: #1, Air-O-Cell #3587 3575 Outside

Fungi Identified	Outdoor data	Typical Outdoor Data for: April in West North Central† EMLab Regional Climate code¹ B Annual Temp, A Elev., B Rain, B Temp. Range (n‡=144)						Typical Outdoor Data for: The entire year in West North Central† EMLab Regional Climate code¹ B Annual Temp, A Elev., B Rain, B Temp. Range (n‡=2119)					
Project zip code 59901	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	-	-	-	-	-	9	13	13	27	53	110	23
Bipolaris/Drechslera group	-	-	-	-	-	-	1	13	13	13	27	53	4
Chaetomium	-	-	-	-	-	-	3	7	13	13	22	27	3
Cladosporium	-	27	53	130	370	640	68	53	67	270	1,000	2,000	82
Curvularia	-	-	-	-	-	-	< 1	7	9	13	22	53	2
Nigrospora	-	-	-	-	-	-	< 1	7	8	13	27	32	1
Penicillium/Aspergillus types	320	53	53	110	320	520	66	40	53	130	360	530	70
Stachybotrys	-	-	-	-	-	-	< 1	13	13	27	240	450	< 1
Torula	-	-	-	-	-	-	1	7	13	22	53	57	3
Seldom found growing indoors**													
Ascospores	-	27	53	89	210	530	72	40	53	210	760	1,600	74
Basidiospores	-	53	53	160	470	720	80	53	110	430	2,100	4,500	87
Rusts	-	-	-	-	-	-	1	13	13	13	53	80	10
Smuts, Periconia, Myxomycetes	13	13	13	27	53	110	31	13	13	53	270	590	57
§ TOTAL SPORES/m3	330												

¹EMLab Regional Climate codes are a climate classification scheme for regional geographic areas containing multiple states. The MoldRANGE™ Local Climate report uses the sampling location zip code to identify the EMLab Regional Climate code in that area. Using information available from the NOAA weather database, the EMLab Regional Climate code sharpens the precision of the MoldRANGE™reporting system, providing more reliable estimates of the range and average concentrations of the different airborne fungal spore types for each region. Additional information on the EMLab Regional Climate code system can be found on the last page of this report.

†The Typical Outdoor Data represents the typical outdoor spore levels across the region's group of states for the time period and EMLab Regional Climate code indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically and if not enough data is available to make a statistically meaningful assessment, it is indicated with a dash.

‡ n is the sample size used to calculate the MoldRANGE™ Local Climate data summarized in the table.

* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

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Understanding EMLab Regional Climate Codes

Outdoor airborne spore concentrations are strongly influenced by climate and weather patterns, often resulting in pronounced seasonal and diurnal cycles (Burge 1995). The seasonal climatic changes directly affect the growth cycle of plants, thereby influencing fungal growth, spore maturation, and release cycles. By evaluating outdoor spore concentrations across similar climatic zones rather than for the state as a whole, it is possible to provide a more representative estimate of typical outdoor spore levels and frequency of occurrence for different airborne fungal spore types in a given area.

The EMLab Regional Climate code system is a novel classification system that uses data from the NOAA - National Oceanic and Atmospheric Administration database to define unique climate zones. The following climate variables, for each regional zip code, are obtained from NOAA and assigned a letter code of A (above the regional average for that variable) or B (below the regional average for that variable):

1. Annual High Temperature
2. Elevation
3. Rainfall/Precipitation
4. Monthly Temperature Range

The result is a 4-character code assigned to each statewide zip code, referred to as the Regional Climate Code. Below are some examples of decoded Regional Climate Codes:

AAAA = Above avg. Annual High Temperature, Above avg. Elevation, Above avg. Rainfall/Precipitation, Above avg. Monthly Temperature Range
AABB = Above avg. Annual High Temperature, Above avg. Elevation, Below avg. Rainfall/Precipitation, Below avg. Monthly Temperature Range
BBAA = Below avg. Annual High Temperature, Below avg. Elevation, Above avg. Rainfall/Precipitation, Above avg. Monthly Temperature Range

The actual outdoor air sample data from matching regional climate codes in each group of states are then compiled in a manner relating typical spore concentrations and frequency of occurrence.

The data presented in this report is from the West North Central Region which includes the states of: MT, ND, NE, SD, and WY

The NOAA regional climate variables were selected by mapping data points from a subset of approximately 145,000 weather and geographic database entries to over 80,000 outdoor spore trap samples with known zip codes and assessing them using orthogonal array experimental design techniques. The results were then compared to the typical ranges of spore types found when grouping zip codes using the Koppen-Geiger climatic classification system; a commonly used climatic system that provides an objective numerical definition in terms of climatic elements such as temperature, rainfall, and other seasonal characteristics . The EMLab Regional Climate codes showed improved granularity and refinement of the zip code groupings, implying a better representation of the expected range of spore types to be found within an individual zip code.

The values on this report were calculated by obtaining the four variables listed above from the over 585 million data points of weather and geographic information available in the NOAA database, and determining the frequencies and percentile values of spore types by utilizing over 180,000 Eurofins EMLab P&K outdoor spore trap samples with known zip codes.

This report groups regional zip codes in relation to these EMLab Regional Climate codes and summarizes MoldRANGE™ data by month and year within each EMLab Regional Climate code.

References:

Burge, Harriet, A. Bioaerosols: Boca Raton: Lewis Publishers, pp. 163-171, 1995.

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MoldSCORE™: Spore Trap Report

Outdoor Sample: #1 Air-O-Cell #3587 3575 Outside

Fungi Identified	Outdoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3
Generally able to grow indoors*			
Alternaria		ND	< 13
Bipolaris/Drechslera group		ND	< 13
Chaetomium		ND	< 13
Cladosporium		ND	< 13
Curvularia		ND	< 13
Nigrospora		ND	< 13
Penicillium/Aspergillus types†		6	320
Stachybotrys		ND	< 13
Torula		ND	< 13
Seldom found growing indoors**			
Ascospores		ND	< 13
Basidiospores		ND	< 13
Rusts		ND	< 13
Smuts, Periconia, Myxomycetes		1	13
Total			**333**

Location: #2 Air-O-Cell #3587 3574 Crawl Space

Fungi Identified	Indoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3	MoldSCORE‡ 100 200 300 Score
Generally able to grow indoors*				
Alternaria		2	27	111
Bipolaris/Drechslera group		ND	< 13	100
Chaetomium		ND	< 13	100
Cladosporium		1	53	103
Curvularia		ND	< 13	100
Nigrospora		ND	< 13	100
Penicillium/Aspergillus types†		1	53	101
Stachybotrys		ND	< 13	100
Torula		ND	< 13	100
Seldom found growing indoors**				
Ascospores		ND	< 13	100
Basidiospores		1	53	106
Rusts		ND	< 13	100
Smuts, Periconia, Myxomycetes		8	110	121
Total			**293**	**Final MoldSCORE** **131**

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* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

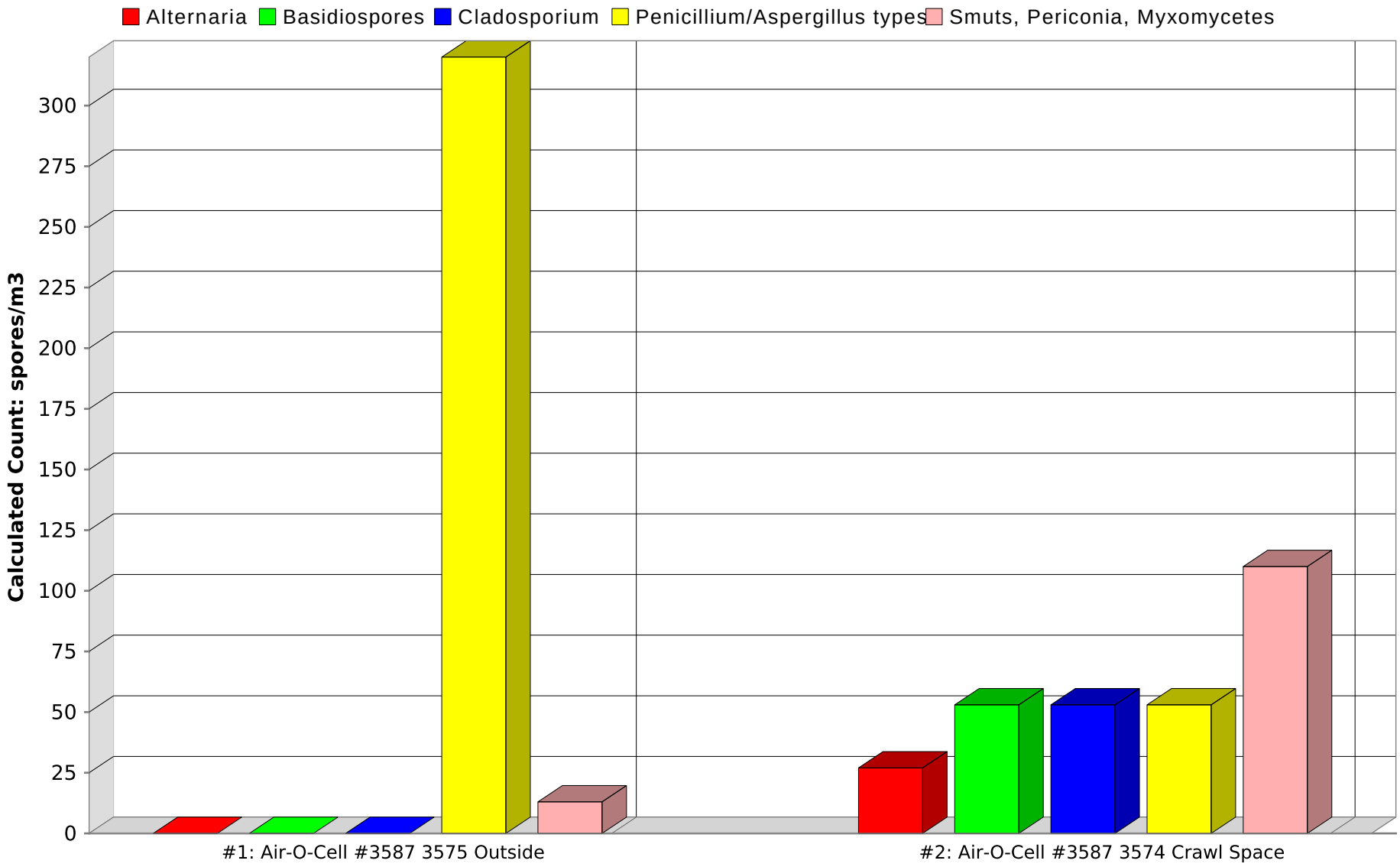
** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

†The spores of Aspergillus and Penicillium (and others such as Acremonium, Paecilomyces) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods.

‡Rated on a scale from 100 to 300. A rating less than 150 is low and indicates a low probability of spores originating inside. A rating greater than 250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A rating between 150 and 250 indicates a moderate likelihood of indoor fungal growth. MoldSCORE is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the analysis on other samples (like wall cavity samples) will lead to misleading results.

1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 www.eurofinsus.com/Built

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY



Comments:

Note: Graphical output may understate the importance of certain "marker" genera.