FACS
Forensic Analytical Consulting Services

April 6, 2023

Mold Investigation Report: Findings of Initial Assessment

Grant Elementary School
Classrooms 70-75
2368 Pearl Street
Santa Monica, CA 90405

Prepared for:

Carey Upton
Santa Monica-Malibu Unified School District
310-450-83380 x79383 |
cupton@smmusd.org

Prepared By:

Kristina Ramos
Forensic Analytical Consulting Services
4900 Airport Plaza Drive, Suite 115
Long Beach, CA 90815
310-668-5600 |
kristina.ramos@forensicanalytical.com

FACS Project #PJ75644

Contents

Executive Summary

Forensic Analytical Consulting Services Inc. performed a mold assessment in Classrooms 70, 71, 72, 73, 74, and 75 at Grant Elementary School, located at 2368 Pearl Street, Santa Monica, California. Limited areas of water intrusion were identified which require corrective actions. Based on assessment findings and the results of collected air samples, there is a potential for hidden mold growth and elevated mold spore levels in the air in Classroom 70. Elevated mold spore levels are not suspected in Classrooms 71, 72, 73, 74, and 75. A more complete discussion of findings, conclusions and recommendations is provided below.

Introduction

Forensic Analytical Consulting Services, Inc. (FACS) was retained by Santa Monica – Malibu Unified School District (SMMUSD) to perform a mold assessment of selected areas of six bungalow classrooms at Grant Elementary School, located at 2368 Pearl Street, Santa Monica, California. The assessment was performed on March 31, 2023. This report contains the findings and recommendations from our investigation. The purpose of the investigation was to attempt to identify areas of water intrusion and mold growth, make recommendations regarding corrective actions, and provide information for consideration in assessing risk to occupants.

Site Characterization

The subject property is characterized as follows (characterization limited to areas inspected):

Bldg. Type/Use:	*Grant Elementary School, bungalow classrooms 70 through 75*
# Floors:	*1*
# Rooms:	*6*
Foundation:	*Raised, with crawlspace*
Flooring:	*Carpet glued on wood subfloor*
Walls:	*Wood framing & drywall, with tackboard panel walls*
Roof:	*Flat*
HVAC:	*Single forced air heating/cooling unit with outdoor air intake*
Landscaping:	*Typical school landscaping, light vegetation*

Site History

Based on conversations with client representatives, the following history relative to water intrusion and mold growth was developed (additional area-specific history may be provided in Table 1):

- SMMUSD reported roof leaks at the six bungalow classrooms, 70 through 75, at Grant Elementary School and occupants have expressed concerns about air quality and potential mold growth.
- FACS was contacted to perform an initial assessment related to the reported moisture event and provide recommendations regarding corrective actions to ensure a healthful environment.

Scope of Work

In the course of this project, FACS conducted the following scope of work:

1. Development of a site characterization and history (see sections above).
2. Visual assessment of the specific areas of concern noted above.
3. Selective moisture meter assessment of materials in inspected areas.

4. Collection of spore trap air samples in 6 indoor locations (Classrooms 70 through 75) and 2 outdoor locations. Indoor sampling locations were selected based on the history of moisture intrusion and to be representative of the areas assessed. Outdoor sampling locations were selected to be representative of air entering the building.

Findings from the assessment are provided in Table 1. Data collection methods, floor plan, photographs, and laboratory results are provided in the appendices of this report.

Conclusions and Recommendations Summary

Based on this investigation, the following summary conclusions and recommendations are reached.

It appears that water intrusion has resulted in moisture impact to the ceiling in Room 70. Although visible mold growth was not identified during the assessment, additional investigation is recommended, based on visible water damage and air sample results which indicated potential hidden mold growth.

Specific findings, conclusions and recommendations are provided in Table 1.

Refer to information regarding mold assessments in the “FACS General Mold Assessment Guidelines” included in the appendices of this report. Per these guidelines, mold growth can appear on moisture impacted building materials within 24-48 hours. As such, efforts should be made to dry moisture impacted materials and correct the underlying cause of moisture in order to prevent mold growth from occurring.

Refer to information regarding mold remediation in the “FACS General Mold Remediation Guidelines” included in the appendices of this report. Per these guidelines, mold remediation should proceed as follows:

1. perform all work per appropriate mold remediation guidelines,
2. evaluate materials to be removed for hazardous building materials,
3. conduct invasive inspection to determine scope of removal,
4. remove impacted building materials per scope,
5. perform detail cleaning of the work areas,
6. ensure all wet building materials are dry,
7. conduct post-remediation assessment, and
8. ensure the cause of moisture intrusion has been addressed.

Limitations

This investigation is limited to the conditions and practices observed and information made available to FACS. The methods, conclusions and recommendations provided are based on FACS’ judgment, expertise and the standard of practice for professional service. They are subject to the limitations and variability inherent in the methodology employed. As with all environmental investigations, this investigation is limited to the defined scope and does not purport to set forth all hazards, nor indicate that other hazards do not exist.

Please do not hesitate to contact our offices at 310-668-5600 with any questions or concerns. Thank you for the opportunity to assist Santa Monica – Malibu Unified School District in promoting a more healthful environment.

Respectfully,
FORENSIC ANALYTICAL

Kristina Ramos
Environmental Health Specialist

Reviewed by,
FORENSIC ANALYTICAL

Lydia Feng, MS, CIH
Senior Project Manager

Table 1 Findings & Recommendations

Ref #: Functional Area	Mold & Moisture Findings Summary[a] History, Observations, Conclusion & Reasoning, Preliminary Cause	Photos & Samples[b]	Moisture[c] Elevated? (Substrate)	Mold[d] Conclusion, Obs. Area/Density, Projected Area	Repair Level[e] • Scope/Detail
Classrooms 70 through 75					
#1: Classroom 70	**History:** Report of roof leaks by Grant Elementary School staff. No major repairs or renovations have occurred. **Observations:** Water stained drop ceiling tiles throughout the room. No observable stains on carpet or walls. Dark staining observed on wood behind ceiling insulation. No elevated moisture meter readings. No observable odor in room. No visible mold growth was observed. **Conclusion:** Although visible mold growth was not identified, there is potential for mold growth based on observable water staining on ceiling tiles and air sample results which were slightly elevated compared to outdoor control samples, indicating potential hidden mold growth. **Cause:** Suspected to be reported ceiling leak.	Photos 1 – 5 Samples F150180: IA1	Not elevated	**Potential**	**MT Level** • Repair cause of roof leaks • Refer to "MT Level" procedures in the attached "General Mold Remediation Guidelines" • Remove all water stained ceiling tiles and stained insulation in ceiling. In the course of removal, proceed in a manner that minimizes disturbance of potential concealed mold growth. • Inspect underlying building materials for mold growth in the ceiling. If mold growth is discovered, remediate in accordance with "General Mold Remediation Guidelines" (e.g. PPE, containment provisions, work practices, etc.) • Wet wipe exposed horizontal surfaces and run HEPA air cleaners (with HVAC fan on) for at least 24 hours. • Conduct post-remediation sampling.

Ref #: Functional Area	Mold & Moisture Findings Summary[a] History, Observations, Conclusion & Reasoning, Preliminary Cause	Photos & Samples[b]	Moisture[c] Elevated? (Substrate)	Mold[d] Conclusion, Obs. Area/Density, Projected Area	Repair Level[e] • Scope/Detail
#2: Classroom 71	**History:** Report of roof leaks by Grant Elementary School staff. No major repairs or renovations have occurred. **Observations:** Minor debris observed above the drop ceiling tiles. No observable stains on ceiling, carpet, or walls. No elevated moisture meter readings. No observable odor in room. No visible mold growth observed. Upon inspection, air handling unit appeared dirty and due for general cleaning/maintenance (heavy dust accumulation). **Conclusion:** Mold growth is not suspected. Elevated mold spore levels in air and on surfaces are not suspected. This is based on the absence of visible mold growth and air sample results indicating levels similar to outdoors. **Cause:** N/A	Photos 6 – 8 Samples F150180: IA3	Not elevated	**Not Suspected**	• Perform general cleaning/maintenance of Classroom 71 air handling unit (AHU), including replacing filter, cleaning evaporative coils, drain pan, and other accessible components
#3: Classroom 72	**History:** Report of roof leaks by Grant Elementary School staff. No major repairs or renovations have occurred. **Observations:** No observable stains on ceiling, carpet, or walls. No elevated moisture meter readings. No observable odor in room. No visible mold growth observed. **Conclusion:** Mold growth is not suspected. Elevated mold spore levels in air and on surfaces are not suspected. This is based on the absence of visible mold growth and air sample results indicating levels similar to outdoors. **Cause:** N/A	Photos 9 – 11 Samples F150180: IA5	Not elevated	**Not Suspected**	N/A
#4: Classroom 73	**History:** Report of roof leaks by Grant Elementary School staff. No major repairs or renovations have occurred. **Observations:** Staining on ceiling tiles surrounding HVAC supply registers. Rust observed on top of registers. No observable stains on carpet or walls. No elevated moisture meter readings. No observable odor in room. No visible mold growth observed. **Conclusion:** Mold growth is not suspected. Elevated mold spore levels in air and on surfaces are not suspected. This is based on the absence of visible mold growth and air sample results indicating levels similar to outdoors. **Cause:** N/A	Photos 12 – 16 Samples F150180: IA7	Not elevated	**Not Suspected**	N/A

Ref #: Functional Area	Mold & Moisture Findings Summary[a] History, Observations, Conclusion & Reasoning, Preliminary Cause	Photos & Samples[b]	Moisture[c] Elevated? (Substrate)	Mold[d] Conclusion, Obs. Area/Density, Projected Area	Repair Level[e] • Scope/Detail
#5: Classroom 74	**History:** Report of roof leaks by Grant Elementary School staff. No major repairs or renovations have occurred. **Observations:** Staining on ceiling tiles surrounding HVAC supply registers. Rust observed on top of registers. No observable stains on carpet or walls. No elevated moisture meter readings. No observable odor in room. No visible mold growth observed. **Conclusion:** Mold growth is not suspected. Elevated mold spore levels in air and on surfaces are not suspected. This is based on the absence of visible mold growth and air sample results indicating levels similar to outdoors. **Cause:** N/A	Photos 17 – 21 Samples F150180: IA9	Not elevated	**Not Suspected**	N/A
#6: Classroom 75	**History:** Report of roof leaks by Grant Elementary School staff. No major repairs or renovations have occurred. **Observations:** Heavy staining on ceiling tiles surrounding HVAC supply registers. Rust observed on top of registers. No observable stains on carpet or walls. No elevated moisture meter readings. No observable odor in room. No visible mold growth observed. **Conclusion:** Mold growth is not suspected. Elevated mold spore levels in air and on surfaces are not suspected. This is based on the absence of visible mold growth and air sample results indicating levels similar to outdoors. **Cause:** N/A	Photos 22 – 25 Samples F150180: IA11	Not elevated	**Not Suspected**	N/A
#7: Exterior of Classrooms 70 thru 75	**Observations:** Light to moderate vegetation surrounding the bungalow classrooms. Wood siding, which was observed to have wood rot at base. Classroom 71 HVAC unit observed to have rust and heavy dust deposition. All other classroom HVAC units appeared in acceptable condition.	Photos 26 – 32 Samples F150180: OA1, OA2	N/A	**Not Suspected**	• Perform general cleaning/maintenance of Classroom 71 air handling unit (AHU) • Repair areas of deteriorated wood siding

Notes:

[a] Cause of moisture/mold is preliminary based upon general observations and should be confirmed by an appropriately qualified building professional.

[b] Photo # refers to attached photo log. Sample # refers to attached lab report # and individual sample #. Positive results in bold.

[c] Moisture results elevated or not elevated based on observation or moisture meter readings. See attached methodology. Positive results in bold.

[d] Conclusion regarding presence of mold growth/contamination (**Suspected**, **Potential**, **Not Suspected**), total surface area of mold growth observed and growth intensity (light, moderate, heavy). Total area of observed & projected hidden mold in parenthesis. “sf”=square feet, “lf”=linear feet.

[e] Refer to attached “FACS General Mold Remediation Guidelines” for general industry guidance regarding identified repair level.

Appendix A
Photographs

Photo #1: Classroom 70 - placard

Photo #2: Classroom 70 – water staining on ceiling tiles throughout

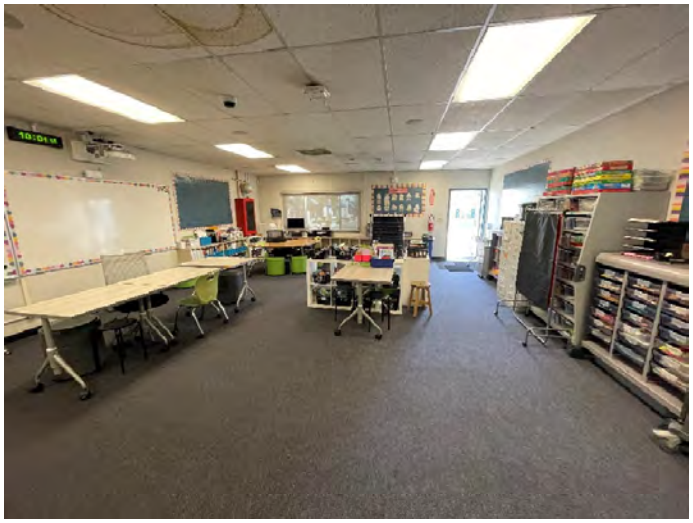

Photo #3: Classroom 70 – water staining on ceiling tile throughout

Photo #4: Classroom 70 – water staining on ceiling tile throughout

Photo #5: Classroom 70 black staining on wood in ceiling cavity

Photo #6: Classroom 71 - placard

Photo #7: Classroom 71 – no visible evidence of significant water intrusion/damage

Photo #8: Classroom 71 – light debris in ceiling cavity

Photo #9: Classroom 72 - placard

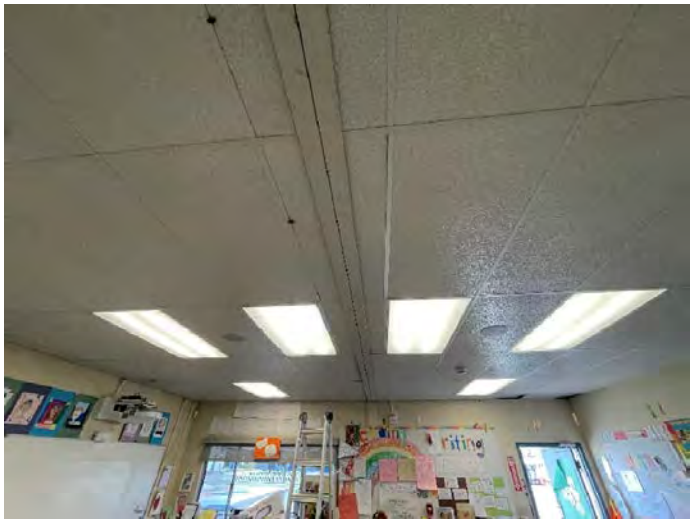

Photo #10: Classroom 72 – no visible evidence of significant water intrusion/damage

Photo #11: Classroom 72 – light ceiling staining observed

Photo #12: Classroom 73 - placard

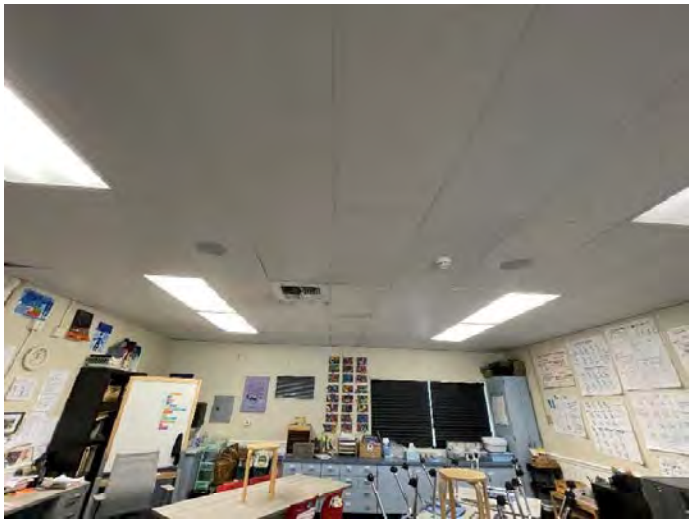

Photo #13: Classroom 73 – no visible evidence of significant water intrusion/damage

Photo #14: Classroom 73 – ceiling staining observed near HVAC supply registers

Photo #15: Classroom 73 – ceiling staining observed near HVAC supply registers

Photo #16: Classroom 73 - rusted HVAC supply

Photo #17: Classroom 74 - placard

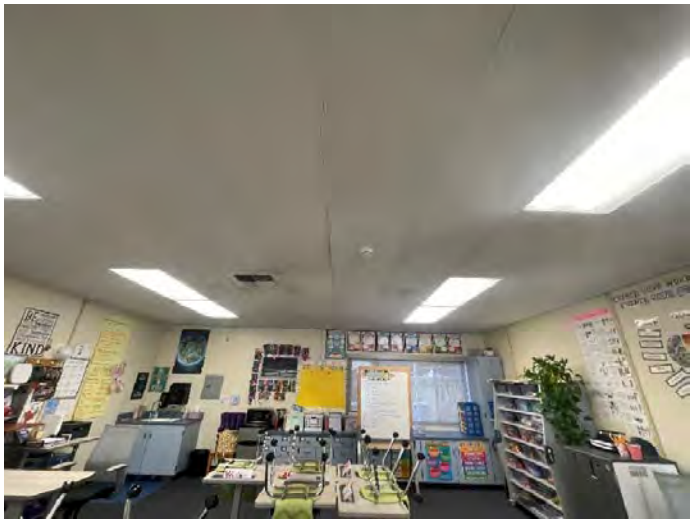

Photo #18: Classroom 74 - no visible evidence of significant water intrusion/damage

Photo #19: Classroom 74 – ceiling staining observed near HVAC supply registers

Photo #20: Classroom 74 – ceiling staining observed near HVAC supply registers

Photo #21: Classroom 74 - rusted HVAC supply

Photo #22: Classroom 75 - placard

Photo #23: Classroom 75 – ceiling staining observed near HVAC supply registers

Photo #24: Classroom 75 – ceiling staining observed near HVAC supply registers

Photo #25: Classroom 75 - rusted HVAC supply

Photo #26: Back of bungalow classroom example

Photo #27: Wood rot observed at the exterior of the bungalows

Photo #28: Classroom 71 air handling unit, heavy dust deposition and rusting observed

Photo #29: Classroom 71 air handling unit, heavy dust deposition and rusting observed

Photo #30: Classrooms 70, 72, 73, 74 and 75 air handling units – no significant observations

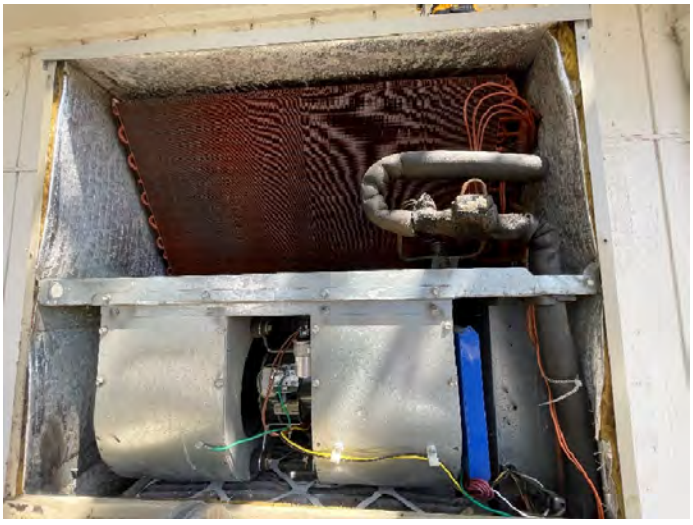

Photo #31: Classrooms 70, 72, 73, 74 and 75 air handling units – no significant observations

Photo #32: Classrooms 70, 72, 73, 74 and 75 air handling units – no significant observations

Appendix B
Sampling Results Summary & Laboratory Reports

Sampling results are summarized in the table below. Supporting laboratory reports and chain of custody forms are attached in the pages that follow in order of laboratory report number.

Spore Trap Air Samples (Lab Report # F150180)			
Sample Number	**Location**	**Summary of Comparison to Controls**	
		Types	**Concentrations**
IA1	Classroom 70	Different	Approximately the same for total; slightly higher for *Penicillium/Aspergillus*
IA3	Classroom 71	Too low for comparison	Approximately the same or lower than
IA5	Classroom 72	Too low for comparison	Approximately the same or lower than
IA7	Classroom 73	Too low for comparison	Approximately the same or lower than
IA9	Classroom 74	Approximately the same	Approximately the same or lower than
IA11	Classroom 75	Too low for comparison	Approximately the same or lower than
OA1	Outdoors, east exterior elevation	Control Sample	Control Sample
OA2	Outdoors, north exterior elevation	Control Sample	Control Sample
Note: *Findings in bold considered elevated.*			

SGS FORENSIC LABORATORIES

Final Report

Non-Viable Air Fungal Analysis

Forensic Analytical Consulting Svcs
Lydia Feng
4900 Airport Plaza Suite 115

Long Beach, CA 90815

Client ID: LA05
Report Number: F150180
SGSFL Job ID: LA05
Date Received: 03/27/23
Date Analyzed: 03/30/23
Date Printed: 03/30/23
First Reported: 03/30/23

Sample Type: Allergenco-D
Analysis: Direct Microscopy; Method IAQ 101; Modified ASTM D7391
Job ID / Site: PJ75644; Santa Monica - Malibu Unified School District SMMUSD Grant Elementary Bungalows IEQ Assessment 2368 Pearl Street Santa Monica CA 90405

Total Samples Submitted: 8
Total Samples Analyzed: 8

Lab Number	60227901				60227902				60227903			
Sample ID	**OA1**				**OA2**				**IA1**			
Location	E Extr Elevation				N Extr Elevation				Rm 70 S side			
Sample Date	03/27/23				03/27/23				03/27/23			
Volume	74.0 L				74.0 L				74.0 L			
Organism	**Spores+**	**%**	**LOD**	**S/m³**	**Spores+**	**%**	**LOD**	**S/m³**	**Spores+**	**%**	**LOD**	**S/m³**
Alternaria	ND	-	-	**ND**	1	0.9	14	14	ND	-	-	**ND**
Ascospores	ND	-	-	**ND**	3	6	32	95	1	3.1	32	32
Basidiospores	23	60.1	32	730	27	54.2	32	850	6	18.8	32	190
Cladosporium	5	13.1	32	160	14	28.2	32	440	5	15.7	32	160
Epicoccum	ND	-	-	**ND**	ND	-	-	**ND**	1	1.3	14	14
Oidium	1	1.1	14	14	1	0.9	14	14	ND	-	-	**ND**
Penicillium / Aspergillus	6	15.7	32	190	4	8	32	130	19	59.8	32	600
Rusts/smuts/myxomycetes	7	7.8	14	95	1	0.9	14	14	ND	-	-	**ND**
Ulocladium	2	2.2	14	27	1	0.9	14	14	1	1.3	14	14
Total	44			1,200	52			1,600	33			1,000
Particulate Density	**Major**				**Major**				**Major**			

Particles	Number		LOD	P/m3	Number		LOD	P/m3	Number		LOD	P/m3

Comments

SGS FORENSIC LABORATORIES

Non-Viable Air Fungal Analysis

Forensic Analytical Consulting Svcs
Lydia Feng
4900 Airport Plaza Suite 115

Long Beach, CA 90815

Client ID: LA05
Report Number: F150180
SGSFL Job ID: LA05
Date Received: 03/27/23
Date Analyzed: 03/30/23
Date Printed: 03/30/23
First Reported: 03/30/23

Sample Type: Allergenco-D
Analysis: Direct Microscopy; Method IAQ 101; Modified ASTM D7391
Job ID / Site: PJ75644; Santa Monica - Malibu Unified School District SMMUSD Grant Elementary Bungalows IEQ Assessment 2368 Pearl Street Santa Monica CA 90405

Total Samples Submitted: 8
Total Samples Analyzed: 8

Lab Number	60227904				60227905				60227906			
Sample ID	IA3				IA5				IA7			
Location	Rm 71 S side				Rm 72 S side				Rm 73 S side			
Sample Date	03/27/23				03/27/23				03/27/23			
Volume	74.0 L				74.0 L				74.0 L			
Organism	**Spores+**	**%**	**LOD**	**S/m³**	**Spores+**	**%**	**LOD**	**S/m³**	**Spores+**	**%**	**LOD**	**S/m³**
Alternaria	ND	-	-	**ND**	ND	-	-	**ND**	ND	-	-	**ND**
Ascospores	ND	-	-	**ND**	ND	-	-	**ND**	**1**	**9.6**	**32**	**32**
Basidiospores	**1**	**9.2**	**32**	**32**	ND	-	-	**ND**	**5**	**47.9**	**32**	**160**
Cladosporium	**3**	**27.6**	**32**	**95**	**1**	**15.6**	**32**	**32**	**1**	**9.6**	**32**	**32**
Epicoccum	ND	-	-	**ND**	ND	-	-	**ND**	ND	-	-	**ND**
Oidium	ND	-	-	**ND**	ND	-	-	**ND**	ND	-	-	**ND**
Penicillium / Aspergillus	**6**	**55.3**	**32**	**190**	**5**	**77.7**	**32**	**160**	**3**	**28.8**	**32**	**95**
Rusts/smuts/myxomycetes	**2**	**7.9**	**14**	**27**	**1**	**6.7**	**14**	**14**	**1**	**4.1**	**14**	**14**
Ulocladium	ND	-	-	**ND**	ND	-	-	**ND**	ND	-	-	**ND**
Total	12			340	7			200	11			330
Particulate Density	**Major**				**Major**				**Major**			
Particles	**Number**		**LOD**	**P/m3**	**Number**		**LOD**	**P/m3**	**Number**		**LOD**	**P/m3**
Comments												

SGS FORENSIC LABORATORIES

Final Report

Non-Viable Air Fungal Analysis

Forensic Analytical Consulting Svcs
Lydia Feng
4900 Airport Plaza Suite 115

Long Beach, CA 90815

Client ID: LA05
Report Number: F150180
SGSFL Job ID: LA05
Date Received: 03/27/23
Date Analyzed: 03/30/23
Date Printed: 03/30/23
First Reported: 03/30/23

Sample Type: Allergenco-D
Analysis: Direct Microscopy; Method IAQ 101; Modified ASTM D7391
Job ID / Site: PJ75644; Santa Monica - Malibu Unified School District SMMUSD Grant Elementary Bungalows IEQ Assessment 2368 Pearl Street Santa Monica CA 90405

Total Samples Submitted: 8
Total Samples Analyzed: 8

Lab Number	60227907				60227908							
Sample ID	IA9				IA11							
Location	Rm 74 S side				Rm 75 S side							
Sample Date	03/27/23				03/27/23							
Volume	74.0 L				74.0 L							
Organism	**Spores+**	**%**	**LOD**	**S/m³**	**Spores+**	**%**	**LOD**	**S/m³**	**Spores+**	**%**	**LOD**	**S/m³**
Alternaria	ND	-	-	**ND**	ND	-	-	**ND**				
Ascospores	**1**	**3**	**32**	**32**	ND	-	-	**ND**				
Basidiospores	**24**	**72.8**	**32**	**760**	**2**	**19.4**	**32**	**63**				
Cladosporium	**1**	**3**	**32**	**32**	**5**	**48.7**	**32**	**160**				
Epicoccum	ND	-	-	**ND**	ND	-	-	**ND**				
Oidium	ND	-	-	**ND**	ND	-	-	**ND**				
Penicillium / Aspergillus	**7**	**21.2**	**32**	**220**	**2**	**19.4**	**32**	**63**				
Rusts/smuts/myxomycetes	ND	-	-	**ND**	**2**	**8.3**	**14**	**27**				
Ulocladium	ND	-	-	**ND**	**1**	**4.2**	**14**	**14**				
Total	33			1,000	12			320				
Particulate Density	**Major**				**Major**							
Particles	**Number**		**LOD**	**P/m3**	**Number**		**LOD**	**P/m3**	**Number**		**LOD**	**P/m3**
Comments												

SGS FORENSIC LABORATORIES

Final Report

Non-Viable Air Fungal Analysis

Forensic Analytical Consulting Svcs
Lydia Feng
4900 Airport Plaza Suite 115

Long Beach, CA 90815

Client ID: LA05
Report Number: F150180
SGSFL Job ID: LA05
Date Received: 03/27/23
Date Analyzed: 03/30/23
Date Printed: 03/30/23
First Reported: 03/30/23

Sample Type: Allergenco-D
Analysis: Direct Microscopy; Method IAQ 101; Modified ASTM D7391
Job ID / Site: PJ75644; Santa Monica - Malibu Unified School District SMMUSD Grant Elementary Bungalows IEQ Assessment 2368 Pearl Street Santa Monica CA 90405

Total Samples Submitted: 8
Total Samples Analyzed: 8

Explanations:

Spores+	Actual number of spores counted in portion of sample examined
%	Percent of Total
LOD	Limit of Detection (Units are the same as result units)
S/m^3	Spores per cubic meter of air sampled
Spores/S	Number of spores per sample
*	Not included in Totals Calculations
ND	None Detected
Particulate Density	Amount of background particulate present
-	Not Applicable
P	Particles excluding fungal spores
P/m^3	Particles per cubic meter of air sampled
P/S	Number of particles per sample

Background Particulate Density Estimated As Follows:

Trace	1 (<5% Occluded) Very little present
Minor	2 (>5% & <25% Occluded) Present but not in large quantity
Major	3 (>25% & <50% Occluded) Present in most of sample
Abundant	4 (>50% Occluded) Covering almost entire sample
Overloaded	5 Covering entire sample

Guidelines For Interpretation:

No accepted quantitative regulatory standards currently exist by which to assess the health risks related to mold exposure. Molds have been associated with a variety of health effects and sensitivity varies from person to person.

Several organizations, including: the American Conference of Governmental Industrial Hygienists (ACGIH); the American Industrial Hygiene Association (AIHA); the Indoor Air Quality Association (IAQA); the United States Environmental Protection Agency (USEPA); the Centers for Disease Control (CDC), as well as the California Department of Health Services (CADHS), have all published guidelines for assessment and interpretation of mold resulting from water intrusion in buildings.

SGSFL reports solely the organisms observed on the sample(s). The limit of detection is based on observing one spore/colony per area analyzed. This is not an inclusive list of the fungal types identified in the microbiology laboratory.

Tiffani Ludd, Laboratory Supervisor, Carson Laboratory

Note* Sampling data used in this report was provided by the client as noted on the associated chain of custody form.

Forensic Analytical ENVIRONMENTAL HEALTH CONSULTANTS

MICROBIAL AIR SAMPLING C.O.C. FORM

Sampled by:	PM:	Date:	Page:
JP	LF	3/27/23	1 of 1

FACS I.D./Client #:

Job #:	Client Name/Job Description:
PJ75644	SMMUSD Grant ES IAQ assessment
Client #:	**Job ID/Site:**
	2368 Pearl St, Santa Monica, CA

Calibrator & SN:

Analysis Req.: NVB

☐ 1-Day ☒ 3-Day ☐ Other
☐ 2-Day ☐ 5-Day

Lab Instructions/Notes:

Email results to lfeng@forensicanalytical.com

Sample Number	Location (& Activity)	Start Flow / Stop Flow	Start Time / Stop Time	Total Time	Total Volume	Media / # / Exp. Date	Wind / Weather	HVAC / Windows
OA1	E extr Elevation	14.8 LPM / 14.8 LPM	1208 / 1213	5 min	74L	5281135 / 01/2024	☒L☐M☐H / Sun	☐On ☐Off / ☐Open ☐Closed
OA2	N extr Elevation		1215 / 1220			5277601 / 01/2024	☒L☐M☐H / Sun	☐On ☐Off / ☐Open ☐Closed
IA1	Rm 70 S side		1007 / 1012			5281229 / 01/2024	☐L☐M☐H	☐On ☒Off / ☐Open ☒Closed
IA3	Rm 71		1026 / 1031			5281097 / 01/2024	☐L☐M☐H	☒On ☐Off / ☐Open ☒Closed
IA5	Rm 72		1102 / 1107			5277552 / 01/2024	☐L☐M☐H	☒On ☐Off / ☐Open ☒Closed
IA7	Rm 73		1120 / 1131			5281053 / 01/2024	☐L☐M☐H	☒On ☐Off / ☐Open ☒Closed
IA9	Rm 74		1139 / 1144			5281053 / 01/2024	☐L☐M☐H	☐On ☒Off / ☐Open ☒Closed
IA11	Rm 75		1152 / 1157			5277488 / 01/2024	☐L☐M☐H	☐On ☒Off / ☐Open ☒Closed
							☐L☐M☐H	☐On ☐Off / ☐Open ☐Closed
							☐L☐M☐H	☐On ☐Off / ☐Open ☐Closed

Sample naming: OA=outside air, IA=inside air, WC=wall cavity. **Weather:** Sun, cloud, fog, rain, snow. **Wind:** Low (still to light breezes), Moderate (occasional gusts, some particulate suspension), High (sustained suspension of particulate & debris).

Relinquished by:	Date & Time:	Received by:	Date & Time:
Justin Phillips	3/27/23 1525		3/27/23 3:41 PM
Relinquished by:	**Date & Time:**	**Received by:**	**Date & Time:**

Revised 3/19/07

MM.F.06.v03

Appendix C
Data Collection Methods

Moisture Meter Readings. The moisture content of various building substrates was evaluated using a direct reading instrument. Forensic Analytical routinely uses a Delmhorst BD 2100 moisture meter or Tramex Moisture Encounter Plus. These instruments measure electrical conductivity of wood, concrete/plaster and wallboard using preset factory scales to approximate moisture content. While elevated meter readings are often associated with the presence of elevated moisture, they are not definitive measures of moisture content.

Non-Viable Air Sampling. Air samples are collected using an Allergenco D spore trap sampling cassette and portable high volume sampling pump. The sampling train is calibrated in the field to approximately 15 liters per minute with a target collection sample volume between 75 liters and 150 liters depending on the anticipated concentration of fungal spores or particulate matter in the air. The air samples are labeled with unique samples numbers and information recorded on field chain of custody forms. The samples are promptly delivered to the laboratory for analysis.

Appendix D
FACS General Mold Assessment Guidelines

Mold Growth Overview

Mold (a.k.a., “fungal”) growth can occur when organic building materials or accumulated organic debris is impacted by moisture. This may occur within 24-48 hours from the time such materials become wet, hence it is critical that materials are substantially dried within this time frame in order to minimize the potential for mold growth to develop. Mold growth has the potential to elicit negative health effects in sensitive persons. This most frequently manifests as allergic respiratory symptoms which may range from mild to severe depending on individual sensitivities. Irritant and infectious effects are possible. It is generally accepted that mold growth in buildings should be removed following appropriate precautions to protect workers involved in the clean-up and the surrounding environment. Greater precautions are taken for greater amounts of mold growth. In addition, the underlying cause of mold and moisture intrusion should be identified and corrected in order to minimize the potential for recurrent mold growth. Additional information can be found at the U.S. Environmental Protection Agency website (http://www.epa.gov/mold/).

Occupant Exposure

In general, when considering the risk of occupant exposure to indoor mold growth, the following should be recognized:

- No accepted quantitative standards currently exist by which to assess the health risks related to fungal exposure. Since fungus and airborne fungal spores are common in the natural environment, most guidelines focus on the amount and location of visible fungal growth present and comparison of indoor and outdoor spore levels.
- Airborne fungal spore levels can vary greatly over time due to changes in environmental conditions and activity patterns. In addition, limitations inherent in commonly used fungal spore air sampling methods may mask differences between case and control samples. Based on these factors, air samples may only detect large differences between case and control environments.
- Based on these limitations, and on the potential presence of other adverse biological agents that may develop on moisture impacted materials, mold growth and dampness in buildings should be controlled and impacted areas should be appropriately addressed in order to promote a healthful indoor environment.

Causal Conditions

Conditions resulting in moisture impact upon organic building materials should be determined and corrected in order to prevent the development of mold growth. These findings should be reviewed and verified by an appropriately qualified construction professional in order to ensure accurate identification and correction of the causes of moisture intrusion issues.

Appendix E
FACS General Mold Remediation Guidelines

FACS General Mold Remediation Guidelines

Rev. 7/9/21

CONTENTS

GLOBAL MOLD REMEDIATION GUIDELINES

1. *General Practices*. All work, which may result in the disturbance of mold growth or contamination, should be performed using work practices that minimize the disturbance of affected materials and dispersion of mold spores. Measures should also be taken to protect the health and safety of individuals performing remediation activities. At a minimum, work should be performed in accordance with the following guidelines addressing mold/water intrusion remediation:

   - Environmental Protection Agency. (September 2008). *Mold Remediation in Schools and Commercial Buildings*. EPA 402-K-01-001**.**
   - New York City Department of Health. (November 2008). *Guidelines on Assessment and Remediation of Fungi in Indoor Environments.*
   - U.S. Department of Labor Occupational Safety and Health Administration (November 8, 2013). Safety *and Health Information Bulletin: A Brief Guide to Mold in the Workplace*. SHIB 03-10-10.
   - American Industrial Hygiene Association. (2008*). Recognition, Evaluation and Control of Indoor Mold.* IMOM08-679*.*
   - Institute of Inspection, Cleaning and Restoration Contractors*. (2021). IICRC 500 Standard and Reference Guide for Professional Water Damage Restoration.* Fifth edition.
   - Institute of Inspection, Cleaning and Restoration Contractors*. (2015). IICRC S520 Standard and Reference Guide for Professional Mold Remediation.* Third edition.

2. *Material Removal*. In the course of removing building materials, bulk quantities of visible mold growth shall be removed from all wood structural members or other materials. Materials should be cleaned or removed 18 inches past visible mold growth unless otherwise specified.

3. *Regulated Materials*. Prior to commencing remediation activities, building materials that may be disturbed should be assessed for asbestos and lead-based paint hazards per applicable regulations.

4. *Sources of Moisture*. Mold growth is most frequently caused by a failure to adequately control moisture. Thus, whenever mold remediation is performed, measures should be taken to correct the conditions resulting in excess moisture and mold growth.

GENERAL PROCEDURES

M0: General Procedures for De Minimus Mold Remediation

The following procedures are provided for general guidance and may be modified as appropriate to address specific conditions on a case-by-case basis. All work should be performed in accordance the aforementioned guideline publications.

- ***Example Applications***
  - Surface cleaning and non-aggressive removal of ≤1 ft.^{2} of mold growth.
  - Surface cleaning of areas with light or minimal mold spore deposition/contamination.
  - Typical housekeeping activities.
- ***Personal Protective Equipment***
  - May include the use of an N-95 disposable respirator, gloves and eye protection.
- ***Containment Provisions***
  - None required.
- ***Work Practices***
  - Mist surface and wet-wipe in a manner that minimizes disturbance of growth.
- ***Post-Remediation Assessment***
  - Visual confirmation of removal of growth.

M1: General Procedures for Small Scale Mold Remediation

The following procedures are provided for general guidance and may be modified as appropriate to address specific conditions on a case-by-case basis. All work should be performed in accordance the aforementioned guideline publications.

- ***Example Applications***
  - Surface cleaning and non-aggressive removal of >1 to <10 ft.^{2} of mold growth.
  - Aggressive removal of materials with ≤1 ft.^{2} of dense mold growth, or <10 ft.^{2} of sparse mold growth.
  - General construction dust control for removal of building materials.
- ***Personal Protective Equipment***
  - N-95 disposable respirator, gloves and eye protection.
- ***Containment Provisions***
  - Cover the immediate work area with plastic sheeting.
  - A floor to ceiling plastic barrier should be erected to further isolate the work area if greater than approximately 5 ft. of material is being aggressively removed (e.g., removal of drywall).
  - Ensure ventilation provisions in the area are turned off.
- ***Work Practices***
  - Remediation performed by maintenance/construction personnel with awareness training regarding proper clean up methods, personal protection, and potential health hazards associated with mold.
  - Clean surfaces using a HEPA vacuum or dust suppression methods (e.g., misting).
  - Remove materials using methods to minimize the disturbance of growth and for general dust suppression (e.g., HEPA vacuum positioned at the point of operation/removal and misting).
  - If removal cannot be accomplished without significant disturbance of mold growth or more extensive mold growth is encountered, then work should stop and medium or large scale remediation procedures should be implemented.
  - All contaminated materials should be removed from the work area in a sealed plastic bag.
  - Following removal of mold growth, clean the work area and immediately adjacent surfaces using a HEPA vacuum or wet-wiping.

- ***Post-Remediation Assessment***
  - Assessment by a designated individual familiar with these procedures and with mold awareness training.
  - Visual confirmation of removal of growth and absence of contamination and debris prior to removal of containment provisions.
  - Materials should be dried and causes of moisture impact controlled to prevent future growth.

M2: General Procedures for Medium Scale Mold Remediation

The following procedures are provided for general guidance and may be modified as appropriate to address specific conditions on a case-by-case basis. All work should be performed in accordance the aforementioned guideline publications.

- ***Example Applications***
  - Surface cleaning and non-aggressive removal of 10 to <100 ft.^{2} of mold growth.
  - Aggressive removal of materials with >1 to <10 ft.^{2} of dense mold growth, or 10 to <100 ft.^{2} of sparse mold growth.
- ***Personal Protective Equipment***
  - ½-face respirator with HEPA filters, gloves, disposable coveralls and goggles. Consider the use of HEPA/organic vapor combination cartridges if strong musty odors are present.
- ***Containment Provisions***
  - Isolate the work area from the surrounding environment using 1 layer of plastic sheeting configured with a slit entry and covering flap.
  - Seal all penetrations to surrounding areas using plastic and tape (e.g., outlets, light switches, ventilation grills).
  - Negatively pressurize the work area and exhaust out of the work area with HEPA filtration.
- ***Work Practices***
  - Remediation performed by professional mold remediation contractors with appropriate training and experience in mold remediation practices.
  - Clean surfaces using a HEPA vacuum or dust suppression methods (e.g., misting).
  - Remove materials using methods to minimize the disturbance of growth to the extent feasible.
  - All contaminated materials should be removed from the work area in a sealed plastic bag.
  - Following removal of mold growth, clean the work area, immediately surrounding area, and worker egress pathways using a HEPA vacuum or wet-wiping.
- ***Post-Remediation Assessment***
  - Assessment performed by a professional mold consultant with appropriate training and experience.
  - Visual confirmation of removal of growth and absence of contamination and debris.
  - Collection and evaluation of air and surface samples as appropriate to support visual inspection.
  - Materials should be dried and causes of moisture impact controlled to prevent future growth.
  - Containment provisions remain in place until the work areas has passed the assessment criteria.

M3: General Procedures for Large Scale Mold Remediation

The following procedures are provided for general guidance and may be modified as appropriate to address specific conditions on a case-by-case basis. All work should be performed in accordance the aforementioned guideline publications.

- ***Example Applications***
  - Surface cleaning and non-aggressive removal of ≥100 ft.^{2} of mold growth.

  - Aggressive removal of materials with ≥100 ft.^{2} of dense or sparse mold growth.
- ***Personal Protective Equipment***
  - Full-face respirator with HEPA filters, gloves, disposable coveralls with head and foot coverings and goggles. Consider the use of HEPA/organic vapor combination cartridges if strong musty odors are present.
- ***Containment Provisions***
  - Isolate the work area from the surrounding environment using 2 layers of plastic sheeting configured with a decontamination area between two slit entries with covering flaps.
  - Seal all penetrations to surrounding areas using plastic and tape (e.g., outlets, light switches, ventilation grills).
  - Negatively pressurize the work area and exhaust to the outdoor environment with HEPA filtration.
- ***Work Practices***
  - Remediation performed by professional mold remediation contractors with appropriate training and experience in mold remediation practices.
  - Clean surfaces using a HEPA vacuum or dust suppression methods (e.g., misting).
  - Remove materials using methods to minimize the disturbance of growth to the extent feasible.
  - All contaminated materials should be removed from the work area in a sealed plastic bag.
  - Following removal of mold growth, clean the work area, immediately surrounding area, and worker egress pathways using a HEPA vacuum or wet-wiping.
  - Mist surface and wet-wipe in a manner that minimizes disturbance of growth.
- ***Post-Remediation Assessment***
  - Assessment performed by a professional mold consultant with appropriate training and experience.
  - Visual confirmation of removal of growth and absence of contamination and debris.
  - Collection and evaluation of air and surface samples as appropriate to support visual inspection.
  - Materials should be dried and causes of moisture impact controlled to prevent future growth.
  - Containment provisions remain in place until the work areas has passed the assessment criteria.

MC: General Procedures for Removal of Mold Spore Contamination/Deposition

The following procedures are provided for general guidance and may be modified as appropriate to address specific conditions on a case-by-case basis. All work should be performed in accordance the aforementioned guideline publications.

- ***Example Applications***
  - Removal of secondary mold spore deposition from surfaces and contents resulting from the presence of mold growth reservoirs in the shared environment.
  - Note: Areas of light or minimal contamination may be cleaned in accordance with procedure M0.
- ***Personal Protective Equipment***
  - Minimum of N-95 disposable respirator, gloves and eye protection. More extensive protective equipment may be appropriate depending on the severity of contamination.
- ***Containment Provisions***
  - Not generally required, however conditions of severe contamination may necessitate containment provisions depending on conditions in surrounding environments.
- ***Work Practices***
  - Remediation performed by professional mold remediation contractors with appropriate training and experience in mold remediation practices.
  - Clean horizontal and vertical surfaces in place.

- Wet-wipe hard, non-porous surfaces.
- HEPA vacuum soft, porous surfaces. Disposal of porous materials exhibiting growth may be necessary.
- Launder or dry-clean textiles.
- Consider use of HEPA filtered negative air machines to purge or scrub the air in the area.

- ***Post-Remediation Assessment***
  - Assessment performed by a professional mold consultant with appropriate training and experience.
  - Visual confirmation of removal of growth and absence of contamination and debris.
  - Collection and evaluation of air and surface samples as appropriate to support visual inspection.

ME: General Procedures for Exterior Mold Remediation

The following procedures are provided for general guidance and may be modified as appropriate to address specific conditions on a case-by-case basis. All work should be performed in accordance the aforementioned guideline publications.

- ***Example Applications***
  - Cleaning of ≥10 ft.^{2} of mold growth from exterior surfaces.
  - General construction dust control for the exterior removal of building materials.
  - Note: Cleaning of <10 ft.^{2} of exterior mold growth may be conducted in accordance with procedure M0.
- ***Personal Protective Equipment***
  - Minimum of N-95 disposable respirator, gloves and eye protection. More extensive protective equipment may be appropriate depending on the severity of growth or intensity of removal activities.
- ***Containment Provisions***
  - Prior to commencing work, close all windows and doors in or adjacent to the work area and seal interior window and door penetrations with tape (easy release or painters tape).
  - If removal of exterior building materials is to occur, seal all wall penetrations (i.e., electrical outlets and light switches) and base of wall on the associated interior wall being repaired with tape (easy release or painters tape).
- ***Work Practices***
  - Remediation performed by maintenance/construction personnel with awareness training regarding proper clean up methods, personal protection, and potential health hazards associated with mold. The use of a professional mold remediation contractor may be appropriate depending on the severity of mold growth.
  - Proceed with exterior cleaning or building material removal using dust control methods (e.g., misting).
  - Inspect the back of exposed interior wall systems for evidence of mold growth. If mold growth is observed, proceed with cleaning or removal in accordance with procedures M0-M3 as appropriate.
  - Use a HEPA vacuum to remove excess debris from the wall cavity prior to reconstruction.
- ***Post-Remediation Assessment***
  - Assessment by a designated individual familiar with these procedures and with mold awareness training.
  - Visual confirmation of removal of growth and absence of contamination and debris prior to removal of containment provisions.
  - Materials should be dried and causes of moisture impact controlled to prevent future growth.

MT: General Procedures for Invasive Inspection for Mold

The following procedures are provided for general guidance and may be modified as appropriate to address specific conditions on a case-by-case basis. All work should be performed in accordance the aforementioned guideline publications.

- ***Example Applications***
  - Removal of building materials in areas where there is the potential for mold growth (i.e., the presence of mold growth has not been confirmed).

- ***Personal Protective Equipment***
  - May include the use of an N-95 disposable respirator, gloves and eye protection as appropriate for general construction activities.
- ***Containment Provisions***
  - Follow practices for general construction dust control (see M1 above). No special provisions for controlling mold growth are required.
- ***Work Practices***
  - Remove a small area of building material from the area in question to facilitate visual inspection (e.g., <1ft.^{2}).
  - In the course of removal, proceed in a manner that minimizes disturbance of potential concealed mold growth reservoirs. For example, cut around and gently remove a section of drywall as a single piece rather than demolishing the area with a hammer. A HEPA vacuum nozzle placed at the point of removal may further control potential releases.
  - Continue removal of materials in a stepwise fashion in order to perform desired construction repairs or to determine if any hidden mold growth exists.
  - If mold growth is encountered in the course of removal, immediately stop and proceed in accordance with mold remediation procedures as appropriate (see M0-M3 above).
- ***Post-Remediation Assessment***
  - No assessment is necessary if no mold growth is encountered. If mold growth is encountered, follow the appropriate post-remediation assessment guidelines as discussed in M0-M3 above.

Right People

Right Perspective

Right Now

www.forensicanalytical.com