Confidential Inspection Report

LOCATED AT:

PREPARED EXCLUSIVELY FOR:

INSPECTED ON:
Wednesday, March 14, 2018

Inspector, Joe Hall
High Range Home Inspection llc

Wednesday, March 14, 2018
Linda Flinkman
1820 Garland Ln
Boulder, CO 80304

Dear Linda Flinkman,

We have enclosed the report for the Mold inspection we conducted for you on Wednesday, March 14, 2018 at:

1234 Boulder, CO
80301

Please take the time to review it carefully. If there is anything you would like us to explain, or if there is other information you would like, please feel free to call us. We would be happy to answer any questions you may have.

Throughout the report, you'll find special symbols at the front of certain comments. Below are the symbols and their meanings:

WARN = These items are in need of immediate attention. They may be an immediate hazard to safety, or be contributing to any moisture or mold problem in a direct way.

CAUT = These areas had visible mold, or moisture conditions (high moisture readings or equipment problems or issues).

SAMP = Samples were taken in these areas.

We thank you for the opportunity to be of service to you.

Sincerely,

Inspector, Joe Hall
High Range Home Inspection llc

Table of Contents

Introduction

This report is based on a visual inspection of the listed items and does not include any other systems of the property.

Latent and concealed defects and deficiencies are excluded from this inspection.

The conclusions and recommendations of this report represent my opinion of the existing structure. High Range Home Inspection LLC is not responsible for the conclusion, opinions, or recommendation made by others based on the information in this report and is not a technically exhaustive evaluation of your home.

This report is prepared for the sole and exclusive use of the client. This report is based on apparent conditions existing at the time of inspection only. The conditions of the property may change due to factors such as water and moisture leaks, actions taken by owners or others, or extreme weather events.

The client must accept responsibility for all risks and for all items which are not reasonably detectable with in the scope of this inspection.

I have made every effort to perform a comprehensive and thorough inspection with recommendations for this property. I do not offer or imply any warranties.

IAC2 Purpose and Scope

The International Association of Certified Air Consultants (IAC2) has published a Standard of Procedures which outlines the methods used in a mold inspection. We strive to perform all inspections in strict compliance with those standards. You will find the IAC2 standards as the heading for each section of the report. This is done to help you understand what is inspected and why it is inspected.

This particular inspection while not considered to be invasive, allows for the inspector to move stored items and materials within reason as the inspector deems necessary. The inspector is not required to enter into any area of the home that in the opinion of the inspector is unsafe or likely to be dangerous. Keeping this in mind, it is the intention of the inspector to attempt to do what is necessary to perform the intended inspection without endangering the health or well-being of the
We do not perform mold remediation, architectural or engineering services. Any opinions given in this report are based on individual experience and are just that.

Hidden Mold

In some cases, indoor mold growth may not be obvious. It is possible that mold may be growing on hidden surfaces, such as the backside of dry wall, wallpaper, or paneling, the underside of carpets and pads, etc. Possible locations of hidden mold can include walls behind furniture (where condensation forms), condensate drain pans inside air handling units, porous thermal or acoustic liners inside ductwork, or roof materials above ceiling tiles (due to roof leaks or insufficient insulation). Some building materials, such as dry wall with vinyl wallpaper over it or wood paneling, may act as vapor barriers, trapping moisture underneath their surfaces and thereby providing a moist environment where mold can grow. You may suspect hidden mold if a building smells moldy, but you cannot see the source, or if you know there has been water damage and building occupants are reporting health problems. Investigating hidden mold problems may be difficult and will require caution when the investigation involves disturbing potential sites of mold growth. For example, removal of wallpaper can lead to a massive release of spores from mold growing on the underside of the paper.

Introductory Notes

Molds, also known as fungi, are microscopic organisms that can be found virtually everywhere, indoors and outdoors. In the presence of excess moisture, mold can grow rapidly to produce adverse conditions. In response to increasing public concern, a number of authorities, including the United States EPA, California Department of Health services and New York City Department of health, have developed recommendations and guidelines for assessment and remediation of mold.

While it is generally accepted that molds can be allergenic, infectious and toxic, there are no generally accepted numerical guidelines for interpretation of microbial data. The absence of standards makes interpretation of microbial data somewhat challenging. This report has been designed to provide some basic interpretive information.

Samples are analyzed via light microscopy at 600X Magnification, with the entire slide (100% of the sample) being analyzed. The results are reported as a total meaning that they include both viable and non-viable spores. Unfortunately, this technique does not allow for the differentiation between Aspergillus and Penicillium, and Trichoderma and other are grouped together as Amerospores. Additionally it does not allow for cultivation or speciation of spores. Slides containing greater than 500 fungal spores are difficult to count accurately due to over crowding and are therefore estimations.

ORIENTATION
DIRECTION: For purposes of identification and reporting, the front of this building faces west.

NOTES
The house was constructed in 1964
The house was occupied and not all areas of the home were visible to be inspected.

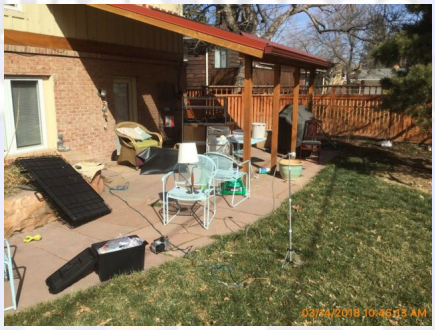
WEATHER: During the course of the inspection, the temperature was between 50 and 60 degrees.

AMBIENT READINGS: Ambient Conditions on site include; temperature, humidity, and weather as stated above. The Outside temperature during the time of our inspection was 62 degrees , And the outside humidity was averaged at 18% at 10:31am. Wind was from 0 to 10 mph.

Exterior ambient

AMBIENT READINGS: Moisture surface reference taken on interior wall drywall at stairs approximately 20' from office.

SAMP Sample # A1O An approved sample collected. Items with this rating have had samples taken that have been authorized by the owner or the inspector for laboratory submission. This was an outdoor control sample.



SCOPE & BACKGROUND

High Range Home Inspection LLC (HRH) was hired to perform a mold and moisture assessment at 1234 boulder st, sample 80301 to evaluate a moisture intrusion condition in the south east office of her home. During a previous courtesy visit on Friday March 2, 2018 HRH did a a non-technical walk-through of the downstairs South East (SE) office and the exterior E and SE side of the home. The home appeared neat and clean during this walk-through. A musty smell was noticed in the downstairs office upon entry. Additionally the carpeting closest to the E window in the downstairs office was damp to the touch. At the time of the 03/02 walk-through the downstairs office had furniture and personal belongings that obscured much of the walls and floor.

Background:

As reported by the client; In approximately Spring of 2015 exterior landscaping and walkways were installed in the backyard. In the Spring of 2017 some moisture was noticed in the downstairs office. In the Fall of 2017 portions of the E and SE wall were excavated and a waterproofing coating was applied by the homeowner. At some point in the Winter of 2017 a musty smell was noticed and some cardboard photo boxes had visible mold on them.

Scope:

On Wednesday, March 14 at 9:45 AM HRH collected air samples and a performed a limited moisture inspection following IAC2 SOP. HRH performed air sampling of the office, the interior of the wall below the east window in the office, the main level living room, and an outdoor control sample. Additionally a surface swab test was performed on an area of suspected biological growth on the SE wall of the office where a file cabinet had been sitting.Two areas on the exterior wall were excavated to a depth of approximately 12 to 18 inches. Moisture testing of the floor and walls was performed but were inconclusive; this was likely caused by the dry ambient conditions outside over the previous 2 weeks and drying of the interior room from the HVAC system.

Observations:

Furniture and personal belongings had been removed from the office, and the door had been taped closed. both windows we're closed. The HVAC vent in the W closet was in the open position. The HVAC system was running but the heat recovery air exchange ventilation system had been shut off for the previous 2 weeks. There was still a musty smell and there were dark patches on the S wall that appeared to be a biological contamination. It was reported that the file cabinet was rusty on the bottom when removed and rust stains on the carpet we're observed by HRH.

Additionally carpet in each corner of the office was pulled up after air sampling to look for visual indications of water damage or mold. Mold was observed on the tack strip for the carpeting in the NE,SE and SW corners of the office. On the exterior of the house the soil in the planter boxes and along the E and S walls we're dry on the surface.

TEST PROCEDURES

Air sampling was conducted with a Zefon E-lite pump field calibrated at 15 liters of air per minute (LPM) And using Air-o-cell sampling cassettes.

In Wall Testing Procedures
All in wall tests are performed by the use of a Zefon E-lite pump field calibrated at 15 liters of air per minute (LPM) And using Air-o-cell sampling cassettes and Zefon Air-O-Cell Wall Adaptors. A hole is drilled with a hand or power (Low speed) drill, to reduce dust. A Wall probe with a dust cover is then inserted into the wall cavity. The debris cap is then removed and the sanitized tubing connected to the Air-O-Cell cassette. The adapter and tubing are cleaned and sanitized before all testing is performed. The pump is calibrated and monitored to 15LPM for 1 minute per wall check.
In-wall sampling of wall cavities can be more subjective than air sampling. Data interpretation can be affected by factors such as moisture level (which may affect aerosolization of mold spores), excessive dust and disturbance of insulation. The main purpose of in wall sampling is to non-destructively assess fungal contamination within a wall cavity. Data may also be significantly impacted by dilution factors i.e. The number of Genera on a sample from within a 4-inch wall will be very different from a 12 inch wall simply because the volume of air available for spore dispersal.
Sterile swab sampling is used to determine whether visible stain or discoloration on a surface sampled is indicative of mold growth. Tape lift, bulk and swab sampling, are techniques used for direct examination. A direct exam allows for the immediate determination of the presence of fungal spores as well as what types of fungi are present.

During our inspection, HRH utilized an Extech MO290 relative humidity and temperature moisture meter to measure relative humidity and temperature in and around the residence and in the area of concern.

ANALYSIS AND FINDINGS
Test results:
The outdoor air sample (A1o) test results showed no identifiable fungi; this can occur when there is extremely clean air after snow or rain. Even a light mist or heavy fog the night before can reduce airborne contaminants to a level that won't be detectable on our test.

The indoor ambient air sample in the office (A1i) the presence of Aspergillus/Penicillium, Cladosporium (common in wet building materials), and Myxomycetes.

The in wall sample (iws2) showed an extremely high Aspergillus/Penicillium count. It is highly likely that there is extensive mold contamination inside of the wall cavities.

The indoor ambient air sample in the living room (A2i) showed a higher Aspergillus/Penicillium count than the downstairs office. The count in this area may be higher due to several possibilities; there is more air movement in the living room and more disturbance of surfaces such as carpets and couches then in the office area. The office area has had relatively still undisturbed air since being sealed up. The previous moisture problem in the vaulted ceiling may be adding to the sport count in the living room area.

The swab sample (iws1)of the possible biological contaminant in the office came back positive for mold growth.

Inspectors opinion:

Based on my initial observations during the courtesy visit on March 2, my observations on March 14, and the mold test results it is likely the the combination of factors is creating a moisture problem in the office. The landscaping done in the spring of 2015 has likely contributed to a pre-existing design flaw in the home. The office is built with and exterior brick wall and slab on grade in this section of the house. Houses of this age did not typically utilize waterproofing design or perimeter drain systems for below grade walls. It is likely that the initial construction utilized adequate ground sloping away from the structure, and ground cover such as grass to absorb and direct run off water away from the structure. This design was probably adequate for many years. Colorado has a relatively dry environment and it is likely no problem existed for many years. It is probable that the landscaping around the perimeter of the house aerated and increased the permeability of the soil. Additionally the installation of sprinklers and mulch encouraged the absorption and holding of water against the foundation.

The waterproofing membrane installed in the large planter box may have also created a water trap; the top level of the membrane is located below the ground level and is not sealed against the foundation wall. Large moisture events such as rainstorms, heavy snow loads, or excessive watering could potentially allow saturation of the soil and over topping of the membrane against the foundation wall. Water will always find the path of least resistance and may move a long distance before it finds a crack or penetration in a foundation.

Colorado has a relatively dry environment and it is likely no problem existed for many years. Depending on seasonal moisture fluctuations there was probably minor moisture intrusion events occurring after the landscaping was done, but as the soil settled and the sprinklers became used more frequently, moisture intrusion increased.

Exterior/Site/Ground

4.2 Exterior and Grounds
I. The inspector shall inspect from the ground level:
A. The cladding, flashing and trim.
B. Exterior doors, windows, decks, stoops, steps, stairs, porches, railings, eaves, soffits and fascias.
C. The exterior grading surrounding the building perimeter.
D. Items that penetrate the exterior siding or covering materials.

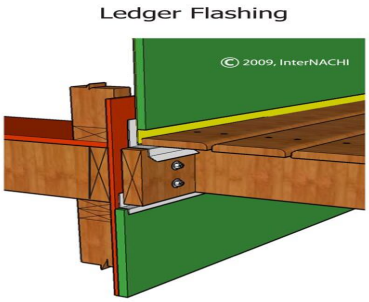
IMPROVEMENTS PATIO
The patio was in satisfactory condition.

IMPROVEMENTS DECK
CAUT The deck was in bad condition. We recommend repair or replacement.


These areas should be caulked and flashed to prevent water intrusion


These areas should be caulked and flashed to prevent water intrusion


Modern building practices require flashing and the separation between the deck and the siding



OTHER FEATURES SIDING
CONDITION: The siding appeared to be in satisfactory condition.

The siding was brick and wood.All of the brick and siding appeared to be in good condition with no evidence of major cracking or areas where water infiltration seemed likely.





OTHER FEATURES CAULKING

The caulking appeared to be in satisfactory condition.



OTHER FEATURES WINDOWS

The windows appear to be in satisfactory condition.


LANDSCAPING AFFECTING FOUNDATION NEGATIVE GRADING

WARN There was negative grading on the east side of the home.The area between the flagstone walkway and the house does not have sufficient slope to move water away from the foundation. This is likely contributing to the moisture intrusion in the office

Planter drains toward house

This area has no way to move excessive moisture away from the foundation

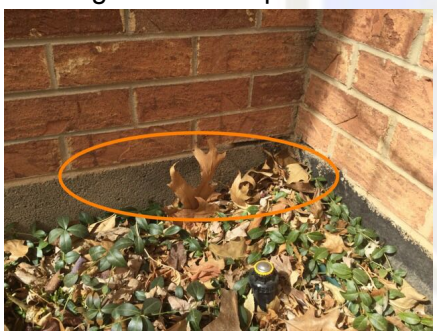
Inadequate drainage

LANDSCAPING AFFECTING FOUNDATION TRIM TREES & SHRUBBERY

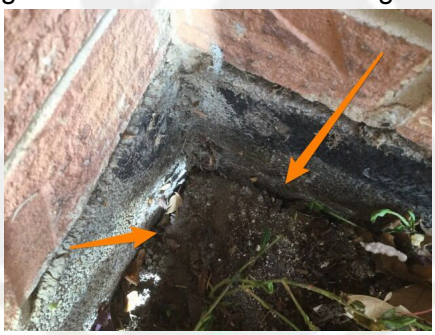
The trees and shrubbery were well trimmed. They should be maintained annually to prevent damage to the siding and prevent moisture damage.

BASIC INFORMATION

WARN The exterior SW corner of the office showed evidence of moisture movement next to the foundation. This is directly adjacent to suspected biological growth in the office, and where evidence of moisture on the carpet and rusting from the file cabinet was noticed. It appears that the waterproofing on the foundation stopped before this area. Is highly probable that the sprinkler was flooding this area and allowing moisture to penetrate through the foundation at the footing.



No waterproofing on west wall



Areas where soil has pulled away from foundation creating pathway for moisture

Areas where soil has pulled away from foundation creating pathway for moisture

LANDSCAPING AFFECTING FOUNDATION PLANTERS

WARN The raise planter on the east side of the building had insufficient drainage. Additionally the liner was installed incorrectly. The liner was not sealed to the foundation wall and was below the soil grade. This could potentially allow water to saturate the soil build up, and over top the liner, resulting in water being trapped between the liner and the foundation. Additionally, there were no weep holes or other drainage options observed that would allow water from the planter to drain away from the foundation.
Modern building practices require adequate waterproofing and drainage of planters to prevent moisture from building up.


Liner can allow water intrusion


Top of liner located below soil surface


Top of liner located below soil surface


Liner attached to house with screws, no sealing


Planter at Wall


Mulch/soil level at window for reference

OTHER FEATURES WATER FAUCET

The faucet is functional And was not leaking at time of inspection.


Faucet at planter

DRAINAGE FRENCH DRAINS

CAUT Two areas were excavated to a depth of approximately 12 to 18 inches. No evidence of perimeter drains was located. Homeowner was not aware of any perimeter drains based on excavation to footing where waterproofing was applied on SE corner of office. Perimeter drains and French drains are and important component in building design to prevent moisture intrusion.

Drain located at steps, appeared to be functional

Structure

4.3 Basement, Foundation, Crawlspace, and Structure
I. The inspector shall inspect:
A. The foundation, basement, or crawlspace including ventilation.
B. For moisture intrusion

FOUNDATION WATERPROOFING

CAUT The foundation waterproofing appeared to be in marginal condition. There were areas of the foundation missing waterproofing. Paint-on or spray-on foundation waterproofing is used in addition to perimeter drainage to help prevent hydrostatic moisture pressure from penetrating below-grade walls.


Homeowner applied waterproofing


Homeowner applied waterproofing


Area next to raised planter with no waterproofing

FOUNDATION BASIC INFORMATION

FOUNDATION: The home is built With a combination slab on grade and basement building style. The east portion of the home that a slab on grade sits below the exterior grade.

MATERIAL: Material: Poured concrete

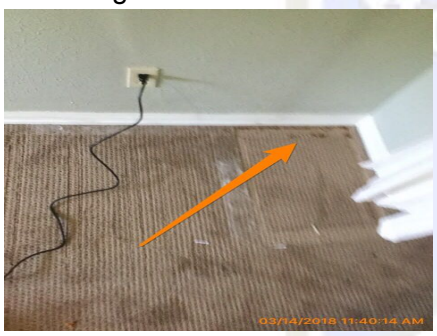
Interior

4.7 Interior
I. The inspector shall inspect:
A. The walls, ceilings, floors, doors and windows.
B. The ventilation in the kitchen, bathrooms and laundry.
C. Whole-house ventilation fans

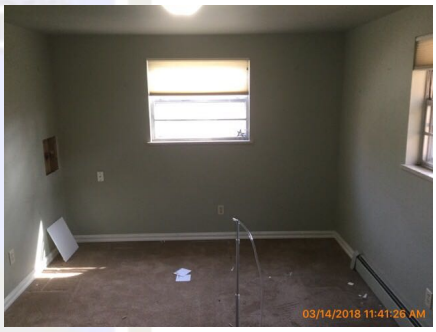
Downstairs Office Interior

SURFACES WALLS

SAMP Sample # iws1(swab) and iws2 (interior wall),approved samples collected. Items with this rating have had samples taken that have been authorized by the owner or the inspector for laboratory submission. There was visible evidence of an apparent biological contamination in the SE corner of the office. No other visible signs of moisture or mold damage were observed.


Rust on carpet where a file cabinet was located


Swab iws1


E wall


Suspected biological substance


NE Corner of office


Closet in office


Closet in office

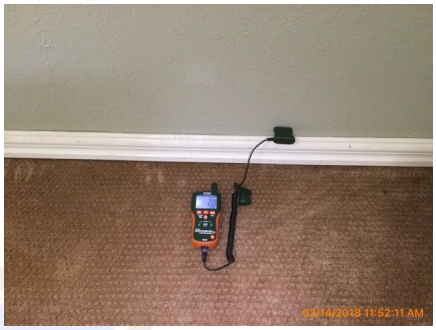

Closet in office


Closet in office

Moisture readings We're taken throughout the room. With the exception of the area near the file cabinet location moisture readings are within normal ranges based on the control sample.
The drywall located in the SW corner had Slightly elevated moisture content. This is an expected outcome considering the room was unoccupied, and exterior conditions of the previous two weeks before the inspection had been relatively dry With single or low double digit humidity levels.


iws1 sample site


Wall below iws1


Wall below E window

SURFACES CEILINGS
There is no visible evidence of mold related issues present. This does not mean that the item or system is free from mold, it means that we could not see mold/biological evidence.

No sample was taken in this area. Although evidence of mold may be noted, enough samples from other areas were gathered that no additional sampling in this are is required.

SURFACES FLOORS
WARN There is visible evidence of a mold condition or a condition conducive to mold growth (Visible moisture, high moisture readings, leaking pipes, etc.).


NE corner of office Evidence of mold

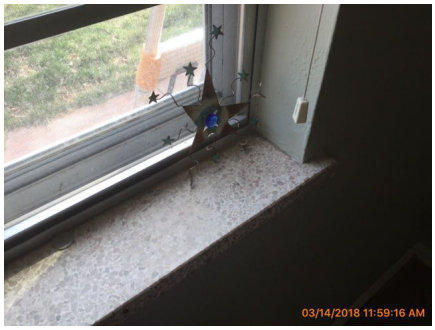

SE corner of office Evidence of mold


SW corner of office evidence of mold

DOORS & WINDOWS DOORS
GENERAL: There were no exterior doors in this room

DOORS & WINDOWS WINDOWS

The Windows were in satisfactory condition. There is no observable evidence to indicate that the windows were leaking or contributing to the moisture intrusion.



MOISTURE, TEMPERATURE AND HUMIDITY: ROOM AMBIENT

Normal readings as compared to ambient exterior conditions

SE Office ambient

CAUT There was a pronounced musty odor upon opening the office door.This is usually indicative of mold.

SAMP Sample # A1i approved sample collected. Items with this rating have had samples taken that have been authorized by the owner or the inspector for laboratory submission.

Living Room Interior

MOISTURE, TEMPERATURE AND HUMIDITY: ROOM AMBIENT

SAMP Sample # A2i approved sample collected. Items with this rating have had samples taken that have been authorized by the owner or the inspector for laboratory submission.

Remediation Recommendations

MOLD REMEDIATION: GENERAL RECOMMENDATIONS

ª Fix leaky plumbing and leaks in the building envelope as soon as possible.

ª Watch for condensation and wet spots. Fix source(s) of moisture problem(s) as soon as possible.

ª Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).

ª Keep heating, ventilation, and air conditioning (HVAC) drip pans clean, flowing properly, and unobstructed.

ª Vent moisture-generating appliances, such as dryers, to the outside where possible.

ª Maintain low indoor humidity, below 60% relative humidity (RH), ideally 30- 50%, if possible.

ª Perform regular building/HVAC inspections and maintenance as scheduled.

ª Clean and dry wet or damp spots within 48 hours.

ª Don't let foundations stay wet. Provide drainage and slope the ground away from the foundation.

SITE SPECIFIC RECOMMENDATIONS

Interior recommendations:

There is sufficient evidence to indicate more than 10 ft.² of possible mold contamination in the wall cavities and under the flooring. We recommend hiring a certified mold remediation company to remove contaminated material. We recommend using the EPA's 'Mold Remediation in Schools and Commercial Buildings Guide' as a baseline.
https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide.

ª for personal items already removed from the office please see table 2 in the appendix for recommendations

ª interior cleanup should begin as soon as possible We do not endorse any company but a previous client had a very positive experience with Eco Tech Environmental inc. www.etechenviro.com

ª exterior waterproofing and remediation should occur simultaneously.

Exterior remediation recommendations:

We recommend the following steps be taken to help prevent moisture intrusion into the office and other areas of the home. Modern building standards call for a perimeter drain and foundation waterproofing. We recommend hiring a licensed contractor or professional to perform the following:

ª the entire perimeter of the building should be excavated to the footing and a perimeter drain should be installed along the footing that drains to daylight (consult local building department for codes relevant to storm water drainage).

ª A foundation waterproofing system should be sprayed or painted on any foundation area that is below grade.

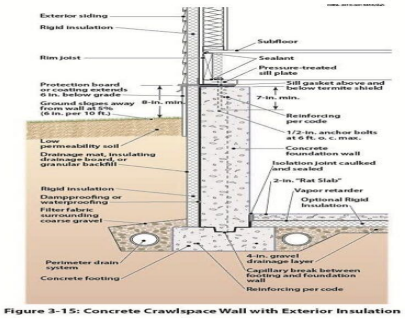
ª a landscape barrier fabric should be installed along the foundation and slope away from the foundation to assist in directing groundwater away from the foundation.

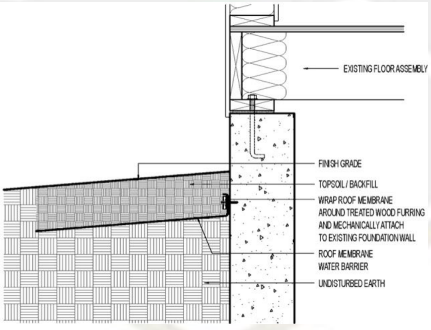
ª the raised planter on the E of the building should have weep holes on the exterior to allow excess water to drain away from the building. Additionally the liner that is currently installed should be removed and foundation waterproofing should be sprayed in that area. The installation of foundation waterproofing, a perimeter drain, and weep-holes/adequate drainage of the planter should negate the need for a liner.

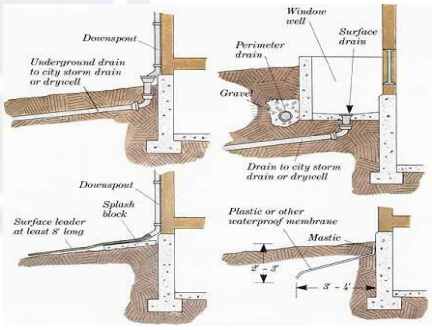
ª sprinklers should have heads installed that direct water away from the walls and foundation.

ª if negative grading cannot be corrected (I.e. areas next to walkways) we recommended the installation of a French drain along the surface perimeter of the foundation to assist with removing groundwater.

ª the areas of the deck with inadequate or missing flashing should be repaired by a qualified professional







Example of waterproofing

DISCLAIMER

We cannot accept nor do we warrant any work performed by third parties based on the information in this report.

It is human nature for homeowners to believe the last bit of "expert" advice they receive, even if it is contrary to previous advice. As home inspectors, we unfortunately find ourselves in the position of "First Man In" and consequently it is our advice that is often disbelieved. We have compiled this report and given our opinion based on over 25 years experience In various building trades. You may receive varying or differing points of view, it is up to you as a homeowner to do your due diligence with regards to the information in this report.

Environmental Concerns

The U.S. Environmental Protection Agency published the "Mold Remediation in Schools and Commercial Buildings" document that also provides guidelines and insight on clean- up procedures.
Common suggestions among the various documents include:

1.) Correct the source of excessive moisture.

2.)When handling or cleaning moldy materials, consider using a mask or respirator for protection against inhaling airborne spores. Respirators can be purchased from hardware stores; select one for particle removal (sometimes referred to as a N95 or TC-21C particulate respirator).

3.)Wear protective gloves, eye protection glasses, and clothing should be immediately washed.

4.)Take care to remove or clean contaminated materials in a way that prevents the emission of fungi and dust contaminated with fungi from leaving a work area and entering an occupied area.

5.)Non-porous (e.g., metals, glass, and hard plastics) and semi-porous (e.g., wood, and concrete) materials that are structurally sound and are visibly moldy can be cleaned and reused.

6.)Cleaning should be done using a detergent solution.

7.)Porous materials (e.g., ceiling tiles and insulation, and wallboard) with more than a small area of contamination should be removed and discarded. Porous materials that can be cleaned, can be reused, but should be discarded if possible.

8.)A professional restoration consultant should be contacted when restoring porous materials with more than a small area of fungal contamination.

9.)All materials to be reused should be dry and visibly free from mold.

Periodic inspections should be conducted to confirm the effectiveness of Remediation work. Please note that I am not an Industrial hygienist or a Remediation Company.

The reader should be aware that the reference documents contain conflicting and inconclusive information about health effects from exposure to mold clean-up procedures, acceptable indoor air moisture levels and ventilation. However, two issues most experts agree upon are: active mold growth should be removed, and eliminating excessive moisture is required to stop mold growth. Armed with information from the reference documents, the reader should be able to make an informed decision about dealing with mold.

Note that there isn't a numerical criterion for interpreting environmental measurements.

Areas of concern

LANDSCAPING AFFECTING FOUNDATION NEGATIVE GRADING
EXTERIOR/SITE/GROUND

WARN **1: -** There was negative grading on the east side of the home.The area between the flagstone walkway and the house does not have sufficient slope to move water away from the foundation. This is likely contributing to the moisture intrusion in the office


Planter drains toward house


This area has no way to move excessive moisture away from the foundation


Inadequate drainage

BASIC INFORMATION
EXTERIOR/SITE/GROUND

WARN **2: -** The exterior SW corner of the office showed evidence of moisture movement next to the foundation. This is directly adjacent to suspected biological growth in the office, and where evidence of moisture on the carpet and rusting from the file cabinet was noticed. It appears that the waterproofing on the foundation stopped before this area. Is highly probable that the sprinkler was flooding this area and allowing moisture to penetrate through the foundation at the footing.


No waterproofing on west wall


Areas where soil has pulled away from foundation creating pathway for moisture


Areas where soil has pulled away from foundation creating pathway for moisture

LANDSCAPING AFFECTING FOUNDATION PLANTERS
EXTERIOR/SITE/GROUND

WARN **3: -** The raise planter on the east side of the building had insufficient drainage. Additionally the liner was installed incorrectly. The liner was not sealed to the foundation wall and was below the soil grade. This could potentially allow water to saturate the soil build up, and over top the liner, resulting in water being trapped between the liner and the foundation. Additionally, there were no weep holes or other drainage options observed that would allow water from the planter to drain away from the foundation. Modern building practices require adequate waterproofing and drainage of planters to prevent moisture from building up.


Liner can allow water intrusion


Top of liner located below soil surface


Top of liner located below soil surface


Liner attached to house with screws, no sealing


Planter at Wall


Mulch/soil level at window for reference

SURFACES FLOORS
DOWNSTAIRS OFFICE INTERIOR

WARN **4: -** There is visible evidence of a mold condition or a condition conducive to mold growth (Visible moisture, high moisture readings, leaking pipes, etc.).


NE corner of office Evidence of mold


SE corner of office Evidence of mold


SW corner of office evidence of mold

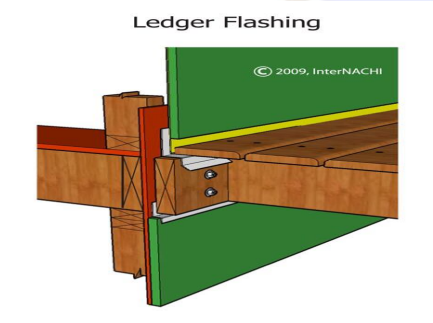
IMPROVEMENTS DECK
EXTERIOR/SITE/GROUND

CAUT **5: -** The deck was in bad condition. We recommend repair or replacement.

These areas should be caulked and flashed to prevent water intrusion

These areas should be caulked and flashed to prevent water intrusion

Modern building practices require flashing and the separation between the deck and the siding



DRAINAGE FRENCH DRAINS
EXTERIOR/SITE/GROUND

CAUT **6: -** Two areas were excavated to a depth of approximately 12 to 18 inches. No evidence of perimeter drains was located. Homeowner was not aware of any perimeter drains based on excavation to footing where waterproofing was applied on SE corner of office. Perimeter drains and French drains are and important component in building design to prevent moisture intrusion.

Drain located at steps, appeared to be functional

FOUNDATION WATERPROOFING
STRUCTURE

CAUT **7: -** The foundation waterproofing appeared to be in marginal condition. There were areas of the foundation missing waterproofing. Paint-on or spray-on foundation waterproofing is used in addition to perimeter drainage to help prevent hydrostatic moisture pressure from penetrating below-grade walls.


Homeowner applied waterproofing


Homeowner applied waterproofing


Area next to raised planter with no waterproofing

MOISTURE, TEMPERATURE AND HUMIDITY: ROOM AMBIENT
DOWNSTAIRS OFFICE INTERIOR

CAUT **8: -** There was a pronounced musty odor upon opening the office door.This is usually indicative of mold.

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1010 Yuma Street Denver, CO 80204
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http://www.EMSL.com / denverlab@emsl.com

Order ID:	221801616
Customer ID:	+22HRHI85
Customer PO:	
Project ID:	

Attn: Joe Hall
High Range Home Inspections LLC
578 Primos Rd
Boulder, CO 80302

Proj: Funkman

Phone:	(720) 383-4255
Fax:	
Collected:	03/14/2018
Received:	03/15/2018
Analyzed:	03/15/2018

Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

221801616-0001

Client Sample ID
A1O 1

Location
East Exterior Control

Sample Volume (L)
150

Sample Type
Background

Comments

Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
Alternaria	-	-	-	
Ascospores	-	-	-	
Aspergillus/Penicillium	-	-	-	
Basidiospores	-	-	-	
Bipolaris++	-	-	-	
Chaetomium	-	-	-	
Cladosporium	-	-	-	
Curvularia	-	-	-	
Epicoccum	-	-	-	
Fusarium	-	-	-	
Ganoderma	-	-	-	
Myxomycetes++	-	-	-	
Pithomyces	-	-	-	
Rust	-	-	-	
Scopulariopsis	-	-	-	
Stachybotrys	-	-	-	
Torula	-	-	-	
Ulocladium	-	-	-	
Unidentifiable Spores	-	-	-	
Zygomycetes	-	-	-	
Triadelphia	-	-	-	
Total Fungi	**-**	**None Detected**	**-**	
Hyphal Fragment	-	-	-	
Insect Fragment	-	-	-	
Pollen	-	-	-	
Conidiophores of Penicillium	-	-	-	

Analytical Sensitivity 600x: **21** counts/cubic meter
Analytical Sensitivity 300x *: **7*** counts/cubic meter

Skin Fragments: **1** 1 to 4 (low to high)
Fibrous Particulate: **1** 1 to 4 (low to high)
Background: **1** 1 to 4 (low to high); 5 (overloaded)

No discernable field blank was submitted with this group of samples.
Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

Concentration at or below background
Concentration above background
Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.
Spores reported to be able to cause allergies in individuals.
Potential for mycotoxin production exists with these fungi.
These fungi are considered water damage indicators.

Initial report from: 03/15/2018 16:31:18

Melanie Rech

Melanie Rech, Microbiology Lab Manager
or Other Approved Signatory

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 in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

Client Sample ID: A1I 2
Location: SE Office
Sample Volume (L): 75
Sample Type: Inside
Comments:

Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
Alternaria	1	40	2.4	⚠ ✹
Ascospores	2	80	4.8	⚠ ✹
Aspergillus/Penicillium	18	760	45.2	⊘ ✹
Basidiospores	1	40	2.4	⚠ ♠ ✹
Bipolaris++	-	-	-	
Chaetomium	-	-	-	
Cladosporium	13	550	32.7	⊘ ✹
Curvularia	-	-	-	
Epicoccum	-	-	-	
Fusarium	-	-	-	
Ganoderma	-	-	-	
Myxomycetes++	4	200	11.9	⚠ ♠ ✹
Pithomyces	-	-	-	
Rust	-	-	-	
Scopulariopsis	-	-	-	
Stachybotrys	-	-	-	
Torula	-	-	-	
Ulocladium	-	-	-	
Unidentifiable Spores	-	-	-	
Zygomycetes	-	-	-	
Triadelphia	1*	10*	0.6	⚠
Total Fungi	**40**	**1680**	**100**	⊘
Hyphal Fragment	1	40	-	⚠
Insect Fragment	-	-	-	
Pollen	1	40	-	⚠ ♠ ✹
Conidiophores of Penicillium	-	-	-	

Analytical Sensitivity 600x: **42** counts/cubic meter
Analytical Sensitivity 300x *: **13*** counts/cubic meter

Skin Fragments: **2** 1 to 4 (low to high)
Fibrous Particulate: **1** 1 to 4 (low to high)
Background: **3** 1 to 4 (low to high); 5 (overloaded)

No discernable field blank was submitted with this group of samples.
Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

☑ Concentration at or below background
⚠ Concentration above background
⊘ Concentration 10X or more above background

♠ Not commonly found growing indoors, spores likely come from outside.
✹ Spores reported to be able to cause allergies in individuals.
☣ Potential for mycotoxin production exists with these fungi.
💧 These fungi are considered water damage indicators.

Initial report from: 03/15/2018 16:31:18

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Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

221801616-0004

Client Sample ID
iws2 4

Location
W Office Wall

Sample Volume (L)
15

Sample Type
Inside

Comments

Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
Alternaria	-	-	-	
Ascospores	-	-	-	
Aspergillus/Penicillium	774	163000	99.9	
Basidiospores	-	-	-	
Bipolaris++	-	-	-	
Chaetomium	1	200	0.1	
Cladosporium	-	-	-	
Curvularia	-	-	-	
Epicoccum	-	-	-	
Fusarium	-	-	-	
Ganoderma	-	-	-	
Myxomycetes++	-	-	-	
Pithomyces	-	-	-	
Rust	-	-	-	
Scopulariopsis	-	-	-	
Stachybotrys	-	-	-	
Torula	-	-	-	
Ulocladium	-	-	-	
Unidentifiable Spores	-	-	-	
Zygomycetes	-	-	-	
Triadelphia	-	-	-	
Total Fungi	**775**	**163200**	**100**	
Hyphal Fragment	-	-	-	
Insect Fragment	2*	100*	-	
Pollen	-	-	-	
Conidiophores of Penicillium	2	400	-	

Analytical Sensitivity 600x: **211** counts/cubic meter
Analytical Sensitivity 300x *: **67*** counts/cubic meter

Skin Fragments: **1** 1 to 4 (low to high)
Fibrous Particulate: **2** 1 to 4 (low to high)
Background: **2** 1 to 4 (low to high); 5 (overloaded)

No discernable field blank was submitted with this group of samples.
Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

Concentration at or below background
Concentration above background
Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.
Spores reported to be able to cause allergies in individuals.
Potential for mycotoxin production exists with these fungi.
These fungi are considered water damage indicators.

Initial report from: 03/15/2018 16:31:18

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Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

221801616-0005

Client Sample ID
A2i 5

Location
Living Room

Sample Volume (L)
75

Sample Type
Inside

Comments

Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
Alternaria	-	-	-	
Ascospores	-	-	-	
Aspergillus/Penicillium	164	6920	97.5	
Basidiospores	-	-	-	
Bipolaris++	-	-	-	
Chaetomium	-	-	-	
Cladosporium	3	100	1.4	
Curvularia	-	-	-	
Epicoccum	1	40	0.6	
Fusarium	-	-	-	
Ganoderma	-	-	-	
Myxomycetes++	1	40	0.6	
Pithomyces	-	-	-	
Rust	-	-	-	
Scopulariopsis	-	-	-	
Stachybotrys	-	-	-	
Torula	-	-	-	
Ulocladium	-	-	-	
Unidentifiable Spores	-	-	-	
Zygomycetes	-	-	-	
Triadelphia	-	-	-	
Total Fungi	**169**	**7100**	**100**	
Hyphal Fragment	1	40	-	
Insect Fragment	-	-	-	
Pollen	-	-	-	
Conidiophores of Penicillium	-	-	-	

Analytical Sensitivity 600x: **42** counts/cubic meter
Analytical Sensitivity 300x *: **13*** counts/cubic meter

Skin Fragments: **2** 1 to 4 (low to high)
Fibrous Particulate: **1** 1 to 4 (low to high)
Background: **2** 1 to 4 (low to high); 5 (overloaded)

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