



Investigation of Mould Growth

Cabin 1 and 6

1225 Grass Lake Road, Haliburton, Ontario

Prepared for:

Fleming College

599 Brealey Drive

Peterborough, Ontario, K9J 7B1

August 27, 2021

Pinchin File: 296878



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1.0 INTRODUCTION AND SCOPE

1.1 Statement of Understanding

Pinchin Ltd. (Pinchin) was retained by Fleming College (Client) to conduct an investigation of potential mould growth of Cabins 1 and 6 located at 1225 Grass Lake Road, Haliburton, Ontario. Cabins 1 and 6 were identified to have an odour and are used for housing for visiting faculty. The Client requested that the air quality be checked for mould prior to the start of the school year.

1.2 Scope of Work

Pinchin performed the investigation on August 5, 2021. The investigation addressed all accessible areas of the buildings.

The investigation involved the following activities:

- Review of occupant and management concerns.
- Spot readings of moisture content of building materials.
- Walkthrough inspection for water damage or mould growth.
- Collection and analysis of four spore trap mould air samples (including reference and field blanks).

2.0 METHODOLOGY

2.1 Interviews and Inspections

Pinchin interviewed building staff, to discuss the history of the building, maintenance practices, water damage and any indoor air quality complaints.

Pinchin performed a walkthrough inspection for indications of suspect mould growth and/or water damage on accessible building materials, paying particular attention to areas where past water damage had been reported.

The investigator did not perform any destructive work to inspect concealed conditions inside wall and/or ceiling cavities.

The investigator used a moisture meter to test for elevated moisture levels in building materials.

This assessment does not provide sufficient detail for long term management of hazardous materials as required by Health and Safety regulations.

2.2 Test Methods and Criteria

The following table presents the parameters tested in this investigation, recommended limits or interpretation guides, the units of measurement, and the instruments and sampling/analytical methods employed.

Table I – Parameters Tested, Recommended Limits and Instruments or Methods Used

Parameter	Unit of Measurement	Recommended Limit or Guide to Interpretation	Instrumentation or Test Method
Temperature, T	°C	Consider the risk of condensation on cold surfaces to prevent mould growth	System Delmhorst® HT-3000
Relative Humidity, RH	%RH	Maintain long term below 80 %, to prevent mould growth ¹	
Moisture in building materials (Note: detects surface moisture only, may not detect deeper moisture)	% Moisture	Threshold for mould growth: ² Drywall, 0.7% Wood materials, 17%	System Delmhorst® BD-2100
Airborne mould (spore trap method)	Spores per cubic metre of air	Compare test area to reference areas and outdoors ³ Consider water-damage indicator moulds Reference results of Pinchin Ambient Mould Index (PAMI)	Allergenco-D® sampler, laboratory analysis by Direct Microscope Examination

All air sampling pumps were calibrated before and after use.

2.3 Laboratory Analysis

The analysis for mould was performed at the Pinchin Environmental Microbiology Laboratory, Mississauga. The Pinchin laboratory is independently accredited to ISO/IEC 17025:2017 for mould and

1 O.A.G. Adan, R.A. Samson (Editors): *Fundamentals of Mold Growth in Indoor Environments and Strategies for Healthy Living*. Wageningen, The Netherlands: Wageningen Academic Publishers, 2011

2 Macher, J. (Ed): *Bioaerosols, Assessment and Control*. Cincinnati OH: American Conference of Governmental Industrial Hygienists, 1999.

3 Health Canada: *Fungal Contamination in Public Buildings: Health Effects and Investigation Methods*. Ottawa ON: Health Canada, 2004.



bacteria analysis, by the American Industrial Hygiene Association Laboratory Accreditation Program LLC (AIHA LAP LLC) (Lab ID 158835)⁴ and the Quebec government (Lab ID 495).⁵

The spore trap mould air sample results include a report from the Pinchin Ambient Mould Index database (PAMI) ©. PAMI is a compilation of over 36,000 outdoor spore trap mould air samples analysed in the Pinchin laboratory, since 2006. The database has been analysed by month and region (18 regions across Canada) to report statistical data on means, medians, confidence intervals, etc. As a measure of the ranges in outdoor mould concentrations, the PAMI data can assist in the interpretation of indoor mould air sample results.

3.0 FINDINGS

3.1 Results of Interviews

Physical Resources Department reported the following:

- Cabins were built in the 1980s.
- Water runs along back side of cabin 1 which is eroding the soil around the cinder blocks holding the cabin up.
- Kitchen sink in Cabin 2 leaked in the past, replaced kitchen wall only (not the wall behind it).

3.2 Facility Description

Table II – Facility Description Cabin 1 and 6

Item	Details
Construction Date	~1980s
Number of Floors	One Storey
Area of Building	750 square feet
Structural Type	Wooden frame
Foundation Type	Concrete
Exterior Cladding	Metal siding
HVAC	N/A

⁴ Accredited by the American Industrial Hygiene Association Laboratory Accreditation Program LLC (AIHA LAP LLC) under the Environmental Microbiology Laboratory Accreditation Program (EMLAP), for Bulk, Surface and Air testing for moulds, Escherichia coli, Legionella by the ISO 11731 method and for Legionella pneumophila by qPCR ISO 12869 method (Lab ID 158835).

⁵ Accredited by the Quebec government under the Programme d'accréditation des laboratoires d'analyses (PALA) program for Air Microbiology – domains 601, 603, 604, 605, 606.

Table II – Facility Description Cabin 1 and 6

Item	Details
Roof	Not assessed – sloped asphalt shingled
Flooring	Carpet, concrete and ceramic tile.
Interior Walls	Drywall and wood fibre panelling
Ceilings	1x1 glue on ceiling tile
Pertinent Exterior Details	Water washing soil away from concrete cinder blocks supporting Cabin 1.

The facility was built at a time when asbestos-containing building materials were commonly used.

3.3 Results of Inspections and Testing

This section presents the findings of the walkthrough investigation and any tests for mould. Appendix I presents the drawings. The analytical certificates for the mould) tests are given in Appendix II.

Table III – Cabin 1

Temperature	22.3 °C	Extent of Mould Growth	0 ft ²
Relative Humidity	49.4-52.7 %RH	Extent of Water Damage	40 ft ²



Photo 1 - Typical water staining identified on 1x1 tiles in various locations throughout the cabin.



Photo 2 - Ceiling falling in, in corridor of Cabin.

Table III – Cabin 1



Photo 3 - Cracks in drywall could be due to building shift or past water infiltration.



Photo 4 - Organic growth on Cabin roof

Moisture Measurements

Material/Location	Results	Material	Results
Drywall wall/ Living Area	0.6% -- DRY	Drywall wall/ Living Area	1.1% -- WET
Drywall wall/ Living Area	0.5% -- DRY	Drywall wall/ Living Area	0.6% -- DRY
Drywall wall/ Washroom	0.5% -- DRY	Drywall wall/ Bedroom 3	0.3% -- DRY
Drywall wall/ Bedroom 2	0.4% -- DRY	Drywall wall/ Bedroom 2	0.5% -- DRY
Drywall wall/ Bedroom 1	0.4% -- DRY	Drywall wall/ Bedroom 1	0.5% -- DRY

Sample Log

Sample Type/ Location	Sample No.	Result
Airborne Mould Spore Trap/ Living Area	ST-01	Impacted

Observations and Comments

A total of 25 water damaged ceiling tiles were identified, cracking in walls was seen by windows in various locations. Organic growth identified on the roof of the cabin, and ~10 sqft of wet wall identified by the front entrance.

Table IV – Cabin 6

Temperature	23.4 °C	Extent of Mould Growth	40 ft ²
Relative Humidity	57.91-60.9 %RH	Extent of Water Damage Including Mould Growth	50 ft ²

Table IV – Cabin 6



Photo 5 - Potential growth on wood below roof.



Photo 6 - Mould growth on wood fibre panel identified in closet area



Photo 7 - Mould growth on wood fibre panel behind kitchen sink drywall that was replaced.



Photo 8 - Mould growth behind loose baseboard in washroom.

Moisture Measurements

Material/ Location	Results	Material	Results
Drywall wall/ Living Area	0.5% -- DRY	Drywall wall/ Living Area	0.6% -- DRY
Drywall wall/ Living Area	0.3% -- DRY	Drywall wall/ Living Area	0.6% -- DRY
Drywall wall/ Washroom	2.9% -- WET	Drywall wall/ Bedroom 3	0.3% -- DRY
Drywall wall/ Bedroom 2	0.6% -- DRY	Drywall wall/ Bedroom 2	0.6% -- DRY
Drywall wall/ Bedroom 1	0.6% -- DRY	Drywall wall/ Bedroom 1	0.5% -- DRY

Sample Log

Sample Type/Location	Sample No.	Result
Airborne Mould Spore Trap/ Living Area	ST-02	Impacted

Observations and Comments

Mould growth on wood fiber paneling behind the drywall wall that was changed out after a past water damage incident. ~30sqft of mould growth identified. Drywall in washroom is wet by toilet and another ~10sqft of mould growth was identified.

Table V – Outdoors


Temperature	25.6 °C	
Relative Humidity	68.9 %RH	
Sample Type/Location	Sample No.	
Mould Air Sample	ST-03	

Photo 9 - Cabin 1 at 1225 Grass Lake Road.

Observations and Comments

Sunny and Humid day.

3.4 Summary of Hazardous Materials

Based on sampling and a review of available previous reports, the following is a summary of the designated substances, limited to the materials impacted the water damage.

3.4.1 Asbestos

Drywall and joint compound should be tested for asbestos, otherwise presume it contains and follow Type 2 procedures.

Ceiling tiles are constructed of wood fibre and are non-asbestos.

3.4.2 Lead

Paint should be sampled for lead, paint is presumed to have elevated levels of lead until proven otherwise.

3.4.3 Silica

Crystalline silica is a presumed component of concrete, masonry, mortar, ceramic tiles, grout and plaster.

3.4.4 Mercury

Materials that could contain mercury are not impacted by the remediation work.



3.4.5 Polychlorinated Biphenyls

Materials that could contain PCBs are not impacted by the remediation work.

4.0 DISCUSSION

4.1 Discussion of Water Damage and Mould Growth

Water damage and wet materials were identified in Cabin 1, consisting of 25 water damaged ceiling tiles and ~12sqft of wet wall by the front entrance.

Water damage, mould growth and wet materials were identified in Cabin 6, consisting of ~40sqft of mould growth and 10sqft of wet drywall in the washroom and utility closet.

The mould air sampling in both Cabin 1 and Cabin 6 indicated that the indoor air quality was being impacted by mould growth at the time of testing.

The water damage and wet materials identified Cabin 1 was likely caused by building envelope issues. Full inspection of attic space was not possible through the small access hatch.

The water damage, mould growth and wet materials identified Cabin 6 was likely left from the repair of the leaking sink from the kitchen, and from a possible leak, overflow or running toilet.

The spot measurements of relative humidity ranged from 49.4 to 60.9 %RH. The outdoor relative humidity averaged 68.9 %RH. Authorities recommend that long-term interior relative humidity be maintained below 80 %RH at all locations to avoid mould growth.

4.2 Mould Remediation and Inspection

Mould growth in buildings can be a risk factor for adverse health effects.⁶ The mould growth found in this investigation should be remediated as soon as possible following currently accepted procedures. Pinchin recommends that mould remediation follow the procedures set by the Environmental Abatement Council of Canada (EACC).⁷ The work should be performed by a contractor with appropriate training, experience and insurance coverage. Ensure that remaining building materials are dry prior to reinstating mould-susceptible finishes, to prevent future mould growth.

Pinchin would be pleased to provide project management services to develop a remediation work plan and retain a specialized environmental abatement contractor. Pinchin could conduct a competitive bidding process to achieve the lowest possible price for the work. Proceeding in this manner will relieve the Client from taking on regulatory responsibility for contractor health and safety, and will reduce the risk of poor

⁶ US Environmental Protection Agency: *Mold Remediation in Schools and Commercial Buildings*. US EPA. 2001.

⁷ Environmental Abatement Council of Canada: *Mould Abatement Guidelines*. Toronto, ON: EACC, 2021.



contractor performance and possible cross-contamination. Pinchin recommends that the Client retain services for project management, as well as for inspection and testing of this project. Health Canada and other authorities recommend independent inspection of medium and large scale mould remediation, to protect the occupants and building from cross-contamination.

The presence of asbestos is possible based on age of construction.

4.3 Communication and Interim Risk Management

The findings of this report should be communicated to the occupants as recommended by current mould guidelines, and in workplaces, as mandated by occupational health and safety legislation. The Client should consider any interim risk management actions that would be appropriate under the circumstances, until the mould growth can be remediated. Interim risk management might include isolating an area of the building, or relocating persons experiencing adverse health effects or with greater sensitivity to mould.

5.0 RECOMMENDATIONS

Pinchin offers the following recommendations to improve air quality in this building and address any mould growth or other microbial contamination found. Pinchin would be pleased to, make recommendations for remediation contractors, and provide services for the planning and inspection of the recommended remediation work.

1. Communicate the findings of this report to the staff and joint health and safety committee.
2. Consider any necessary steps for interim risk management.
3. Arrange for the preparation of a detailed Scope of Work for the mould remediation including any required asbestos precautions and finalize an inspection and oversight plan.
4. Sample suspect asbestos containing drywall joint compound prior to its removal.
5. Inspect roof and or above ceiling to identify the cause of water damaged ceiling tiles in Cabin 1 and make any necessary repairs.
6. Arrange for the following mould remediation, following EACC Level 2 methods in conjunction with Ontario Regulation 278/05 Type 2 asbestos procedures:
 - a. Remove the lower 2ft of wood fibre board panelling and drywall in the washroom and closet (~50sqft) where indicated to be wet or mouldy on the drawings in Appendix I.
7. Arrange for the following mould remediation, following EACC Level 1 methods in conjunction with Ontario Regulation 278/05 Type 2 asbestos procedures:



- a. Remove the lower 2ft of drywall in the living area (~12sqft) where indicated to be wet on the drawings in Appendix I.
8. Remove and dispose of water damaged ceiling tiles in Cabin 1 following EACC Level 1 methods.
9. Finalize an inspection and testing plan to document the mould remediation. To confirm, Pinchin will perform inspections at the following stages:
 - a. Clean Site Preparation
 - b. Post-Remediation Inspection
10. Clean the floors, other building surfaces, furnishings and contents in areas immediately adjacent to the remediation work areas, following normal custodial practices.

6.0 TERMS AND LIMITATIONS

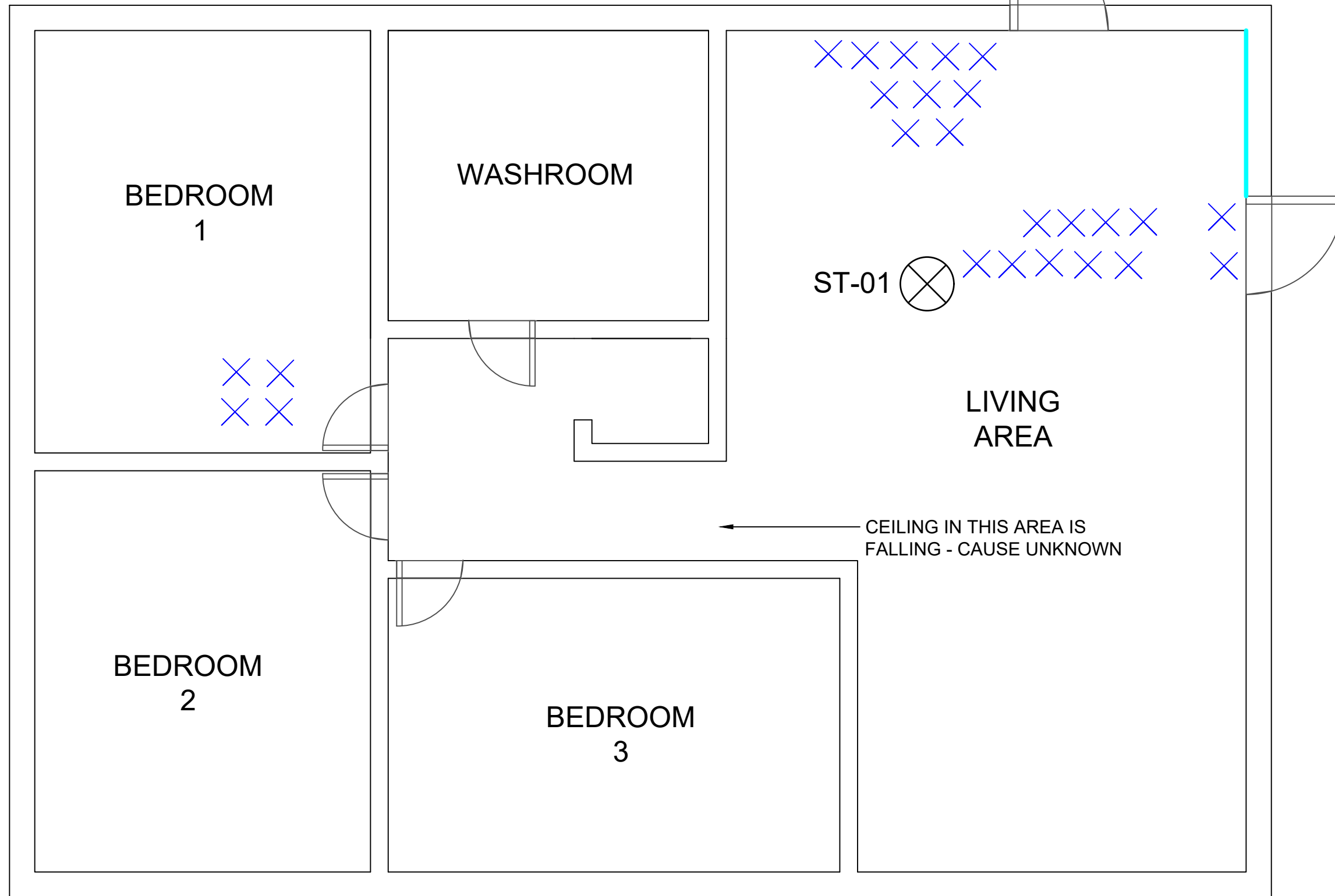
This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

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Template: Master Mould Investigation Report, IEQ, February 5, 2021

APPENDIX I
Drawings



LEGEND

- X WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- ⊗ SPORE TRAP MOULD AIR SAMPLE

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

BASE PLAN PROVIDED BY CLIENT.



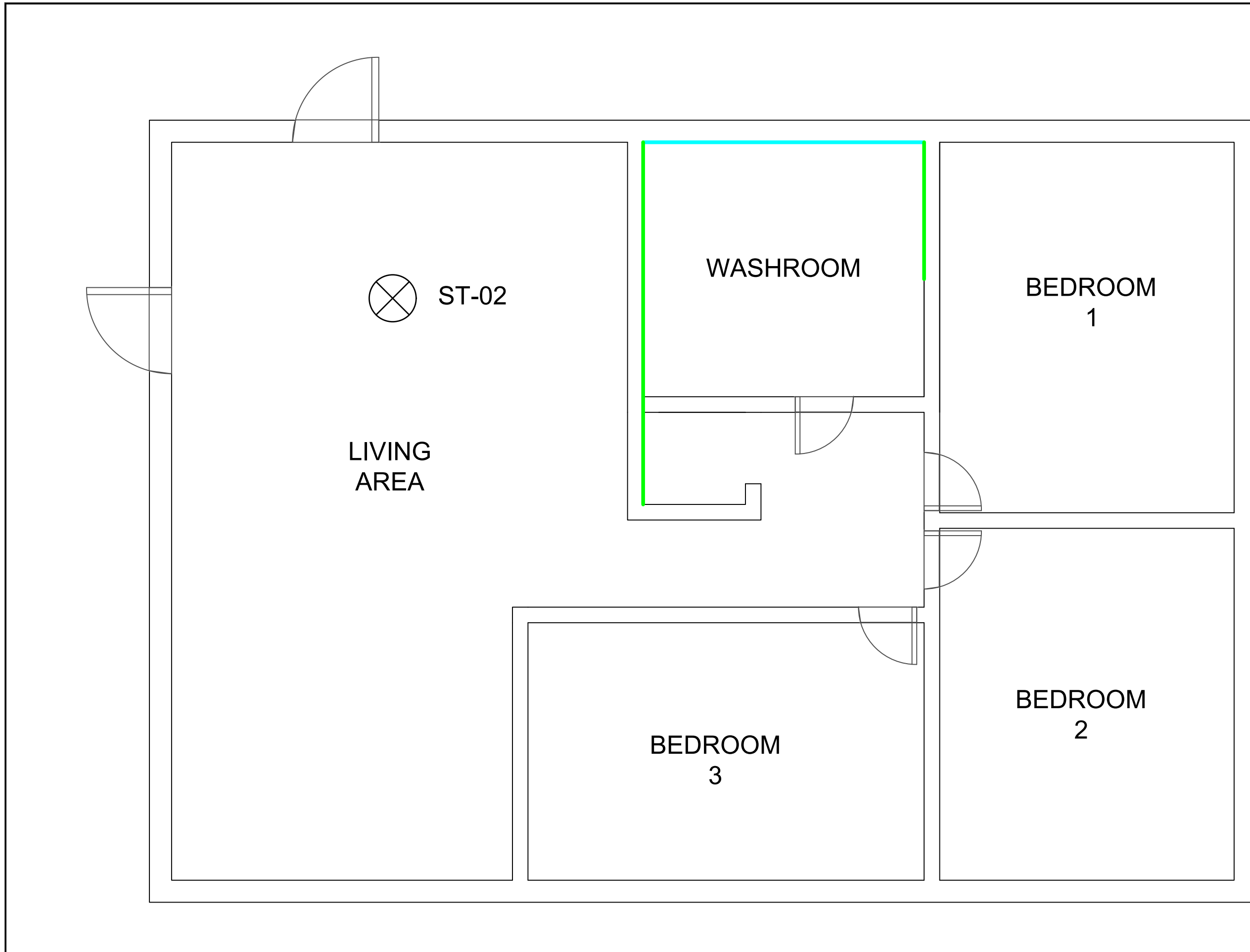
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMMING COLLEGE

PROJECT LOCATION:
CABIN 1
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 1
GROUND FLOOR

PROJECT NUMBER: 296878	SCALE: NOT TO SCALE
DRAWN BY: PINCHIN LTD.	REVIEWED BY: PINCHIN LTD.
DATE: AUG 2021	FIGURE NUMBER: 1 OF 2



LEGEND

- ✕ WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- ✕ SPORE TRAP MOULD AIR SAMPLE

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

BASE PLAN PROVIDED BY CLIENT.



PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMMING COLLEGE

PROJECT LOCATION:
**CABIN 6
 1225 GRASS LAKE ROAD
 HALIBURTON, ONTARIO**

FIGURE NAME:
**CABIN 6
 GROUND FLOOR**

PROJECT NUMBER: 296878	SCALE: NOT TO SCALE
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DRAWN BY: PINCHIN LTD.	REVIEWED BY: PINCHIN LTD.
---------------------------	------------------------------

DATE: AUG 2021	FIGURE NUMBER: 2 OF 2
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APPENDIX II
Results of Mould Samples



2470 Milltower Court
Mississauga, ON L5N 7W5
Tel: (905) 363-0678
Fax: (905) 363-0681

Certificate of Analysis

Pinchin Environmental Microbiology Laboratory



Laboratoire d'analyse
accrédité par le
gouvernement du Québec



CUSTOMER: Meaghan Dunn
COMPANY: Pinchin Ltd.
ADDRESS: 191 Bloor Street East
Oshawa, ON L1H 3M3

PROJECT NAME:
TYPE OF SAMPLES: AllergencoD
NO. OF SAMPLES: 4
DATE COLLECTED: August 5, 2021
DATE RECEIVED: August 6, 2021
DATE ANALYSED: August 13, 2021
DATE REPORTED: August 13, 2021

PROJECT NO: 296878
LAB REFERENCE NO: m255931
ANALYST: Rafic Dulymamode, PhD
Laboratory Manager
REVIEWER: Partinder Puri, B.Sc.
Environmental Microbiologist

CONDITION OF SAMPLES ON RECEIPT: Acceptable

Method of Analysis: Analysis of Air Samples for Fungal Spores (SOP: DME-SPT, Rev. 13, December 18, 2019)

This SOP is based on the method described in the AIHA's "Field Guide for the Determination of Biological Contaminants in the Environmental Samples" and also partially on the ASTM method D7391-09. The cassette slide with the trace (area impacted with air) facing upwards is fixed on a clean microscope slide. It is stained with lactophenol cotton blue or lactofuscin, and then scanned under low power magnification to locate the trace and to give the analyst an idea of the diversity of the spores. The final analysis is performed at X600 magnification by counting the different spores along a number of traverses or fields of view to cover at least 25% of the sample. A lower percentage of the sample is counted if it is overloaded. Raw counts are converted to spores/m³ of air. Counts of fungal fragments and pollens are not computed in the total. Spores lacking unique characteristics for identification are reported as "Unidentified spores". Spores showing features of specific groups are recorded under the respective groups such as "Unidentified Basidiospores or Unidentified Ascospores". Spores occurring in chains are counted individually. Spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium*, *Paecilomyces*) are indistinguishable.

A scale of 0 to 5 is used to rate abundance of non-fungal material, with 5 indicating the largest amount. Large amounts of non-fungal material may obscure small spores. Therefore, counts from samples with 4-5 non-fungal material may be treated as undercounts. Except for blanks, samples with no detected spores are recorded as "less than the analytical sensitivity" (AS). Results are not corrected for blanks. Estimation of the measurement of uncertainty is available upon request.

Comments/Observations (if any):

Notes:

1. The laboratory is not responsible for sample collection.
2. The report applies to the samples submitted to the laboratory and, the result(s) relate only to sample(s) tested.
3. The report shall not be reproduced except in full, without written approval of the laboratory.
4. Services are subject to Pinchin Ltd. Standard Terms and Conditions for Laboratory Services.



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Certificate of Analysis

Pinchin Environmental Microbiology Laboratory



Laboratoire d'analyse
accrédité par le
gouvernement du Québec



Lab ID # 158835

DATE ANALYSED:

August 13, 2021

ANALYST: Rafic Dulymamode, PhD

D

PROJECT NO: 296878

LAB REFERENCE NO: m255931

Customer Sample No:	ST-01			ST-02			ST-03			ST-04								
Lab Sample ID:	m255931-1			m255931-2			m255931-3			m255931-4								
Description	Cabin 1			Cabin 6			Outside			Blank								
Total Air Volume (L)	150			150			150			N/A								
% of Sample Counted	25.5			25.5			12.7			25.5								
Fungal spores identified	raw ct.	%	ct./m ³	raw ct.	%	ct./m ³	raw ct.	%	ct./m ³	raw ct.	%	ct./m ³	raw ct.	%	ct./m ³	raw ct.	%	ct./m ³
<i>Alternaria</i>							2	0	110									
Ascospores non- specified	16	4	420	7	1	180	26	5	1400									
Aspergillus/ Penicillium-like	251	56	6600	509	93	13000	17	3	890									
Basidiospores non- specified	147	33	3800	14	3	370	420	78	22000									
<i>Botrytis</i>																		
<i>Chaetomium</i>																		
<i>Cladosporium</i>	25	6	650	5	1	130	47	9	2500									
<i>Coprinus</i>	1	0	26	2	0	52	3	1	160									
Drechslera/Bipolaris Group																		
<i>Epicoccum</i>																		
<i>Fusarium</i>																		
<i>Ganoderma</i>	9	2	240	4	1	110	12	2	630									
Non-specified spores	3	1	78	3	1	78	10	2	520									
<i>Oidium</i>																		
<i>Periconia</i> /Myxomycetes																		
<i>Pithomyces</i>				1	0	26												
<i>Polythrincium</i>							1	0	52									
Rusts																		
<i>Stachybotrys</i>																		
<i>Ulocladium</i>																		
Pollens							1											
Fungal fragments	1		26				9		470									
Non-fungal material	3			2			2											
Spores/sample	452			545			538											
TOTAL SPORES/M³	12000			14000			28000			No fungal spores								
A.S. (SPORES/M³)	26			26			52											

Note: 1. Samples analysed at 630X or 600X magnification. 2. A.S. = Analytical Sensitivity
3. Total spores/m³ and counts/m³ reported to two significant figures where applicable



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M255931

Environmental Microbiology Laboratory

Chain of Custody Form

RESULTS TO		Contact: Meaghan Dunn	Dept: IEQ
Company: Pinchin Ltd.		Tel: 289.928.0366	Fax:
Mailing Address: 191 Boor Street East		Email: mdunn@pinchin.com; mhorobin@pinchin.com	
City: Oshawa	Prov: Ontario	Postal Code: L1H 3M3	Customer Job / P.O. #: <input checked="" type="checkbox"/>
Special Instructions:			
Report Language: English <input checked="" type="checkbox"/> French <input type="checkbox"/>		No. Samples Submitted: 4	Project: 296878
			Invoice To:

ANALYSIS TYPES

- Total Fungal Particulate (Spore count and Identification)
- Direct Microscope Examination (Fungal)
- Direct Microscope Examination (Particulate):
 - Quantitative
 - Qualitative
- Fungal Quantification & Identification (Anderson/RCS)
- Bacteria (Quantification/Gram staining)
- Heterotrophic Plate Counts (HPC)
- E.coli/Total Coliforms
- Other: _____

Sample#	Description	Analysis Requested (e.g. 3a)	Date Sampled	Vol (L)	TAT		FOR LAB USE ONLY LAB #
					REG.	RUSH	
ST-01	Cabin 1	1	08/05/2021	150	X		M255931-1
ST-02	Cabin 6	1	08/05/2021	150	X		-2
ST-03	Outside	1	08/05/2021	150	X		-3
ST-04	Blank	1	08/05/2021	150	X		-4

CHAIN OF CUSTODY		Collected by: MMD	FOR LAB USE ONLY:	
Relinquished by: MMD	Date/Time: Aug 5, 2021	Received by: SA	Date/Time: AUG 6 2021	W.S.F
Method of Shipment: Courier		Sample Condition Upon Receipt: <input type="checkbox"/> Acceptable <input type="checkbox"/> Other (explain) <input type="checkbox"/>		

Reviewed Pass 8/13/21

Authorized by: _____ **Date:** _____
Customer Signature MUST Accompany Request. Customer accepts Pinchin Ltd. Standard Terms and Conditions for Laboratory Services (see over)

Pinchin Ambient Mould Index (PAMI) ©

Region:	Greater Toronto Area
Month:	August
# Samples:	763
Period:	2006 – 2018

Mould/Groups Recorded	Frequency of detects (%)	Min (spores/m³)	5th percentile (spores/m³)	50th percentile (spores/m³)	95th percentile (spores/m³)	Max (spores/m³)
Basidiospores non-specified	99.74	26	870	9360	40046	154971
Ascospores non-specified	99.61	52	314	1432	8000	77486
<i>Cladosporium</i>	99.48	26	208	1988	12348	74000
<i>Ganoderma</i>	98.56	26	79	445	2043	8229
<i>Aspergillus/Penicillium-like</i>	90.04	26	46	320	2105	10549
<i>Coprinus</i>	81.13	26	26	130	741	5257
Non-specified spores	72.48	26	26	185	2099	12400
<i>Alternaria</i>	62.39	26	26	79	411	2057
<i>Periconia/Myxomycetes</i>	45.22	26	26	69	388	9600
<i>Epicoccum</i>	27.65	26	26	43	171	1243
Rusts	23.07	26	26	52	170	1771
<i>Polythrincium</i>	20.84	26	26	43	192	2100
<i>Cercospora</i>	20.58	26	26	52	216	1100
<i>Pithomyces</i>	18.22	26	26	49	207	1300
<i>Oidium</i>	13.24	26	26	52	290	460
<i>Arthrinium</i>	10.75	26	26	43	264	523
Helicospores	8.91	26	26	34	127	190
<i>Botrytis</i>	8.39	26	26	48	171	430
<i>Torula</i>	7.47	26	26	49	174	343
<i>Fusicladium</i>	2.75	26	26	26	86	149
<i>Curvularia</i>	2.36	26	26	26	72	86
<i>Fusarium</i>	2.36	26	26	32	238	290
<i>Nigrospora</i>	2.10	26	26	26	73	86
<i>Stemphylium</i>	1.97	26	26	53	447	690
Drechslera/Bipolaris group	1.97	26	26	26	154	290
<i>Peronospora</i>	1.83	26	26	36	156	264
<i>Chaetomium</i>	1.31	26	26	26	369	607
<i>Scopulariopsis</i>	0.92	26	26	53	155	185
<i>Ulocladium</i>	0.79	26	33	78	161	171
<i>Urocystis</i>	0.39	26	26	26	61	65
<i>Spegazzinia</i>	0.13	26	26	26	26	26
<i>Exosporiella</i>	0.13	26	26	26	26	26

Based on detection limit of 26 spores per cubic metre of air.

The Pinchin Ambient Mould Index (PAMI) ©, is a measure of "typical" outdoor mould air quality, and can assist in the interpretation of indoor mould air samples. PAMI is derived from over 30,000 outdoor mould spore trap air samples analysed in the Pinchin Environmental Microbiology Laboratory over the period shown above. This data is analysed on a monthly basis for 18 regions across Canada, based on a minimum of 30 samples per region per month.

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