

September 25, 2024

Ms. Sandra Duran
Combined Facilities Director
Town of Sudbury
275 Old Lancaster Road
Sudbury, MA 01776

Re: Mold Air Sampling, Hosmer House – 299 Old Sudbury Road, Sudbury, MA

Dear Ms. Duran:

Introduction & Summary

The Town of Sudbury retained Smith and Wessel Associates, Inc. (SWA) to perform a follow-up mold evaluation at the Hosmer House located at 299 Old Sudbury Road, Sudbury, Massachusetts. The house is historic, serves as a museum and was constructed circa 1793.

The initial assessment was conducted by Ted Sherry representing SWA on September 6, 2023 after concerns arose that mold was observed on a leather book cover in the second floor art storage room. Testing was performed in the 2nd floor Art Storage room and adjacent spaces to determine for elevated moisture in building finishes and airborne mold spore levels. It was determined that elevated airborne mold spores were present in the Art Storage room as well as elevated moisture in some finishes.

Therefore, the Town contracted with Alpine Environmental, Inc. (Alpine) to remediate the Art Storage room. Alpine contained the work area and remediated all impacted finishes. Walls were opened up to evaluate for areas of water intrusion and corrective measures were implemented. In addition, a mini-split wall unit was removed and the wall patched as it was not operating correctly and thought to be in part some of the issue.

Following remediation of the space by Alpine, additional repairs were performed in an attempt to eliminate future water intrusion events. Following the work, SWA performed follow-up evaluations to determine if the work was successful. The first post remediation evaluation occurred on October 23, 2024. The airborne

mold spore concentrations were significantly lower and more in-line with what would be expected. SWA then waited a period of time and on November 13, 2024 conducted additional testing and normal conditions persisted in the spaces.

On August 1, 2024, Richard Bourassa conducted an annual follow up site visit for the purpose of evaluating current conditions. Mr. Bourassa evaluated the Art Storage room and adjacent spaces as well as the basement.

Because elevated airborne mold spores were identified in the basement during the August 1st evaluation, the Town initiated mitigation efforts in the space. Ted Sherry representing SWA returned to the site on September 17, 2024 to replicate the sampling to determine if these mitigation efforts were successful in the basement and to determine if airborne spore counts in the Art Storage and adjacent spaces remained stable.

Background & Observations

During the September 17, 2024 assessment, SWA noted that two dehumidifiers and a HEPA air filtration unit operating in the basement. HEPA air filtration units were also operating in the stairwell areas on the main floors. No moisture was detected in any of the finishes and no visible mold growth or water staining was evident. The relative humidity (RH) was in the 40% range within the recommended comfort level of 30% to 60%.

Sampling & Analytical Methods

Airborne Mold - In order to assess levels of mold present in the spaces, airborne mold testing was performed utilizing a Buck BioAire Air-O-Cell™ sampling device following all manufacturers' recommended sampling procedures.

The Air-O-Cell™ is a direct-read total particulate sampling device. It is designed for the rapid collection and analysis of airborne particulates, including mold. A known volume of air, at a flow rate of 15 liters/minute, was drawn through each cassette and the filters analyzed to detect types of mold present in the air and the total number of spores. The cassettes were assigned unique sample numbers that were recorded onto a chain-of-custody form.

During the September 17, 2024 site visit, Mr. Sherry collected five air samples that best replicated previous testing. The air samples collected including the following; one in the basement, one in the Art Storage room, one in the space outside the

storage room, one in the adjacent bedroom, and one exterior comparison sample. Laboratory results of the testing are presented as Appendix A of this report.

Moisture Assessment – Because elevated moisture is one of the leading causes of fungal amplification, contributes to the destruction of indoor building products, and can lead to the deterioration of buildings, SWA conducted testing of representative building finishes throughout the spaces using a General Tools moisture meter. The moisture meter is a conductance type meter that uses a two-pin inspection mode enabling the consultant to instantly assess moisture conditions not only on a component surface, but also at depth.

The Protimeter Mini moisture meter identifies by means of green, yellow, and red LEDs whether a surface is in an air-dry (0-18%), borderline (18-22%), or damp condition (>22%) and quantifies this condition in terms of percent wood-moisture-equivalent (% WME).

Findings

Airborne Mold Results – Results of airborne mold sampling during the August 1, 2024 visit indicated that the airborne spore counts and types in the 2nd floor Art Storage room and adjacent spaces were consistent with normal conditions. However, the basement sample indicated airborne mold spores were significantly elevated at 25,840 total airborne fungi. Professional Indoor Air Quality associations such as the EPA and the American Conference of Governmental Industrial Hygienists (ACGIH) consider a space contaminated when the total mold spore levels reach or exceed 10,000 spores per cubic meter of air. The spore counts in the basement are more than twice the level deeming a space to be contaminated.

In particular, extremely high levels of *Aspergillus/Penicillium* spores were identified in the basement in comparison to levels noted in the outside comparison and the other indoor samples. Moderate levels of Basidiospores and

Moderate levels of *Cladosporium* spores were detected in the exterior comparison sample as well as lesser counts of *Aspergillus/Penicillium* and Ascospores.

During the September 17, 2024, site visit, airborne spore counts in the basement had dropped considerably from 25,840 in August to 5,870. *Aspergillus/Penicillium* remained the primary spore type identified.

The levels of airborne mold spores recorded during the different site visits are presented in **Table 1** below for comparison:

| Table 1. Airborne Mold Levels | |
|---|--------------------------------------|
| Hosmer House | |
| 299 Old Sudbury Road, Sudbury, MA | |
| Sample # & Location | Spores per Cubic Meter of Air |
| <i>Site Visit on 9-6-23</i> | |
| (01), Floor 2 art storage room | 20,900 |
| (02), Floor 2 main hall at stairs | 480 |
| (03), Floor 1 dining room | 370 |
| (04), Exterior near garage | 18,690 |
| <i>Site Visit on 9-15-23</i> | |
| (01), Floor 2 art storage room | 12,800 |
| <i>Site Visit on 9-19-23</i> | |
| (01), Middle of the basement | 670 |
| (02), Exterior near garage | 10,360 |
| <i>Site Visit on 9-29-23</i> | |
| (01), Floor 2 art storage room | 70,310 |
| (02), Area outside art storage room | 14,640 |
| (03), Bedroom connecting to art storage | 740 |
| (04), Exterior near garage | 2,390 |
| <i>Site Visit on 10-23-23 (Following Remediation)</i> | |
| (01), Art storage room | 200 |
| (02), Space outside art storage room | 240 |
| (03), Exterior | 1800 |
| <i>Site Visit on 11-13-23 (Following Remediation)</i> | |
| (01), Art storage room | Present |
| (02), Space outside art storage room | 420 |
| (03), Bedroom adjacent to Art Storage room | 320 |
| (03), Exterior | 340 |
| <i>Site Visit on 8-1-24</i> | |
| (01), Basement | 25,840 |
| (02), Art Storage Room | 440 |
| (03), Space Outside Storage Room | 400 |
| (04), Bedroom, adjacent to Art Storage Rm. | 160 |
| (05), Exterior at rear of Building | 4,660 |

| Table 1. Airborne Mold Levels Hosmer House 299 Old Sudbury Road, Sudbury, MA | |
|---|--------------------------------------|
| Sample # & Location | Spores per Cubic Meter of Air |
| <i>Site Visit on 9-17-24</i> | |
| (01), Basement | 5,870 |
| (02), Art Storage Room | 320 |
| (03), Space Outside Storage Room | 1,210 |
| (04), Bedroom, adjacent to Art Storage Rm. | 530 |
| (05), Exterior at rear of Building | 1,300 |

Moisture Findings – SWA tested representative finishes throughout the impact areas and the majority of all finishes were determined to be within the air-dry 0-18% range. The basement appeared to be dry this visit and was somewhat dank during our August evaluation.

Conclusions and Recommendations

Based on the follow-up assessment conducted on September 17, 2024, SWA makes the following conclusions and recommendations:

- Based on the diminished number of airborne spores noted in the basement, it appears that the installation of the dehumidifiers and HEPA air filtration unit has successfully mitigated the airborne mold issue in that space. The 2nd floor Art Storage room and adjacent spaces appear to be maintaining expected levels of airborne mold spores and types. No further concerns were noted in those spaces. However, it would be prudent to conduct periodic testing to be certain conditions remain stable.
- Maintenance or other staff members must continue to perform in house visual inspections for any suspect mold growth or staining that may be indicative of water intrusion during their routine work activities. It is important to ensure that relative humidity (RH) is maintained in the indoor environment at between 30% and 60%. Promote air movement in spaces that are not readily used such as the Art Storage room as this tends to maintain dry conditions.
- Levels of both airborne mold spores and active mold growth may change at any given time due to changes in temperature, moisture, air pressure changes, and the like. This report presents the results of visual assessments

and mold levels at the time of the assessment; it makes no claims as to the status of environmental conditions outside of this sampling period.

Should you have any questions or concerns please do not hesitate to contact us at your earliest convenience.

Respectfully submitted,
SMITH & WESSEL ASSOCIATES INC.



For

Ted Sherry
Project Manager

Appendix A

Laboratory Analytical Sheets (9-17-24)



EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801

Tel/Fax: (781) 933-8411 / (781) 933-8412

<http://www.EMSL.com> / bostonlab@emsl.com

EMSL Order: 132405701

Customer ID: SMIT50B

Customer PO:

Project ID:

Attention: Ted Sherry
Smith & Wessel Associates, Inc.
188 Greenville Street
Spencer, MA 01562

Phone: (978) 994-3643
Fax: (978) 346-7265
Collected Date: 09/17/2024
Received Date: 09/17/2024 11:50 AM
Analyzed Date: 09/20/2024

Project: 24220 - Hosmer House; 299 Old Sudbury Road; Sudbury, MA

Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

| Lab Sample Number: Client Sample ID: Volume (L): Sample Location: | 132405701-0001 | | | 132405701-0002 | | | 132405701-0003 | | |
|--|-------------------|-------------|------------|------------------|------------|------------|----------------------------|-------------|------------|
| | 01 | 02 | 03 | 01 | 02 | 03 | 01 | 02 | 03 |
| | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | Basement - Middle | | | Art Storage Room | | | Space Outside Storage Room | | |
| Spore Types | Raw Count† | Count/m³ | % of Total | Raw Count† | Count/m³ | % of Total | Raw Count† | Count/m³ | % of Total |
| Alternaria (Ulocladium) | - | - | - | - | - | - | - | - | - |
| Ascospores | - | - | - | - | - | - | - | - | - |
| Aspergillus/Penicillium++ | 118(142) | 5830 | 99.3 | 2 | 80 | 25 | 9 | 400 | 33.1 |
| Basidiospores | 1 | 40 | 0.7 | 1 | 40 | 12.5 | 1 | 40 | 3.3 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | - | - | - | - | - | - | - | - | - |
| Cladosporium | - | - | - | 5 | 200 | 62.5 | 12 | 490 | 40.5 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | - | - | - | - | - | - | 3 | 100 | 8.3 |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | - | - | - | - | - | - | - | - | - |
| Myxomycetes++ | - | - | - | - | - | - | 2 | 80 | 6.6 |
| Pithomyces++ | - | - | - | - | - | - | 3 | 100 | 8.3 |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Zygomycetes | - | - | - | - | - | - | - | - | - |
| Total Fungi | 143 | 5870 | 100 | 8 | 320 | 100 | 30 | 1210 | 100 |
| Hyphal Fragment | - | - | - | - | - | - | - | - | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |
| Analyt. Sensitivity 600x | - | 41 | - | - | 41 | - | - | 41 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 1 | - | - | 2 | - | - | 3 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Steve Grise, Laboratory Manager
or other Approved Signatory

No discernable field blank was submitted with this group of samples.

EMSL Analytical, Inc. maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. EMSL Analytical, Inc. bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. Skin Fragment and Fibrous Particulate ratings are based on the percent of non-fungal material they represent: 1 (1-25%), 2 (26-50%), 3 (51-75%), or 4 (76-100%). Background ratings are based on the total area covered by non-fungal particles: 1 (1-25%), 2 (26-50%), 3 (51-75%), 4 (76-99%), or 5 (100%; overloaded). High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts >= 100 are extrapolated based on the percentage analyzed.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA LAP, LLC-EMLAP Accredited #180179

Initial report from: 09/20/2024 12:50 PM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com



EMSL Analytical, Inc.

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| Lab Sample Number: Client Sample ID: Volume (L): Sample Location: | 132405701-0004 | | | 132405701-0005 | | |
|--|----------------------------------|------------|------------|------------------------------|-------------|------------|
| | 04 | 05 | 75 | 05 | 75 | |
| Sample Location: | Bedroom adj. to Art Storage Room | | | Exterior at Rear of Building | | |
| Spore Types | Raw Count† | Count/m³ | % of Total | Raw Count† | Count/m³ | % of Total |
| Alternaria (Ulocladium) | - | - | - | - | - | - |
| Ascospores | - | - | - | - | - | - |
| Aspergillus/Penicillium++ | 4 | 200 | 37.7 | 3 | 100 | 7.7 |
| Basidiospores | 2 | 80 | 15.1 | 2 | 80 | 6.2 |
| Bipolaris++ | - | - | - | - | - | - |
| Chaetomium++ | - | - | - | - | - | - |
| Cladosporium | 6 | 200 | 37.7 | 23 | 940 | 72.3 |
| Curvularia | - | - | - | - | - | - |
| Epicoccum | - | - | - | 1 | 40 | 3.1 |
| Fusarium++ | - | - | - | - | - | - |
| Ganoderma | - | - | - | 3 | 100 | 7.7 |
| Myxomycetes++ | 1 | 40 | 7.5 | - | - | - |
| Pithomyces++ | 1 | 10* | 1.9 | - | - | - |
| Rust | - | - | - | 1 | 40 | 3.1 |
| Scopulariopsis/Microascus | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - |
| Zygomycetes | - | - | - | - | - | - |
| Total Fungi | 14 | 530 | 100 | 33 | 1300 | 100 |
| Hyphal Fragment | - | - | - | - | - | - |
| Insect Fragment | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - |
| Analyt. Sensitivity 600x | - | 41 | - | - | 41 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 1 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 2 | - | - | 1 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.
 ++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.


 Steve Grise, Laboratory Manager
 or other Approved Signatory

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Appendix B

Photo Log (9-17-24)

Hosmer House
299 Old Sudbury Road, Sudbury, Massachusetts



Basement Area, dry conditions



Unit operating in basement



2nd Floor, bedroom, no issues



2nd Floor, Art Storage Room, no issue



Space outside Art Storage



Location of exterior comparison sample