

DATE: November 10, 2015

TO: Jason Mullin, Assistant Principal

SUBJECT: Marcus HS - IAQ - Air Test - Room W-225

Today, I received W.O. #314435: *"Teacher in Room W-225 reports some issues with the air in her room, specifically musty odors and humidity. She is requesting an air check."* This morning, I inspected the room. I have requested a P.O. to Air Test Room W-225. The test should be done by the end of this week, and we should have the results by the beginning of next week.

If you have any questions, please contact me.

Thanks,

Paul

Paul Siddall
Maintenance Energy Auditor (IAQ)
Facility Services
Lewisville ISD
469-446-8882



December 7, 2015

Lewisville Independent School District
340 Lake Haven
Lewisville, Texas 75057
Attn: Mr. Paul Siddall

Re: Limited Mold Assessment Services
Marcus High School
Room W-225
5707 Morriss Road
Flower Mound, Texas
LISD PO No. 91611490-00
Apex Project No. 7250115350

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 Marcus High School located at 5707 Morriss Road in Flower Mound, 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. Clinton S. Jech, a State of Texas licensed Mold Assessment Technician (Lic. No. MAT1075) on December 2, 2015. 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 W-225. 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. P01151514) dated November 11, 2015 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 December 2, 2015 by Mr. Clinton S. Jech. Apex's visual reconnaissance of the Investigation areas revealed the following:

Temperature and Relative Humidity

Temperature readings collected inside the room was reported as 68.3 degrees Fahrenheit while relative humidity was reported as 56.5 percent. Temperature readings collected outside the building ranged from 60.2 to 62.2 degrees Fahrenheit while outside relative humidity ranged from 21.9 to 25.8 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 ranged from 11 to 15% 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 were 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 74 counts/m³, while the exterior level ranged from 227 to 640 counts/m³.

Two (2) 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 office and break room reported Drechslera/Bipolaris group and Curvularia were each 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 (214) 350-5469.

Sincerely,
Apex TITAN, Inc.



Darren G. Bowden
Senior Program Manager
Texas Mold Assessment Consultant
Lic. No. MAC0321

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

ATTACHMENT 1

Analytical Results/Chain of Custody



IAQ Mold Report

Summary

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 : Marcus HS Room W-225
Project # : 7250115350

Lab Job No. : 15F-14959
Report Date : 12/04/2015 1:59 PM
Sample Date : 12/02/2015

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

On 12/2/2015, three (3) samples were submitted by Clint Jech of Apex Titan, Inc.- Dallas (located at 2351 W. NW Highway #3321, Dallas, TX 75220) 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	75	Exterior, North	Cladosporium Aspergillus / Penicillium Ascospores Hyphal / Spore Fragments Basidiospores Nigrospora Myxomycete / Rust / Smut Alternaria <div style="text-align: right;">Total:</div>	227 35% 107 17% 93 15% 67 10% 53 8% 40 6% 40 6% 13 2% 640 100%
2	75	Exterior, Northwest	Hyphal / Spore Fragments Myxomycete / Rust / Smut Cladosporium Aspergillus / Penicillium Ascospores <div style="text-align: right;">Total:</div>	147 65% 27 12% 27 12% 13 6% 13 6% 227 100%
3	150	Room W-225 * See Analytical Notes report for further details	Hyphal / Spore Fragments Ascospores Drechslera / Bipolaris group Curvularia Alternaria <div style="text-align: right;">Total:</div>	40 54% 13 18% 7 9% 7 9% 7 9% 74 100%



IAQ Mold Report

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Sample Number	Volume (liters)	Sample Description	Identification	Concentration spores/cubic meter

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

Approved Signatory : _____

Lab Director : Bruce Crabb

Approved Signatory : _____

Thank you for choosing Moody Labs



IAQ Mold Report

Data Detail

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Sample ID:	1				2				3			
Location:	Exterior, North				Exterior, Northwest				Room W-225			
Media Expires On:	Mar 2016				Mar 2016				Mar 2016			
Notes Included:												
Volume:	75				75				150			
	raw ct.	MDL	spores/m ³		raw ct.	MDL	spores/m ³		raw ct.	MDL	spores/m ³	
Alternaria	1	13.33	13	2%					1	6.67	7	9%
Ascospores	7	13.33	93	15%	1	13.33	13	6%	2	6.67	13	18%
Aspergillus / Penicillium	8	13.33	107	17%	1	13.33	13	6%				
Basidiospores	4	13.33	53	8%								
Chaetomium												
Cladosporium	17	13.33	227	35%	2	13.33	27	12%				
Curvularia									1	6.67	7	9%
Drechslera / Bipolaris group									1	6.67	7	9%
Hyphal / Spore Fragments	5	13.33	67	10%	11	13.33	147	65%	6	6.67	40	54%
Memnoniella												
Myxomycete / Rust / Smut	3	13.33	40	6%	2	13.33	27	12%				
Nigrospora	3	13.33	40	6%								
Stachybotrys												
TOTALS	48		640	100%	17		227	100%	11		74	100%
Analyst	Nina Mims				Nina Mims				Nina Mims			
Analysis Date	12/4/2015				12/4/2015				12/4/2015			
Debris Rating	2				2				5			
Debris Composition												
Fibers	0/5				1/5				3/5			
Inorganic/Other	2/5				2/5				5/5			
Insect Parts	0/5				0/5				0/5			
Pollen	0/5				0/5				1/5			
Skin/Dander	0/5				0/5				5/5			

End of Data Detail section
15F-14959

SMLMS v11.37



IAQ Mold Report

Analytical Notes

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Samples Analyzed

Sample No 3 : Room W-225

Notes: 60% Occluded.

Field Blanks

No discernable field blanks were submitted with this set of samples.

NOTE: All remaining samples suitable for analysis.

Methods

Method: ASTM D7391-09: Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy.

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.



IAQ Mold Report

Analytical Notes

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LAB # 102577



End of Analytical Notes section

15F-14959

IAQ Mold Report

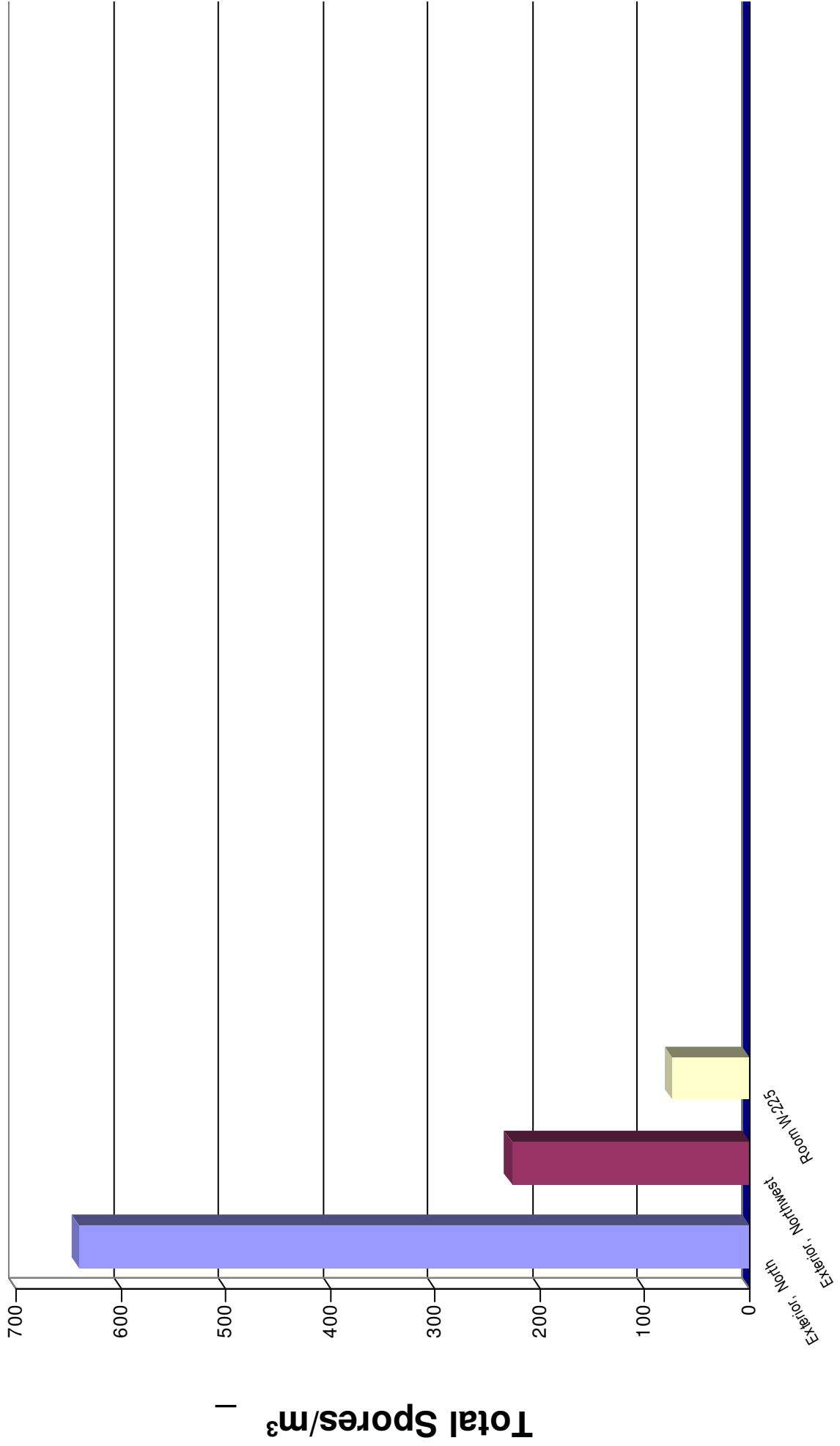
Supplemental Overview

DSHS License No.: LAB0117
AIHA EMPAT ID: 102577

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

Client : Apex Titan, Inc. - Dallas
Project : Marcus HS Room W-225
Project # : 7250115350

Lab Job No. 15F-14959
Report Date 12/04/2015 1:59 PM
Sample Date : 12/02/2015





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

IAQ Mold Report

Supplemental Overview

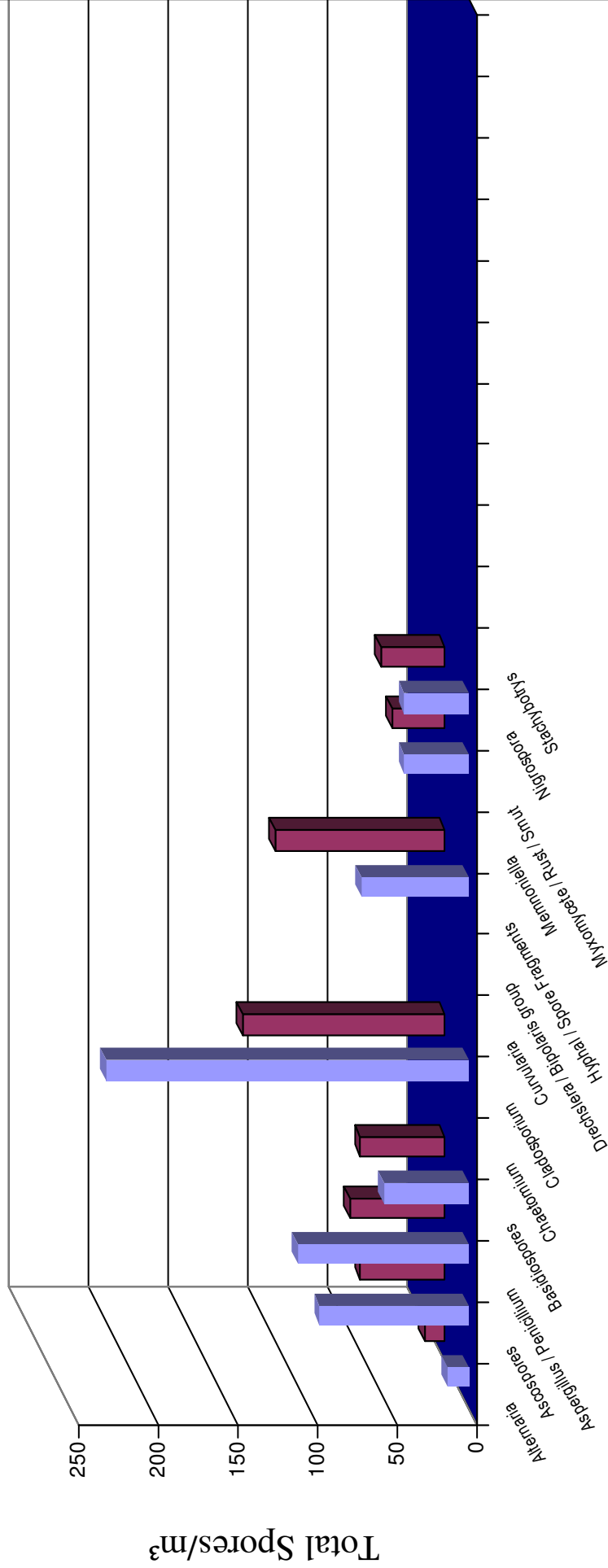
DSHS License No.: LAB0117
AIHA EMPAT ID: 102577

Client : Apex Titan, Inc.- Dallas
Project : Marcus HS Room W-225
Project # : 7250115350

Lab Job No. 15F-14959
Report Date 12/04/2015 1:59 PM
Sample Date : 12/02/2015

Exterior, North

■ Sample ■ Average Reference 1 □ Average Reference 2



Average Reference 1 = Exterior, North, Exterior, Northwest

IAQ Mold Report

Supplemental Overview

DSHS License No.: LAB0117
 AIHA EMPAT ID: 102577



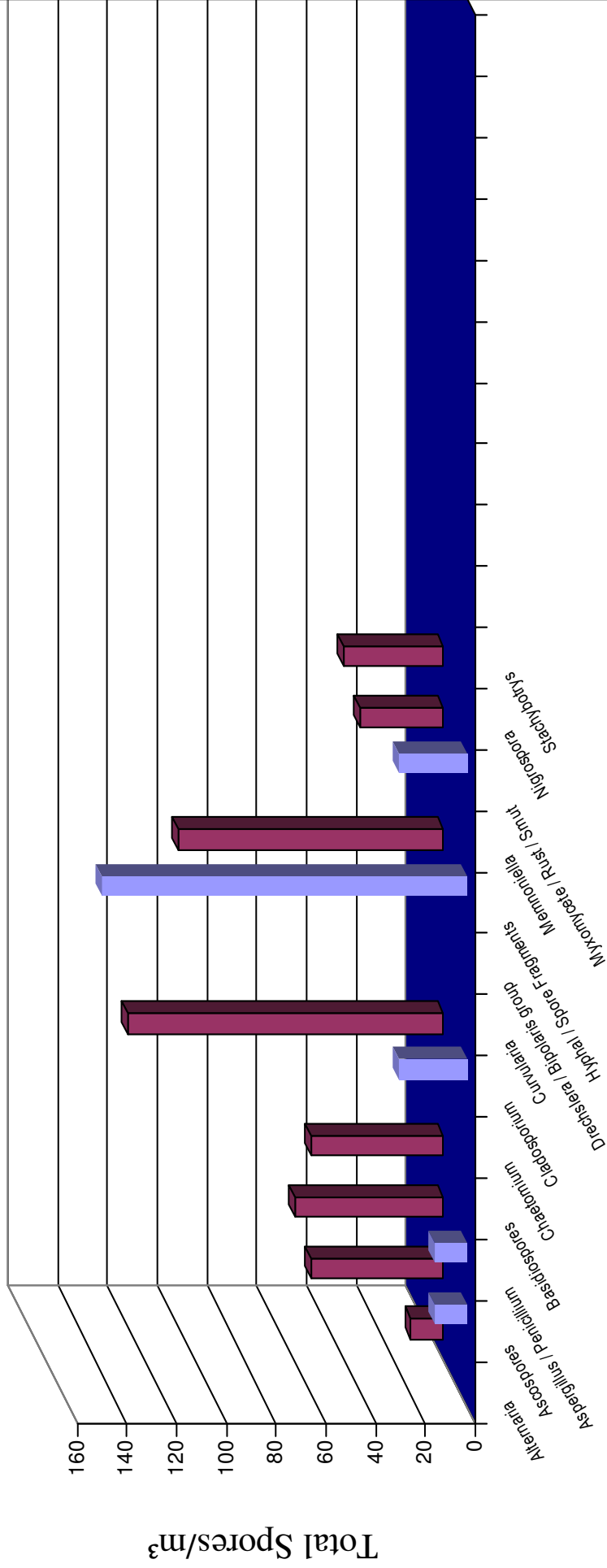
2051 Valley View Lane
 Farmers Branch, TX 75234 Phone: (972) 241-8460

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Project : Marcus HS Room W-225
Project # : 7250115350

Lab Job No. 15F-14959
Report Date 12/04/2015 1:59 PM
Sample Date : 12/02/2015

Exterior, Northwest

■ Sample ■ Average Reference 1 □ Average Reference 2



Average Reference 1 = Exterior, North, Exterior, Northwest



Chain of Custody

Lab Job # 15F-14959 AOC:3
Lab Job #
Lab Job #

Please call in advance for immediate, after-hour, & weekend pricing & availability.

ASBESTOS PLM

Bulk [] Immediate [] 1 day [] 2 day [] 3 day [] 5 day
[] Analyze All [] Positive Stop

PCM Air (7400)

[] Immediate [] 1 day [] 2 day [] 3 day [] 5 day

TOTAL DUST (0500/0600)

[] 1 day [] 2 day

ASBESTOS TEM

Air AHERA Method [] 6 hr [] 12 hr [] 24 hr
Air 7402 (Modified) [] 1 day [] 2 day [] 3 day
Bulk [] 1 day [] 2 day [] 3 day [] 5 day
Water/Wipe/Micro Vac [] 1 day [] 2 day [] 3 day
Analyze Blanks [] Yes [] No

MOLD

Direct Exam [] Immediate [] 1 day [] 2 day
Standard Air [] Immediate [] 1 day [x] 2 day
Expanded Air [] Immediate [] 1 day [] 2 day
Culture** [] 10-14 days
Analyze Blanks [] Yes [] No

Turnaround of Culture Samples subject to Culture Growth

BACTERIA**

Colony Counts (CC) [] 3 day [] 5 day
CC + Gram Stain [] 3 day [] 5 day
Coliform & E. coli (P/A) [] 2-3 day
Legionella [] 14 days

OTHER:

Billing Company / City: Apex Titan (Dallas South) # of Samples: 3
Submitter's Company: Sample Date: 12/2/2015
Submitter's Name: Clint Jech Project #: 7250115350
Project: Marcus HS Room W-22-5 Phone #:
Contact Information: Name: Clint Jech Mobile #: (972) 989-1031
E-mail Results to: Clint/Duncan/Veronica Fax #:
Invoice Address: Veronica P.O. #:

Please review paperwork and samples before submitting to lab. Unsealed / improperly packaged / damaged / expired samples or excessive administrative requests may incur additional fees

Notes: Teacher Notes musty smell

Table with 4 columns: Sample #, Sample Description, Vol. / Area (if applicable), Location / Notes. Contains handwritten data for 3 samples and location notes.

Released By: [Signature] Date / Time: 12/2/2015 11:00 AM Received By: Sondi Lewis Date / Time: 12/02/15 4:07 p.m.

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.