

**DATE:** January 17, 2017

**TO:** James Crockett, Principal

**SUBJECT:** Lakeland ES - IAQ - Results report - Room 126

On Tuesday 1/10, Apex-Titan Air tested Rooms 126. It is typically assumed that indoor spore levels in an area with filtered or air conditioned air, and activity levels associated with schools average below the outdoor levels. Data from the airborne fungi sampling indicated that the total indoor concentration of mold/fungi in Room 126, was 33.2% of the outdoor levels. Utilizing this theory, the indoor concentrations are within the acceptable guidelines for areas with filtered air or air conditioning. If you have any questions, please call me.

Thanks, Paul

Paul Siddall
Maintenance Energy Auditor (IAQ)
Facility Services
Lewisville ISD
340 Lake Haven Rd
Lewisville, TX 75057



January 12, 2017

Lewisville Independent School District 340 Lake Haven Lewisville, Texas 75057

Attn: Mr. Paul Siddall

Re: Limited Mold Assessment Services

Lakeland Elementary School

Room 126 800 Fox Avenue Lewisville, Texas

LISD PO No. 91716669-00 Apex Project No. 725010727044

## **Introduction**

Apex TITAN, Inc., a subsidiary of Apex Companies, LLC (APEX) conducted limited mold assessment activities for the Lewisville Independent School District (Lewisville I.S.D.) within Lakeland Elementary School located at 800 Fox Avenue in Lewisville, Texas (hereinafter referred to as the "Site"). The investigation was limited to areas of the Site identified by Lewisville I.S.D. as described below. The assessment was performed by Mr. Darren G. Bowden, a State of Texas licensed Mold Assessment Consultant (Lic. No. MAC0321) on January 10, 2017 Apex's mold services definitions and limitations are included as an attachment to this report.

#### **Investigation Areas**

Lewisville I.S.D. identified the following physical portions of the Site as the target investigation areas ("Investigation Areas") for mold assessment: readily accessible areas within room 126. Apex's mold assessment services were limited to the Investigation Area(s) identified by Lewisville, I.S.D. Additional areas or portions of the Site were out-of-scope and not included in Apex's mold assessment or this report at this time.

#### **Scope of Work**

As set forth in Apex's Mold Assessment Proposal (No. P725010727057) dated January 9, 2017. Apex's scope-of-work was to provide visual and/or analytical mold assessment and related services in the Investigation Areas which included:

Visual Reconnaissance: Apex performed a visual reconnaissance of the Investigation Areas for visible indications of moisture intrusion (as indicated by staining or visible moisture) and/or suspect mold growth. Apex's visual reconnaissance only included readily accessible or visible portions of the Investigation Areas.

Suspect Mold Growth Sampling and Analysis: Apex collected limited ambient air samples for nonviable mold spores utilizing Air-O-Cell cassettes. "Air-O-Cell" refers to slit impaction air sampling cassettes manufactured by Zefon Analytical Accessories, St. Petersburg, Florida.

## Site Reconnaissance Observations/Findings and Recommendations

Apex' Mold Assessment Site reconnaissance was performed on January 10, 2017 by Mr. Darren G. Bowden. Apex's visual reconnaissance of the Investigation areas revealed the following:

## **Temperature and Relative Humidity**

Temperature readings collected inside the room was reported as 69.9 degrees Fahrenheit while relative humidity was reported as 51.8 percent. Temperature readings collected outside the building was reported a 68.3 degrees Fahrenheit while outside relative humidity was reported as 53.5 percent.

Relative humidity is a measure of the moisture content of air and is closely tied to the comfort of the office/workplace temperature. As with temperature, there are no regulations governing acceptable office/workplace humidity ranges. Humidity levels in the office/workplace are not only related to health effects, but also have operational impacts on modern office equipment.

Workplace/office temperatures have historically been considered a subjective factor because the perception of uncomfortable temperature levels is specific to each individual. There are no regulations governing acceptable office/workplace temperature ranges, but significant research has been conducted which indicates that there are temperature ranges that are not only comfortable but also result in optimum performance. ASHRAE (American Society of Heating, Refrigerating & Air Conditioning Engineers) has published guidelines describing thermal environmental conditions that at least 80% of the persons who occupy that environment will find acceptable or "comfortable." Table I below explains the applicable limits and guidelines.

Table I							
Acceptable Ranges of Temperature and Humidity							
Relative Humidity	Winter Temperatures	Summer Temperatures					
30%	68.5 to 76°F	74 to 80°F					
40%	68.5 to 75.5°F	73 to 79.5°F					
50%	68.5 to 74.5°F	73 to 79°F					
60%	68 to 74°F	72.5 to 78°F					

Apex utilized a Protimeter Moisture Measurement System (MMS) instrument (Model No. BLD2000) to measure and diagnose dampness in the drywall within random areas. The MMS is a battery powered handheld unit that is equipped with hydrostick probes to measure moisture content in wood, drywall and other and non-conductive materials. The device measures electrical conductivity of building materials and compares the conductivity readings to an internal, electronic standard reading for normal or "dry" materials.

Moisture content readings were obtained by pushing the moisture probe pins into surfaces. The measured values were then displayed on a colored scale depicting if the materials measured were normal (dry), higher than normal but not critical (at risk) or contained excessive moisture levels (wet). Based on the manufacturer's guidelines, the instrument measurement values are described below:

< 5%	Out of Range			
> 5% but < 16%	Normal			
> 17% but < 20%	Higher than Normal but Not Critical			
> 20%	Excessive Moisture Levels			

Moisture meter readings taken from the walls within the room was >8% which is considered normal by the manufacturer.



### **Air Monitoring Results**

Apex collected one (1) sample from the interior of the investigation area and two (2) samples from the exterior of the building. The microbial samples were analyzed by Steve Moody Micro Services, LLC (SMMS) in Farmers Branch, Texas; SMMS is a State of Texas licensed mold analysis laboratory and accredited under the AIHA Laboratory Quality Assurance Program for Environmental Microbiology.

Air testing performed using spore traps indicated that total airborne mold spores in the classroom was lower as compared to those measured outside of the building at the time the sampling was performed. The total fungal spore concentration within the investigation area was reported as 434 counts/m³, while the exterior level ranged from 1,207 to 1,306 counts/m³.

Three types of mold were identified at a higher concentration within the investigation area as compared to the sample collected from the exterior of the building. Air sample(s) collected within the class room reported Drechslera/Bipolaris group as 87 counts/m³ while exterior levels were reported as 13 counts/m³. Curvularia was reported as 20 counts/m³ while exterior levels were reported as 7 counts/m³. Epicoccum was reported as 7 counts/m³ while no exterior levels were reported.

The American Conference of Governmental Industrial Hygienists (ACGIH) sets forth assessment criteria related to the "indoor/outdoor" relationship where the indoor air quality should be at or below that of outdoor air quality with regard to fungal spores (see ACGIH Bioaerosols, Assessment and Controls publication, 1999).

## **Suspect Mold**

No visible mold was observed during the assessment. No odors or excessive dust were noted.

#### **Conclusions and Recommendations**

Based on Apex's limited assessment and the analytical results collected, it appears that the indoor air quality, as it relates to airborne fungi was within recommended guidelines on the day of the assessment.

If you have any questions regarding this report or if we can assist you with any other matter, please contact the undersigned at (469) 365-1140.

Sincerely,

Apex TITAN, Inc.

Darren G. Bowden

Senior Program Manager

Texas Mold Assessment Consultant

A Boule

Lic. No. MAC0321

Attachments: Analytical Results/Chain of Custody, Mold Services Definitions & Limitations



# **ATTACHMENT 1**

Analytical Results/Chain of Custody





2051 Valley View Lane

# **IAQ Mold Report**

**Summary** 

DSHS License No.: LAB0117 AIHA EMPAT ID: 102577

Farmers Branch, TX 75234 Phone: (972) 241-8460

**Lab Job No.:** 17F-00334 Client: Apex Titan, Inc. - Dallas

**Report Date:** 01/12/2017 2:21 PM **Project:** Lakeland ES 126

725010727044 **Sample Date:** 01/10/2017 Project #:

Spore Trap Type: Zefon - Air-O-Cell Sample Type: Spore Trap, Non-cultured

Test Method: Mold: ASTM D7391-09 - Standard Profile Page 1 of 2

On 1/10/2017, three (3) samples were submitted by Darren Bowden of Apex Titan, Inc. - Dallas (located at 12100 Ford. Rd., Suite 401, Farmers Branch, TX 75234) for Spore Trap, Non-cultured mold analysis. This report consists of three sections; a summary section, a data detail section, and an analytical notes section.

Sample Number	Volume (liters)	Sample Description	Identification		Concentration spores/cubic meter		
1	150	Room 126	Hyphal / Spore Fragments Drechslera / Bipolaris group Cladosporium Myxomycete / Rust / Smut Ascospores		180 87 53 33 27	41% 20% 12% 8% 6%	
			Curvularia Alternaria Nigrospora Epicoccum Aspergillus / Penicillium		20 13 7 7	5% 3% 2% 2% 2%	
				Total:	434	100%	
2	150	Outside	Cladosporium Hyphal / Spore Fragments Ascospores Aspergillus / Penicillium Myxomycete / Rust / Smut Nigrospora Drechslera / Bipolaris group Basidiospores Alternaria Pestalotia / Pestalotiopsis Beltrania Pithomyces Curvularia		500 253 213 180 80 13 13 13 7 7 7	38% 19% 16% 14% 6% <1% <1% <1% <1% <1% <1% <1% <1% <1%	
				Total:	1306	100%	



**Summary** 

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Client: Apex Titan, Inc. - Dallas Lab Job No.: 17F-00334

Project: Lakeland ES 126 Report Date: 01/12/2017 2:21 PM

**Project #:** 725010727044 **Sample Date :** 01/10/2017

Sample Type: Spore Trap, Non-cultured Spore Trap Type: Zefon - Air-O-Cell

**Test Method:** Mold: ASTM D7391-09 - Standard Profile Page 2 of 2

On 1/10/2017, three (3) samples were submitted by Darren Bowden of Apex Titan, Inc. - Dallas (located at 12100 Ford. Rd., Suite 401, Farmers Branch, TX 75234) for Spore Trap, Non-cultured mold analysis. This report consists of three sections; a summary section, a data detail section, and an analytical notes section.

Sample Number	Volume (liters)	Sample Description	Identification		Concentration spores/cubic meter		
3	150	Outside	Cladosporium	734	61%		
			Hyphal / Spore Fragments	200	17%		
			Ascospores	100	8%		
			Myxomycete / Rust / Smut	67	6%		
			Aspergillus / Penicillium	53	4%		
			Fusarium	13	1%		
			Drechslera / Bipolaris group	13	1%		
			Basidiospores	13	1%		
			Curvularia	7	<1%		
			Alternaria	7	<1%		
			Total:	1207	100%		

Results may not be reported except in full. Data contained in this test report relates only to the samples tested. This report does not express or imply interpretation of the results contained herein. Interpretation should be made by a qualified professional.

Moody Labs assumes no responsibility for the manner in which these samples were collected or handled prior to being received at this laboratory. Moody Labs assumes no responsibility for the qualifications of personnel performing sampling and/or interpretations of this data.

Analyst(s): Nina Mims

Lab Manager : Heather Lopez

Lab Director: Bruce Crabb

Approved Signatory: Beathe Let

Approved Signatory: Bune Vull

Approved Signatory
Thank you for choosing Moody Labs

SMLMS v11.99

DSHS License No.: LAB0117

AIHA EMPAT ID: 102577



**Client:** 

Project:

# IAQ Mold Report

## **Data Detail**

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460 Apex Titan, Inc. - Dallas

**Lab Job No.:** 17F-00334

DSHS License No.: LAB0117

AIHA EMPAT ID: 102577

Lakeland ES 126 **Report Date:** 01/12/2017 2:21 PM

**Sample Date:** 01/10/2017 Project #: 725010727044

**Spore Trap Type:** Zefon - Air-O-Cell Sample Type: Spore Trap, Non-cultured

Test Method: Mold: ASTM D7391-09 - Standard Profile

This report consists of three sections; a summary section, a data detail section, and an analytical notes section. Results may not be reported except in full.

Sample ID:	1			2			3					
Location:	Room 126			Outside			Outside					
Media Expires On:	Apr 2017			Sep 2017			Sep 2017					
Notes Included:												
Volume:			150		150				150			
	raw ct.	MDL	spores/m³		raw ct.	MDL	spores/m³		raw ct.	MDL	spores/m³	
Alternaria	2	6.67	13	3%	2	6.67	13	<1%	1	6.67	7	<1%
Ascospores	4	6.67	27	6%	32	6.67	213	16%	15	6.67	100	8%
Aspergillus / Penicillium	1	6.67	7	2%	27	6.67	180	14%	8	6.67	53	4%
Basidiospores					2	6.67	13	<1%	2	6.67	13	1%
Beltrania					1	6.67	7	<1%				
Chaetomium												
Cladosporium	8	6.67	53	12%	75	6.67	500	38%	110	6.67	734	61%
Curvularia	3	6.67	20	5%	1	6.67	7	<1%	1	6.67	7	<1%
Drechslera / Bipolaris group	13	6.67	87	20%	2	6.67	13	<1%	2	6.67	13	1%
Epicoccum	1	6.67	7	2%								
Fusarium									2	6.67	13	1%
Hyphal / Spore Fragments	27	6.67	180	41%	38	6.67	253	19%	30	6.67	200	17%
Memnoniella												
Myxomycete / Rust / Smut	5	6.67	33	8%	12	6.67	80	6%	10	6.67	67	6%
Nigrospora	1	6.67	7	2%	2	6.67	13	<1%				
Pestalotia / Pestalotiopsis					1	6.67	7	<1%				
Pithomyces					1	6.67	7	<1%				
Stachybotrys												
TOTALS	65		434	100%	196		1306	100%	181		1207	100%
Analyst	Nina Mims			Nina Mims			Nina Mims					
Analysis Date		1/1	2/2017		1/12/2017			1/12/2017				
Debris Rating	4		2			2						
Debris Composition												
Fibers	2/5			1/5			1/5					
Inorganic/Other	3/5			2/5			2/5					
Insect Parts	0/5			1/5		0/5						
Pollen	0/5			2/5			1/5					
Skin/Dander	4/5			0/5			0/5					

End of Data Detail section 17F-00334

SMLMS v11.99



## **Analytical Notes**

DSHS License No.: LAB0117

AIHA EMPAT ID: 102577

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Client: Apex Titan, Inc. - Dallas Lab Job No.: 17F-00334

Project: Lakeland ES 126 Report Date: 01/12/2017 2:21 PM

Sample Type: Spore Trap, Non-cultured Spore Trap Type: Zefon - Air-O-Cell

**Test Method:** Mold: ASTM D7391-09 - Standard Profile Page 1 of 2
This report consists of three sections; a summary section, a data detail section, and an analytical notes section. Results may not be reported except in full.

NOTE: No abnormalities or exceptions noted during analysis. All samples suitable for analysis.

NOTE: No discernable field blanks were included with this sample set.

#### Methods

Method: ASTM D7391-09. A standard spore trap reading consists of a 30% reading for small spores; 100% of the sample is read for medium and large spores. A 100% reading is provided for containment samples, upon request, or otherwise as noted. Use final spore concentrations, not raw spore counts, for interpretation of results.

Calculation: Spores/cubic meter = (Raw spore count)\*(MDL)

Note: MDL (Minimum Detection Limit) is calculated based upon 1 raw spore count.

Moody Labs recommends two significant figures for calculated values based on ASTM D7391-09.

This report must not be used by the customer to claim product certification, approval, or endorsement by AIHA, ISO, or any agency of the Federal Government.

#### **Debris Rating Key**

- 0 No linear trace detected
- 1 Trace particulate/debris
- 2 Light particulate/debris
- 3 Moderate particulate/debris.
- 4 Substantial particulate/debris
- 5 Extensive particulate/debris
- 6 Field blank
- 10 Hold Sample
- 11 Modified Analysis per Client Instructions

NOTE: Particulate/debris are defined as skin, fibers, pollen grains, insect parts, fungal and/or other non-fungal particles.

SMLMS v11.99



## **Analytical Notes**

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Client: Apex Titan, Inc. - Dallas Lab Job No.: 17F-00334

Project: Lakeland ES 126 Report Date: 01/12/2017 2:21 PM

**Project #:** 725010727044 **Sample Date :** 01/10/2017

Sample Type: Spore Trap, Non-cultured Spore Trap Type: Zefon - Air-O-Cell

**Test Method:** Mold: ASTM D7391-09 - Standard Profile Page 2 of 2

This report consists of three sections; a summary section, a data detail section, and an analytical notes section. Results may not be reported except in full.



LAB#102577



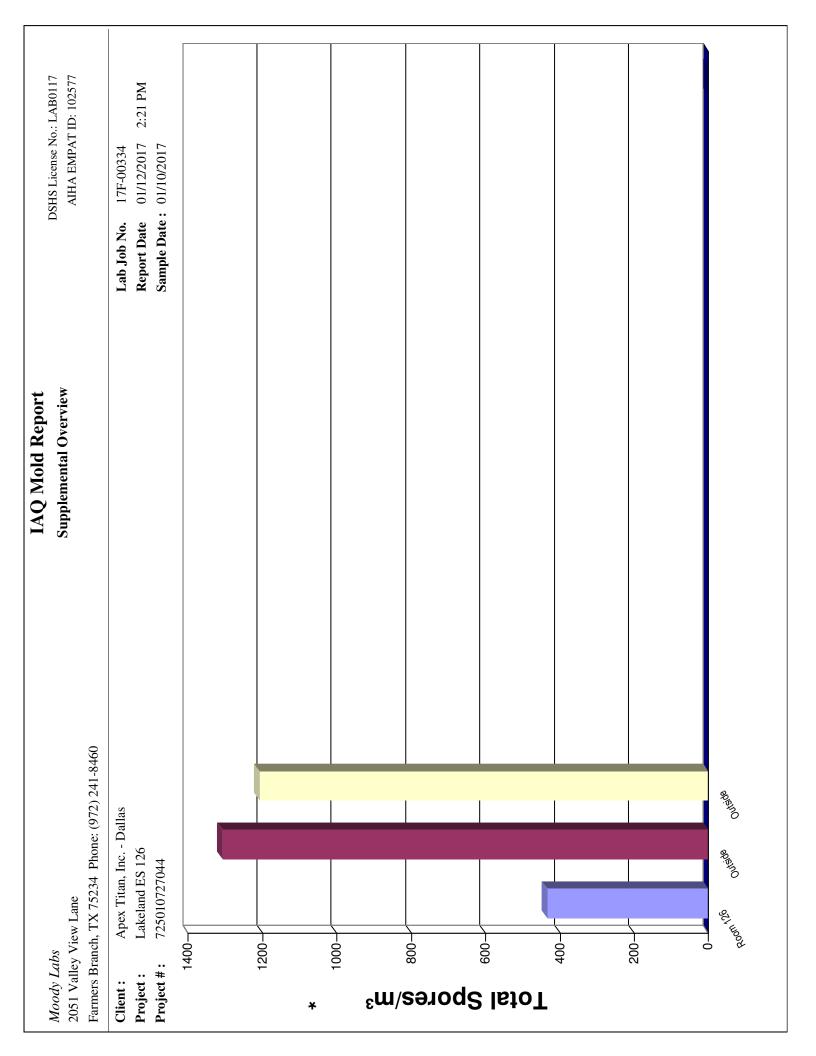




DSHS License No.: LAB0117

AIHA EMPAT ID: 102577

End of Analytical Notes section 17F-00334





Supplemental Overview

DSHS License No.: LAB0117 AIHA EMPAT ID: 102577

> Farmers Branch, TX 75234 Phone: (972) 241-8460 2051 Valley View Lane

Apex Titan, Inc. - Dallas Client:

Lakeland ES 126 Project :

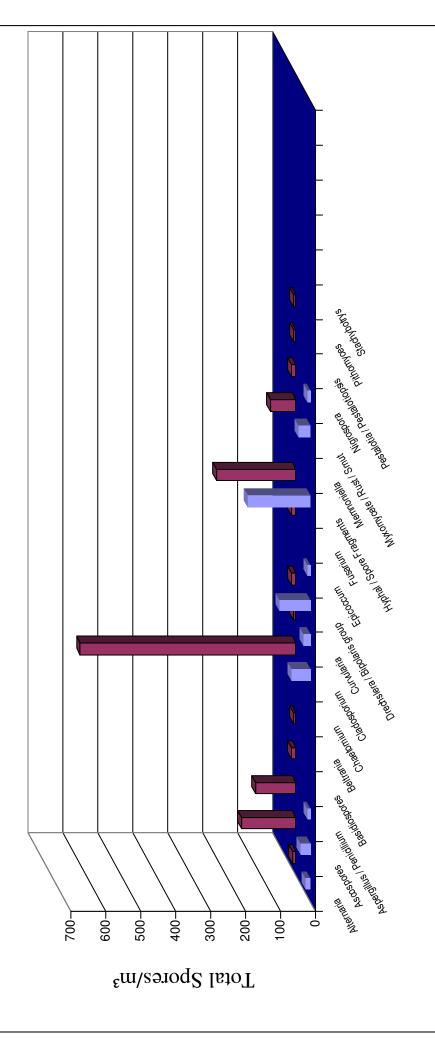
725010727044 Project #:

Room 126

■ Sample ■ Average Reference 1 □ Average Reference 2

2:21 PM 01/12/2017 17F-00334 Report Date Lab Job No.

**Sample Date:** 01/10/2017



Average Reference 1 = Outside, Outside



Supplemental Overview

DSHS License No.: LAB0117 AIHA EMPAT ID: 102577

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Client: Apex Titan, Inc. - Dallas Project: Lakeland ES 126

 Project:
 Lakeland ES 126

 Project #:
 725010727044

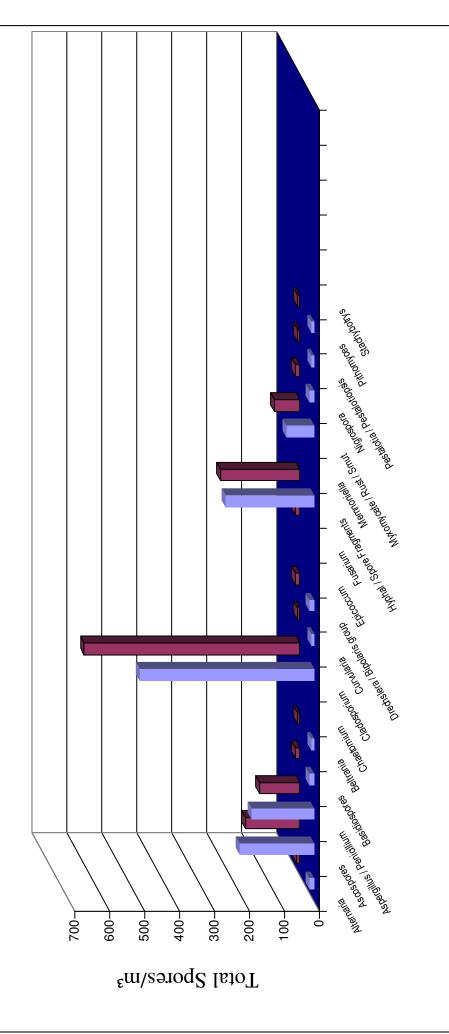
Outside

Lab Job No. 17F-00334

**Report Date** 01/12/2017 2:21 PM

**Sample Date:** 01/10/2017





Average Reference 1 = Outside, Outside



Supplemental Overview

DSHS License No.: LAB0117 AIHA EMPAT ID: 102577

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Apex Titan, Inc. - Dallas Client:

725010727044 Project #:

Lakeland ES 126 Project:

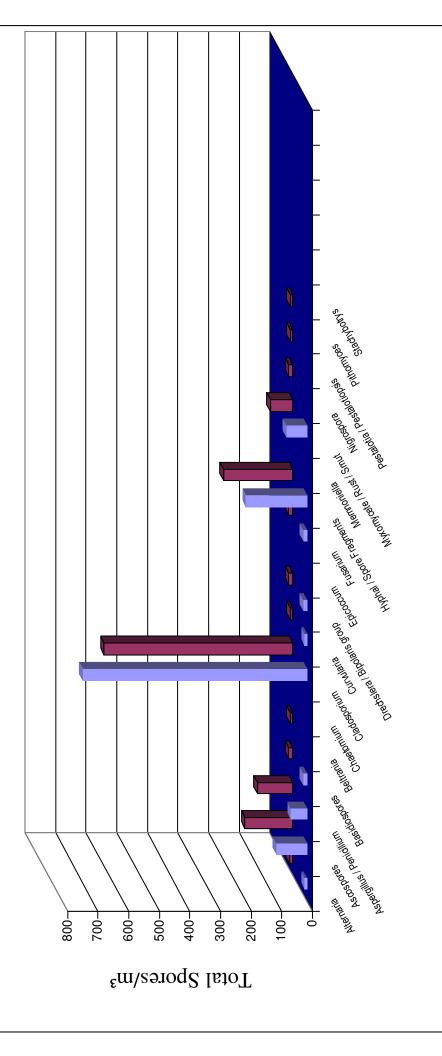
Outside

■ Sample ■ Average Reference 1 □ Average Reference 2

17F-00334 Lab Job No.

2:21 PM 01/12/2017 Report Date

**Sample Date:** 01/10/2017



Average Reference 1 = Outside, Outside

End of Supplemental Overview section

17F-00334



# Chain of Custody

Lab Job #	MF-	00334	AOC3	
Lab Job #_	•			
Lab Job #_				

	*Please call in advance for im	mediate, after-hour, &		vailability.*	Page of
PCM Air (7400	mmediate	☐ Positive Stop	MOLD Direct Exam Standard Air Expanded Air Culture**	Immediate	☐ 1 day ☐ 2 day ☐ 1 day ☐ 2 day ☐ 1 day ☐ 2 day
	mmediate 🗌 1 day 🔲 2 day	3 day 5 day	Analyze Blank	s 🗌 Yes	□ No
TOTAL DUST(	<u>0500/0600)</u> ☐ 1 day ☐ 2 day			ulture Samples subj	ject to Culture Growth**
Air 7402 (Mod Bulk Water/Wipe/M Analyze Blank	M thod	☐ 3 day ☐ 3 day ☐ 5 day	Colony Counts CC + Gram Sta Coliform & E. c Legionella  OTHER:	in	☐ 3 day ☐ 5 day ☐ 3 day ☐ 5 day ☐ 2-3 day ☐ 14 days
	ny / City: Aper			# of Samp	les:
	pany: D. Bowden				ite: 1/10/17
	ne: D. Boul	•			725-010747
Project: 1	akeland ES	~126			
	nation: Name:				
	):				
Invoice Address:	work and samples before submitting to lab. U	Incorted / improperty packaged	I / damaged / evalued sample		ive requests may incur additional fees*
Notes:	work and samples before submitting to lab, u	onsealed / improperly packaged		s or excessive auministrati	ve requests may medi additional rees.
Sample #	Sample Descri	ption	Vol. / Area (if applicable)	Location	n / Notes
	200m 126		150		
2			150		
3	outside		(30		
	0-13161		/50		
1					
Released	*IN_	Date / Time:	Received By	1.10.17	Date / Time:
Released B	y:	Date / Time:	Received By:		Date / Time:

# **ATTACHMENT 2**

Mold Services Definitions & Limitations/Standard of Care and Reliance





#### **Mold Services Definitions & Limitations**

"Mold" defined. Mold is a general term used to describe various types of singled-celled naturally occurring biological organisms occurring worldwide. For purposes of this report the term "mold" is broadly defined to include any living or dead fungi or related products or parts, including spores, hyphae, and mycotoxins.

Limited Scope of Mold Assessment. The scope of Apex's mold assessment services as reflected in the Proposal and this report are limited in that (i) they were physically limited to certain portions of the building structure (e.g., the Client identified Investigation Areas); and (ii) limited by accessibility to building materials or components within the Investigation Area(s). In contrast to a Limited Assessment" is a comprehensive assessment, which involves destructive sampling methods and the scope of the assessment typically extending to the entire building structure.

Time sensitive. Mold assessments are essentially a "snap shot in time," and the results are only relevant at the time of site reconnaissance. Because mold, when biologically active, is a living organism, its presence is influenced and controlled by environmental conditions. Mold assessments, therefore, are "time sensitive" in that the presence and concentration of mold and similar organisms in building structures or in the air is directly influenced by environmental conditions (such as humidity, moisture, nutrients and substrates), whether natural or caused by man, which conditions may vary significantly over relatively short periods of time.

Methodologies. Currently, mold assessment methodologies and protocols are governed by persuasive guidelines (rather than promulgated federal/state or local regulations). Presently, there is no data that supports a threshold limit or dose-response relationship for exposure to mold aeroallergens, individual pathogens, opportunistic pathogens and/or mycotoxins. The Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety and Health (NIOSH) and other non-governmental associations, have not yet established permissible exposure limits (PELs), recommended exposure limits (RELs), or other limit values for aeroallergens. Because no limit values presently exist, Apex will not and cannot represent that the site contains no harmful microbes, mold, fungi, or their metabolites, or other latent conditions beyond those identified by the limited scope of this mold assessment.

Findings limited. Findings from a limited mold assessment are limited because of the nature of the information obtained (e.g., visual reconnaissance of readily accessible areas of building structures, interview information, anecdotal information, and limited sampling data derived from one or more specific sampling events). Apex cannot warrant the accuracy of prior or subsequent information/data, reports and services performed by other firms at the Site. Apex assumes no responsibility or liability for errors in information or data provided by or through the client or third party sources. Apex's services are not to be construed as legal or medical interpretation or advice.

Moisture Intrusion Limitation. Apex performs mold assessment services and is not a moisture intrusion, HVAC, roofing, plumbing or building envelope specialist. However, during the course of conducting its mold assessment services, Apex will report observed areas of apparent moisture intrusion. Apex does not and will not investigate the cause or causes of such observed moisture intrusion. In the event apparent moisture intrusion is observed, Apex will recommend

that the client contact a specialist (i.e., plumbing contractor, building envelope specialist, HVAC contractor, water intrusion specialist, etc.) to assist the client in determining the specific cause or causes of the moisture intrusion and remedial options.

#### Standard of Care

Apex performed its Services in accordance with generally accepted practices of the profession undertaken in similar services at the same time and in the same geographical area. No other warranties, expressed or implied, apply to the Services hereunder or this report.

#### Reliance

Apex's proposal for this project, services and this report have been prepared on behalf of and for the exclusive use of Lewisville Independent School District solely for their use and reliance in assessing the presence of mold in the Investigation Areas of the site. Lewisville Independent School District is the only party to which Apex explained the risks and limitations of the services and was solely involved in shaping the scope of services. Accordingly, reliance on this report by any other party may involve assumptions leading to an unintended interpretation of findings and opinions. With the consent of the client, Apex may offer reliance to third parties or contract with other parties to develop findings and opinions related to such party's unique risk management concerns. Notwithstanding the foregoing, reliance by any and all third parties upon the proposal, the Services or this report shall be limited in the aggregate to all relying parties to the fair market value of the Services provided by Apex.

