

October 1, 2024

Ms. Lori Stute
City of Mercer
PO Box 118
Mercer, ND 58559

RE: P24-0387 MICROBIAL SAMPLING &
ASSESSMENT REPORT
MERCER COMMUNITY CENTER
MAX STREET
MERCER, ND 58559

Dear Ms. Stute:

Badlands Environmental Consultants, Inc. (BEC) has completed the sampling and assessment services for the presence of mold/fungi within the Mercer Community Center located in Mercer, ND (Site). The BEC representative for this project was Environmental Specialist, Kayla DeHaven. The mold assessment was conducted on September 27, 2024 as per your authorization.

Two (2) air samples were collected for this assessment.

- Sample 1 was collected outside and used as a Control Sample.
- Sample 2 was collected from throughout the building.

One (1) surface swab sample was also collected for this assessment.

- Sample 3 was collected from suspect fungal growth on the concrete wall in the basement Women's bathroom.

The air samples were collected utilizing a Buck BioAire Bioaerosol (Buck) sampling pump with Allergenco D Cassettes (spore traps). The Buck sampling pump is calibrated up to 15 liters per minute using a pump specific rotameter. Allergenco D cassettes are designed for rapid collection and analysis of a wide range of airborne particulates, including fungal spores. The surface swab sample was collected utilizing a Copan Venturi Transystem Transport Swab.

The air and swab samples were submitted to Hayes Microbial Consulting (Hayes) in Midlothian, VA, where they were analyzed for mold/fungi using a light microscope fitted with a 100X oil immersion objective for a total magnification of 1000X.

RESULTS

Because mold/fungi are found everywhere throughout nature, air samples collected from suspect areas need to be evaluated against samples collected from non-suspect areas or outdoors (Control Sample).

As a general rule of thumb, the fungi found from the indoor sample should match the Control Sample and be present at levels equal to or less than those of the Control Sample. Higher levels of fungi indoors or different fungi genera from the Control Sample can indicate a possible indoor source.

The presence of certain fungi in indoor environments is significant because fungi can and will produce mycotoxins, metabolites that can cause adverse health effects in humans and animals. Symptoms due to exposure of mycotoxins include dermatitis, cold and flu symptoms, sore throat, headache, fatigue, diarrhea, and impaired or altered immune function, which may lead to opportunistic infection.

Analytical results from the indoor air sample collected from throughout the building indicated the total mold spore concentrations were lower than the Control Sample. However, elevated concentrations of *Aspergillus*/*Penicillium* species were detected in this air sample but not in the Control Sample.

Analytical results from the surface swab sample, collected from suspect fungal growth on the concrete wall in the Women's bathroom, indicated a Moderate Presence (100- 999 spores) of *Alternaria* species with many mycelial detected, indicating active growth.

Please refer to the attached Hayes Mold Analysis Report dated October 1, 2024 for complete analytical results of the samples collected for this project.

MOLD SPECIES IDENTIFICATION

Alternaria is a very common species found in house dust, carpets, textiles, and on horizontal surfaces in building interiors and is one of the main fungal causes of allergy. It is a common cause of extrinsic asthma. This can be found on dead and dying plant material. It is easily blown by wind and found in house dust, carpets, textiles, and horizontal surfaces indoors. It can be considered a water impact mold. The pathology to humans on exposure includes allergies and asthma. Other diseases linked to *Alternaria* include mycotic keratitis, skin infections, and osteomyelitis.

Aspergillus is an indicator organism of moisture problems in a building and is typically found on water damaged building materials such as wallpaper, wood, and wet mineral fiberboards used for insulation. The genus *Aspergillus* contains many individual species, some of which can produce mycotoxins. This fungus has a characteristic musty, earthy odor and is the cause of eye, nose, and throat irritation. Pathology to humans includes asthma, but it is less allergenic than other molds. Infections from *Aspergillus* happen mostly to persons with compromised immune systems. Aspergillosis is the second most common fungal infection requiring hospitalization in US.

Penicillium is a very common genus found in soil, food, paint, carpet, wallpaper, and in interior fiberglass insulation. Penicillium can grow indoors in water-damaged buildings on wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint. The Penicillium genus has multiple individual species, some of which are reported to be allergenic, with some species being able to produce mycotoxins. The pathology to humans includes allergies (eg. hay fever, asthma), moldy wall hypersensitivity, and hypersensitivity pneumonitis.

SITE OBSERVATIONS

BEC observed suspect (and verified) fungal growth on the concrete walls in both bathrooms in the basement. Water damage and suspect fungal growth were also observed throughout the rest of the building on the wood ceiling, wood walls, wood door frames in the basement, etc. (see attached photos).

It should also be noted that there were dead mice and mouse droppings observed throughout the building, which poses a potential bacteria problem.

Temperature and relative humidity (RH) readings were collected within the Site utilizing a Moisture Relative Humidity Meter. The temperature throughout the Site averaged 68 degrees Fahrenheit. The relative humidity (RH) averaged 63%.

BEC also collected moisture readings within the Site utilizing the Extech. The wood walls throughout the building had normal moisture content of 23%-37%. The associated baseboards had elevated moisture content of 50%-80%.

CONCLUSIONS/RECOMMENDATIONS

Based on the air and swab sample analysis results, the Site has a significant mold/fungi problem and potential bacteria issue, at the time of this assessment.

The first step in eliminating potential mold/fungi problems would be to eliminate any water/moisture intrusion problems. BEC understands that some of the copper water lines within the Site have leaked in the past. Once the moisture issues have been identified, addressed, and corrected, the following recommendations would apply.

BEC recommends that a Professional Remediation Contractor, licensed and or trained to perform mold and asbestos remediation, conduct the following remediation under controlled conditions (requires the use of a negative pressure system with HEPA filtration, personal protective equipment, etc.).

BEC recommends that all building materials (i.e., wood baseboards, rotted wood walls, ceilings, and door frames, insulation, etc.) should be abated, abatement of these materials should continue 2 feet past any visible water damage or mold growth. All substrate materials (i.e., intact wood walls and ceiling, wood floors, concrete walls and floors, etc.)

should be cleaned and scrubbed with an anti-microbial solution and then sprayed with an approved fungicide.

After all remediation work has taken place, the Site should be fogged with an anti-microbial solution. Relative humidity within the Site should be maintained between 30% and 50%.

Once all remediation work has taken place, BEC recommends that another visual inspection along with another round of air sampling be completed to determine if airborne concentrations of Aspergillus/Penicillium species have been reduced to concentration less than the Control Sample.

BEC is not responsible for design of repair and/or renovation activities following remedial work or repairs to correct moisture intrusions. Please be advised that BEC makes no representation or warranties regarding the cause of moisture intrusion or for further moisture intrusion, whether from civil or structural, sewer or water line, or storm water defects or events. The Customer will hold BEC harmless in the event of future moisture intrusions and subsequent mold growth and BEC is not responsible for determining or repairing the cause and effect of any future moisture intrusions.

Please contact us at 223-7335 if you have any questions or would like further information regarding this project.

Sincerely,

BADLANDS ENVIRONMENTAL CONSULTANTS, INC.



James D. McGurran
President/CEO

Attachments

Site Photos



Photo 1: Visible water damage and spotting on the wood ceiling in the gym.

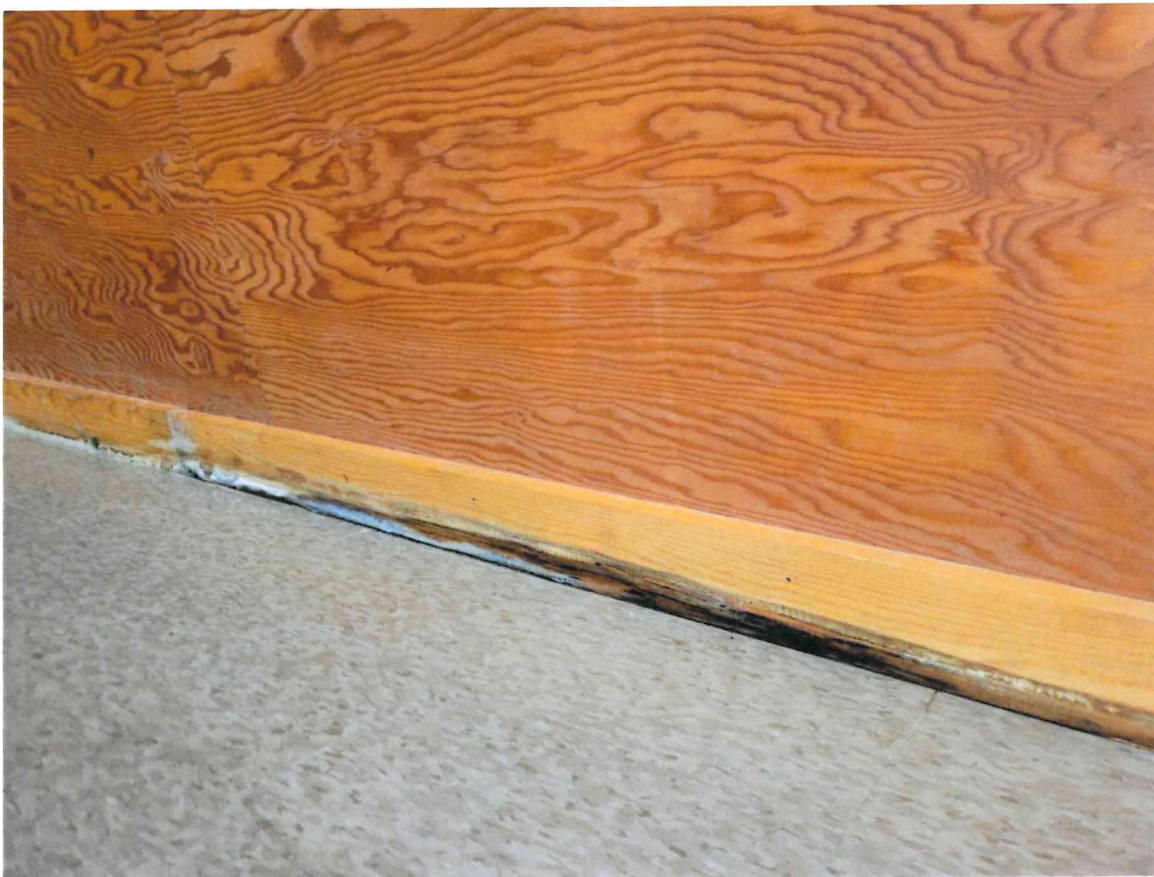


Photo 2: Visible water damage and spotting on wood baseboards and walls in the gym (moisture content 23-80%).

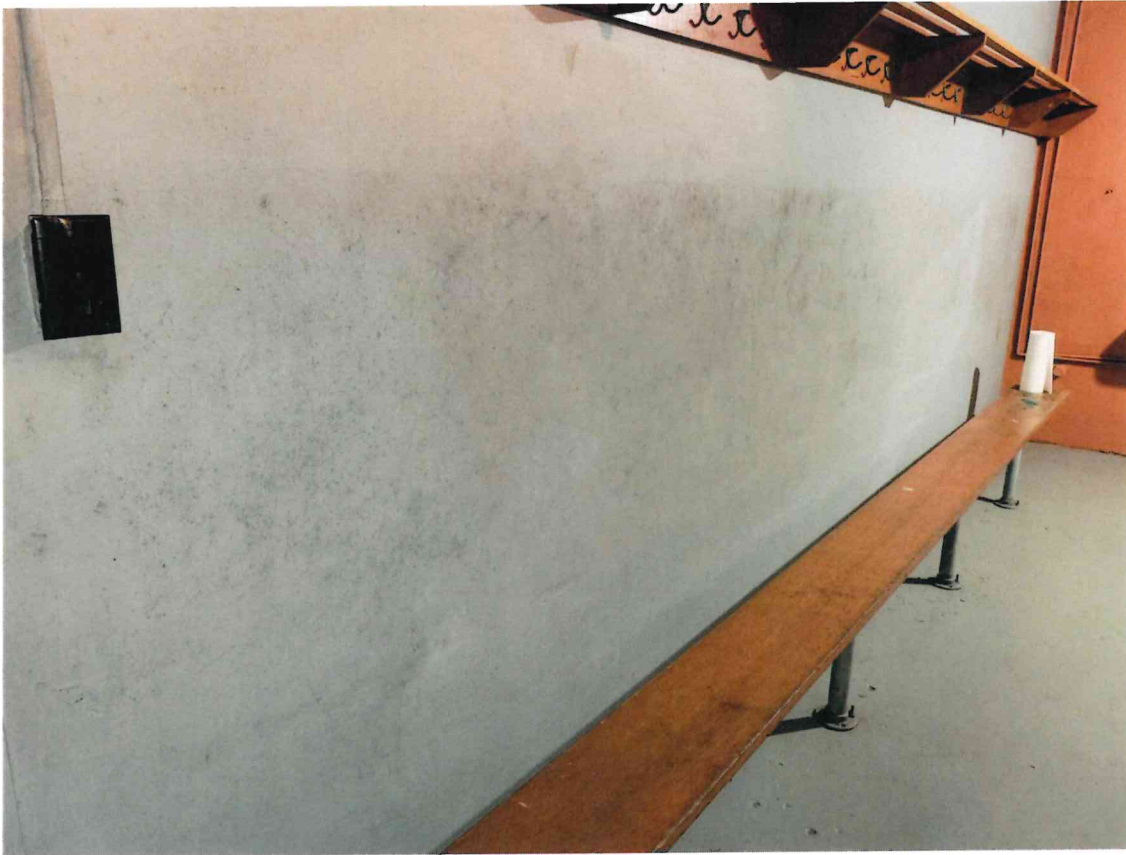


Photo 3: Visible mold growth on concrete walls throughout the basement.



Photo 4: Closet up of photo 3 (Where swab sample was collected).



Photo 5: Visible water damage and spotting on wood door frames throughout the basement.



Photo 6: Visible water damage and spotting on wood walls and baseboards on the stage.



Photo 7: Dead mice and mouse droppings throughout the building.

**Hayes Microbial
Consulting
Laboratory Report**



#24043459

Analysis Report prepared for

Badlands Environmental Consultants, Inc.

1008 E. Central Ave
Bismarck, ND 58501

Phone: (701) 223-7335

P24-0387
Mercer Community Center
Max Street
Mercer, ND 58559

Collected: **September 27, 2024**
Received: **October 1, 2024**
Reported: **October 1, 2024**



We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 3 samples by FedEx in good condition for this project on October 1st, 2024.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. Information supplied by the customer can affect the validity of results. These results apply only to the samples as received. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

All information provided to Hayes Microbial is confidential information relating to our customers and their clients. We will not disclose, copy, or distribute any information verbally or written, except to those designated by the customer(s). We take confidentiality very seriously. No changes to the distribution list will be made without the express consent of the customer.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

A handwritten signature in black ink that reads 'Stephen A. Hayes'.

Steve Hayes, BSMT(ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC.

EPA Laboratory ID: VA01419

Lab ID: #188863

DPH License: #PH-0198


Sample Number*	1		2			
	Outside Control Sample		Throughout Building			
Sample Name*	Count / m³	% of Total	Count / m³	% of Total		
Sample Volume*	75 L		75 L			
Reporting Limit	13 spores/m³		13 spores/m³			
Background	2		2			
Fragments	747/m³		ND			
Organism	Raw Count	Count / m³	% of Total	Raw Count	Count / m³	% of Total
Alternaria	8	110	5.8%	4	53	3.7%
Ascospores	20	270	14.5%	94	1300	87.0%
Aspergillus Penicillium	51	680	37.0%	2	27	1.9%
Basidiospores						
Bipolaris Drechslera						
Chaetomium						
Cladosporium	58	770	42.0%	8	110	7.4%
Curvularia						
Epicoccum						
Fusarium						
Memnoniella						
Myxomycetes	1	13	<1%			
Pithomyces						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Total	138	1843	100%	108	1490	100%


Water Damage Indicator: Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality

* indicates data provided by the customer

HAYES
 MICROBIAL CONSULTING

Collected: **Sep 27, 2024** Received: **Oct 1, 2024** Reported: **Oct 1, 2024**

Project Analyst: Andrew Shields,  Date: **10 - 01 - 2024**

Reviewed By: Steve Hayes, BSMT  Date: **10 - 01 - 2024**

3005 East Boundary Terrace, Suite F, Midlothian, VA. 23112 (804) 562-3435 contact@hayesmicrobial.com

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#24043459

P24-0387
Mercer Community Center
Max Street
Mercer, ND 58559

Kayla DeHaven
Badlands Environmental Consultants, Inc.
008 E. Central Ave
Bismarck, ND 58501
(701) 223-7335

Direct Analysis
SOP - HMC#102

Mycelial Estimate

Spore Estimate

Organism

Many

Moderate

Alternaria

Swab (1.00 cm2*)

3 - Basement Women's Bath - Concrete Wall

#3

* indicates data provided by the customer



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Reporting Limit

The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.

Blanks

Results have not been corrected for field or laboratory blanks.

Background

The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of Aspergillus and Penicillium may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows:

NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)

- 1 : <5% of field occluded. No spores will be uncountable.
- 2 : 5-25% of field occluded.
- 3 : 25-75% of field occluded.
- 4 : 75-90% of field occluded.
- 5 : >90% of field occluded. Suggested recollection of sample.

Fragments

Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.

Control Comparisons

There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

Water Damage Indicator
Common Allergen
Slightly Higher than Baseline
Significantly Higher than Baseline
Ratio Abnormality

Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.

Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.

Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.

Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.

Violet: The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.

Color Coding

Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.

Significant Figures

Raw counts and column totals may reflect more than 2 significant figures, but results should only be considered significant to 2 figures.



Spore Estimate	Percentages
ND	0%
Rare	< 1%
Light	1-10%
Moderate	11-25%
Heavy	26-50%
Very Heavy	51-100%

Mycelial Estimate	Percentages
ND	None Detected No active growth at site.
Trace	Very small amount of Mycelium Probably no active growth at site.
Few	Some Mycelium Possible active growth at site.
Many	Large amount of Mycelium Probable active growth at site.

Alternaria	Habitat: Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces. Health Effects: A common allergen and has been associated with hypersensitivity pneumonitis. Alternaria is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.
Ascospores	Habitat: A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report. Health Effects: Health affects are poorly studied, but many are likely to be allergenic.
Aspergillus/Penicillium	Habitat: The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates. Health Effects: This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.
Basidiospores	Habitat: A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings. Health Effects: Common allergens and are also associated with hypersensitivity pneumonitis.
Cladosporium	Habitat: One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts. Health Effects: A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.
Myxomycetes	Habitat: Found on decaying plant material and as a plant pathogen. Health Effects: Some allergenic properties reported, but generally pose no health concerns to humans.

Badlands Environmental Consultants, Inc.
 1008 E. Central Ave
 Bismarck, ND 58501



SHIP: FEDEX - ENV 50
 DATE: 10-01-2024



Job Name: Mercer Community Center
 Max Street
 Mercer, ND 58559

Job Number: 824-0387
 Collector: Kayla DeHaven
 Date Collected: 9-27-24

Mobile: badlands@midconetwork.com
 Email: badlands@midconetwork.com

Analysis Type	Analysis Description	Turnaround	Accepted Media Types
Spore Trap	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
S			
S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

#	Number	Sample	Analysis	Volume	Notes
1	1 MD	outside Central Sample	S	75	
2	2	Thrausmont Building	S	75	TEMP 68% RH 6:30
3	3 SW	Basement + womens Bath - Concrete wall	D	-	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

Released by: *[Signature]* Date: 9-27-24 Received By: *[Signature]* Date: 10/1