RPS RICHMOND PUBLIC SCHOOLS

Indoor Air Quality Update

October 9, 2023

Dear Families and Staff,

We are writing to update you on concerns regarding the presence of mold at Fox at Clark Springs. The safety and wellbeing of our students and staff is our top priority and we want to ensure that you are well-informed about the situation.

To accurately assess the extent of the issue, we commissioned a professional mold testing company to conduct comprehensive tests. A detailed report of the findings outlining the types and levels of mold identified as well as recommended remediation steps is attached. We encourage you to review this report to gain a better understanding of the situation. Before going any further, we want to note that, while there is some mold present in the building, the testing company indicated that the building is safe for occupancy.

In response to the findings, we have taken and will continue to take the following steps:

- Immediate Mitigation: We have initiated immediate measures to address the mold issue, including isolating, cleaning, and disinfecting the affected areas, and implementing improved ventilation and moisture control measures.
- Ongoing Monitoring: Our Facilities Department will continue to monitor the affected areas and conduct regular follow-up inspections to ensure that the mold is effectively addressed and that the building remains safe.
- Communication: We are committed to keeping you informed throughout this process and will provide updates as necessary. Please contact us with any questions or concerns you may have.

We understand that the presence of mold in any of our schools is a cause for concern, and we want to assure you that we are taking all necessary steps to address the issue promptly and effectively. If you have any questions or require further clarification, please do not hesitate to reach out.

Thank you for your understanding and cooperation as we work to maintain a safe and healthy learning environment for our students and staff.

Sincerely,

Jason Kamras
Superintendent

MOLD AND MOISTURE ASSESSMENT REPORT

FOX AT CLARK SPRINGS ELEMENTARY SCHOOL

1101 DANCE STREET
RICHMOND, VIRGINIA 23220

ECS PROJECT NO. 47:14153-A

FOR: RICHMOND PUBLIC SCHOOLS FACILITY SERVICES

OCTOBER 4, 2023

October 4, 2023

Mr. Lloyd Schieldge
Richmond Public Schools Facility Services
1461-A Commerce Road
Richmond, Virginia 23224
lschield@rvaschools.net

ECS Project No. 47:14153-A

Reference: Mold and Moisture Assessment, Fox at Clark Springs Elementary School, 1101 Dance Street, Richmond, Virginia

Dear Mr. Schieldge:

ECS Mid-Atlantic, LLC (ECS) is pleased to provide Richmond Public Schools Facility Services with the results of the above referenced Mold and Moisture Assessment performed at Fox at Clark Springs Elementary School located at 1101 Dance Street in Richmond, Virginia. This report summarizes our observations, analytical results, findings, and recommendations related to the work performed. The work described in this report was performed by ECS in general accordance with the Scope of Services described in ECS Proposal Number 47:47:30196-EP and the terms and conditions of the agreement authorizing those services.

ECS appreciates this opportunity to provide Richmond Public Schools Facility Services with our services. If we can be of further assistance to you, please do not hesitate to contact us.

Sincerely,

ECS Mid-Atlantic, LLC

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1.0 PROJECT DESCRIPTION

The buildings located at 1101 Dance Street in Richmond, Virginia are a school building and four classroom trailers known as Fox at Clark Springs Elementary School. The building was reportedly originally constructed sometime in the late 60's or early 70's, and underwent major renovations in 1989.

ECS understands that the students and faculty of the school have observed evidence of mold or moisture intrusion in the building and have been experiencing allergic type-symptoms when in the building.

Richmond Public Schools Facility Services has requested ECS to conduct a mold and moisture assessment of the building and the four (4) classroom trailers to determine if a source of water intrusion or mold growth is present and prepare a general mold remediation protocol to provide remediation recommendations.

ECS previously performed mold and moisture testing in the school in the Spring of 2022 and prepared a Mold and Moisture Assessment and Asbestos Sampling Report project #47:14153 dated March 21, 2022. This report identified mold and moisture impacted building materials and provided remediation recommendations. Remediation work and cleaning was performed following ECS initial assessment. ECS was not present for any remediation work and cannot comment on the extent of remediation that was performed. ECS returned to the site and performed follow up spore trap air sampling in areas that ECS had identified as elevated which indicated that the airborne mold spore levels had decreased.

2.0 PURPOSE

The purpose of the Mold and Moisture Assessment was to conduct visual observations and testing for mold and moisture to identify evidence of moisture-affected building materials or selective amplification of mold within tested areas of the subject building.

3.0 METHODOLOGY

ECS performed the authorized Scope of Services in general accordance with our proposal, standard industry practice(s) and methods specified by guidelines and industry standards for the identification of mold and moisture-affected building materials.

Mold and Moisture

The assessment included a non-invasive visual and olfactory survey for evidence of mold and moisture within the school building and four (4) classroom trailers. The assessments focused on the client-selected areas indicated by Richmond Public Schools Facility Services which including requesting duplication of the parameters of the testing for the previous report. The ECS site personnel observed readily accessible areas and selected building materials to evaluate visible suspect fungal growth and/or moisture impacted materials. A reasonable effort was made to identify water and mold impacted areas; however, this does not imply a guarantee that all possible reservoirs of mold were identified because mold or water-impacted building materials may be hidden by walls,

flooring, partitions, etc. ECS could not safely access the ceiling cavity in the multi-purpose room or any of the areas beneath the classroom trailers. Mold and moisture impacted building materials may be present in these areas.

Ambient temperature, relative humidity, and dewpoint temperature were measured during the survey using a TSI Q-Trak Model 7545 IAQ meter. The purpose of these measurements was to identify elevated interior humidity levels, which could potentially support indoor mold growth or indicate ongoing moisture problems.

Selected potentially moisture-affected materials were tested using a Delmhorst Model BD 2100 moisture meter to evaluate moisture content. Based on the Delmhorst moisture meter settings, moisture levels greater than 1.0% are considered elevated for drywall or other gypsum materials, and greater than 17% is elevated for wood-based materials. This was not a comprehensive moisture mapping survey of all building materials within the areas surveyed but rather a non-invasive survey of moisture in select areas of specific building materials which may be impacted by moisture.

ECS measured the moisture content in various building materials in multiple locations within the surveyed areas utilizing a Protimeter brand hand-held moisture meter. The instrument may be operated in two independent modes. The non-destructive “search mode” uses radio-frequency induction to detect moisture in a substrate. Using the search mode, the Protimeter is capable of detecting moisture in solid, homogeneous materials at depths up to 10 millimeters (0.39 inches). When operated in search mode, the Protimeter produces qualitative readings (“dry”, “at risk”, “wet”) along with a relative numerical reading corresponding to the appropriate qualitative reading. The Protimeter may also be used in “measure mode” to obtain actual moisture percentage readings in wood and other solid, non-conductive materials. Measurements are taken by inserting the pins of a moisture probe into the material being tested. For wood substrates, the moisture percentage is expressed as “% Moisture Content (MC)”; for other materials this number is expressed as “% Wood Moisture Equivalent (WME)”. In general, %MC or %WME values of less than 17 are considered “dry”, values greater than or equal to 17 but less than 20 are considered “at risk” for moisture damage, and values of 20 or greater are considered “wet”. Values of greater than 17 % typically are considered at risk for mold growth. This was not a comprehensive moisture mapping survey of all building materials within the areas surveyed but rather a non-invasive survey of moisture in select areas of specific building materials which may be impacted by moisture.

Fungal spore air samples were collected by means of a self contained battery operated Zefon pump and Allergenco® cassettes. Samples were transported to Environmental Hazards Services located in Richmond, Virginia for analysis. Environmental Hazards Services is accredited by the Environmental Microbiology Laboratory Accreditation Program, administered by the American Industrial Hygiene Association. Air samples were reported to the genus or group level according to the laboratory standard quantification procedures.

It is important to note that fungal spore samples represent a snapshot in time of a constantly changing microbiome. Environmental conditions such as temperature and humidity may influence sample results. The goal of the sampling performed was not to establish precise numerical concentrations over time, but rather to generally identify the dominant fungi in the sampled locations and the general significance of their relative concentrations as compared to outdoor concentrations or unaffected locations.]

4.0 RESULTS

The following is a summary of laboratory results, measurements, findings and observations.

4.1 Mold and Moisture

Below is a summary of the sampling data collected as part of this evaluation.

- Water stained ceiling tiles were observed sporadically throughout the classrooms of the building;
- Ceiling tiles with mold impact (on the exterior face of the tile) were observed in rooms 104, 118, the Multi-purpose Room, Conference Room (locker room), the exit vestibules and storage rooms in the South wing, the bathrooms between classrooms in the North wing and the staff locker room; It is anticipated that mold is present on the backside of the ceiling tile.
- Suspect mold was observed on some of the ceiling tiles above the entrance in the Multi-purpose Room. ECS could not access these ceiling tiles for tape lift or moisture testing.
- Mold was observed on the fan coil hot water return loop pipe insulation observed throughout the building as previously identified in ECS's previous report Clark Springs Elementary School - Mold and Moisture Assessment and Asbestos Sampling Report reference ECS report 47:14153 dated March 21, 2022.
- Evidence was observed that the condensate drains for the fan coils for many of the classrooms were clogged and condensate moisture is pooling and infiltrating back into the perimeter classroom walls.
- Evidence of mold staining was observed on the back of the older fissure style ceiling tiles throughout many of the classrooms. Tape lift samples were collected from two (2) classroom locations which indicated the presence of mold spores but not a direct indication of mold growth.
- Water and mold impacted ceiling tiles were observed in the ceiling cavity in room 118. The ceiling tiles appeared to have been previously impacted and then pushed into the ceiling cavity when a new ceiling tile was installed. ECS also observed this sporadically in a number of classrooms throughout.
- In the North wing ECS observed sporadic rodent droppings above the ceilings (on top of the ceiling tiles).
- The interior relative humidity measured in many of the classrooms was elevated above the recommended EPA and industry range of 30% to 60%.
- The blown-in insulation in the soffit around the perimeter classrooms and fiberboard panels above the windows in the library and cafeteria were visibly discolored and stained in some areas. This appears to indicate infiltration of outdoor air and potential moisture through gaps in exterior soffits and corrugated fascia panels.
- On the exterior ECS observed some of the window glazing missing from some of the windows. Some of the exterior walls also had cracks or missing mortar joints.

4.1.1 Spore-Trap Air Samples

Fungal spore-trap air samples were collected from all the classrooms and common areas where students or faculty occupy the building. Representative exterior samples were collected for comparison. The following table summarizes the results of sample analysis reported in spore counts per cubic meter of air.

Spore-Trap Sample Results

Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter)
Inside the Building, September 21, 2023		
A1	Outside	4,400
A2	101	420
A3	102	290
A4	103	710
A5	104	1,300
A6	105	570
A7	106	890
A8	107	450
A9	108	650
A10	GAA/Ms. Spencer	1,000
A11	Cafeteria	470
A12	Kitchen	490
A13	Library	Nothing Observed* (see note below)
A14	Nurse's Office	390
A15	Office Lobby	550
A16	Outside	20,000
A17	Multi-purpose Room	620
A18	Conference Room (Locker Room)	230
A19	Faculty Lounge	310
A20	109	310

Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter)
A21	110	130
A22	111	300
A23	112	160
A24	113	53
A25	114	67
A26	CIS Site Coordinator	40
A27	Schauer	110
A29	115	53
A29	116	33
A30	117	660
A31	118	180
A32	119	190
A33	120	160
A34	Outside	8,200
Trailers, September 25, 2023		
3689 9182	Outside	2,000
3689 9183	#1	720
3689 9197	#2	1,800
3689 9154	#3	400
3689 9180	#4	320
3689 9176	Outside	2,200

* No particulate or mold spores were observed by the laboratory on this spore trap cassette.

Discussion:

The mold spore trap air samples results for the school building and the trailers indicated that generally, the total indoor spore counts were less than the spore counts of the outdoor samples. Elevations of certain fungal genera were present however on the samples collected in Rooms 103, 104, 106, GAA/Ms. Spencer's area, the Multi-purpose Room and Room 117. The elevations were apparently being caused by the active roof leaks or other water intrusion concerns observed in these areas and the mold impacted materials also observed. Of all of the samples collected, the

most significantly elevated air sample for mold was detected on the sample collected in the Room 104. Visible mold and an active leak were observed on ceiling tiles associated with a leaking hydronic piping valve above the ceiling at the entrance to Room 104. The other areas where elevations were noted were in locations where visible mold was present or present in adjacent rooms.

There are currently no accepted regulatory standards or guidelines with respect to acceptable fungal levels inside buildings. Generally total spore counts and fungal genera detected on spore trap samples collected on the interior should be comparable to and less then outdoor samples. It is important to note however that spore trap measurements can fluctuate rapidly and the readings reported should not be used as a definitive indication that mold and or health hazards related to mold are present or absent.

4.1.2 Direct Surface Fungi Samples

Direct tape lift samples were collected from classrooms 112 and 118. Sample locations were selected from areas suspected to have fungal spore concentrations present due to water staining on building materials, visible mold growth, or other observations made by ECS indicative of possible fungal spore growth. The following table summarizes the results of sample analysis. The laboratory reports the results in accordance with the following density rating:

- Occasional: 1-5 spores seen per cover slip, growth not likely
- Few: Over 5 spores seen per cover slip, but less than 1 spore seen in 5 fields:, possible indication of growth
- Moderate: At least 1 spore seen in 5 fields, probable indication of growth
- Numerous Several spores seen in every field, indication of growth
- N/A: Not applicable

Direct Surface Fungi Samples

Sample Number	Sample Location	Type and Density Rating
T1	Back of Ceiling Tile in Room 113	Few - basidiospores, Cladosporium spores,smuts, Periconia, myxomycetes, hyphal elements Occasional - Bispora spores, Arthrinium spores, Torula spores, ascospores and Alternaria spores Occasional to Few - Pithomyces spores, Stachybotrys spores, pollen grains

Sample Number	Sample Location	Type and Density Rating
T2	Back of Ceiling Tile in Room 118	Few - hyphal elements, ascospores, basidiospores Occasional - Alternaria spores, pollen grains, Epicoccum spores, Pithopmyces spores, Bispora spores, Cladosporium spores and Drechslera/ Bipolaris group spores

During the survey ECS observed apparent surface mold staining on the back of older fissure style ceiling tiles mainly in the classroom wings. ECS collected a direct tape lift sample from two ceiling tiles that were in Room 113 and Room 118. The results indicate that mold spores are present but that a source of growth is not likely present. It appeared that the older fissure style ceiling tiles all showed this evidence of light surface mold staining on the backs of the ceiling tiles. These ceiling tiles are present in the school anywhere they have not been previously replaced and are still present in areas all over the school. ECS believes that the condition may be caused by a temperature and relative humidity differential between the classroom and the ceiling cavity that are causing conditions in the cavity to encourage mold growth during the cooling season. ECS does not believe that the surface mold on the ceiling tiles is necessarily contributing to or is a direct source of any airborne mold spore elevations.

There are currently no accepted regulatory standards or guidelines with respect to acceptable fungal levels inside buildings. Surface samples are generally qualitative in that they reflect the type and quantity of mold present only at the sampled location at the time the sample was collected.

4.1.3 Moisture in Building Materials

The following table summarizes moisture content readings collected.

Summary of Moisture Readings from Building Materials

Location	Building Component	Substrate Material	Moisture Content (%)
Room 104	Ceiling	Ceiling Tile	90.0
Room 106, Bathroom	Ceiling	Ceiling Tile	71.0
Room 112	Floor	Concrete	89.0
Room 104, Bathroom	Floor	Sheet Floor and concrete	22.7

Elevated moisture meter readings were detected in ceiling tiles in room 104 , the room 106 bathroom and the exit vestibule outside room 117 from visibly active leaks from plumbing valves above these areas.

Elevated moisture readings were also measured around the floors and walls by the fan coil units in classrooms 109, 111 and 112; ECS observed these were classrooms with backed up condensate drains on the exterior. It is likely this is a common issue wherever there are clogged condensate drains draining back up against the building.

Elevated moisture meter readings indicated elevated moisture around the base of the toilet in the room 104 bathroom.

4.1.4 Temperature and Relative Humidity

The following table summarizes the indoor air temperature and relative humidity readings collected by ECS from various locations.

Temperature and Relative Humidity

Location	Relative Humidity (%)	Temperature (°F)
School Interior, September 21, 2023		
Outside	50.2	78.4
101	58.5	71.7
102	59.2	71.8
103	62.3	69.7
104	51.4	74.0
105	61.5	73.8
106	62.2	70.0
107	61.9	69.9
108	69.4	68.8
Cafeteria	61.1	70.1
GAA/Ms. Spencer	58.3	71.9
Kitchen	60.0	74.3
Library	62.6	70.7
Nurse's Office	59.1	70.2
Office Lobby	57.2	70.1
Multi-purpose Room	47.5	71.1

Location	Relative Humidity (%)	Temperature (°F)
Conference Room (Locker Room)	51.1	73.3
Faculty Lounge	49.6	74.1
109	59.3	70.5
110	60.5	70.2
111	60.2	71.2
112	58.1	72.6
113	55.7	71.2
114	60.3	69.7
CIS Site Coordinator	58.3	72.6
Schauer	58.3	70.6
115	60.6	68.4
116	67.1	67.3
117	65.2	69.8
118	63.7	69.6
119	61.7	70.7
120	60.3	67.8
Outside	69.4	71.1
Classroom Trailers, September 25, 2023		
Outside	60.0	75.0
Trailer 1	38.0	75.0
Trailer 2	49.8	71.0
Trailer 3	50.0	71.5
Trailer 4	58.3	74.8

ANSI/ASHRAE 55 recommends a relative humidity range of 20% to 65% and US EPA recommends maintaining relative humidity (RH) below 60%, ideally 30 to 50%, to prevent mold growth. The relative humidity levels were elevated above recommended ranges in many of the classrooms and some of the student common areas like the library and the cafeteria. In general the temperature and relative humidity associated with the trailers was within the recommended ranges.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our understanding of the purpose of the Mold and Moisture Assessment, the results of laboratory analysis, and our findings and observations, ECS presents the following recommendations.

Mold and Moisture

Below is a summary of our primary findings and observations and preliminary recommendations for response. ECS has also detailed more extensive recommendations further in this report for most of the individual items highlighted.

School Building

1. Water stained ceiling tiles were observed sporadically throughout the classrooms of the building; **Recommendation:** Remove and replace water impacted ceiling tiles during school off-hours (including tiles abandoned above the drop ceiling); Verify that the roof leaks or condensation/plumbing leaks have been repaired in these areas.
2. Ceiling tiles with mold impact (on the exterior face of the tile) were observed in rooms 104, 118, the Multi-purpose Room, Conference Room (locker room), the exit vestibules and storage rooms in the South wing, the bathrooms between classrooms in the North wing and the staff locker room; It is anticipated that mold is present on the backside of the ceiling tiles. **Recommendation**; Same as #1; Take precautions to minimize disturbance of mold when removing ceiling tile. Please see recommendations further in this report for ppe and training.
3. Suspect mold was observed on some of the ceiling tiles above the entrance into the Multi-purpose Room. ECS could not access these ceiling tiles for tape lift or moisture testing. **Recommendation**; Use a lift to access these tiles for inspection to determine if they are mold impacted. Follow recommendation #2 if it is determined they are; Take precautions to minimize disturbance of mold when removing ceiling tiles.
4. Mold was observed on the fan coil hot water return loop pipe insulation observed throughout the building as previously identified in ECS's previous report reference ECS report 47:14153 Clark Springs Elementary School - Mold and Moisture Assessment and Asbestos Sampling dated March 21, 2022. **Recommendation**; contract a qualified Mold Remediation Contractor to remove the mold impacted pipe insulation, correct the condensation or leaking of the pipe and have a qualified insulation contractor re-insulate the pipe runs. Reference recommendations further in this report as far as containment, ppe, training etc.
5. Evidence was observed that the condensate drains for the fan coils for many of the classrooms were clogged and condensate moisture is pooling and infiltrating back into the perimeter classroom walls. **Recommendation**; Inspect and clear the clogged drains. Open up and inspect the fan coil units and adjoining chases throughout the school for evidence of mold and moisture. Individually these areas may need to be dried out. If suspect mold is observed address as recommended further in this report. ECS also observed that the fan coil units and associated filters appeared dirty and should be cleaned and/or under routine preventive maintenance/inspection/cleaning. With regards to the condensate drain issues, once the school switches to heating season this issue should subside until cooling season begins.

6. Evidence of mold staining was observed on the back of the older fissure style ceiling tiles throughout many of the classrooms and common areas. Tape lift samples were collected from two (2) classroom locations that indicated surface mold staining but not active growth. **Recommendation**; It is unclear if this is a concern. This condition may be due to humidity in the ceiling cavity. ECS recommends further review by a building envelope engineer to address if humidity in the ceiling cavity is creating a potential moisture issue for the building.
7. Water and mold impacted ceiling tiles were observed in the ceiling cavity in room 118. The ceiling tiles appeared to have been previously impacted and then pushed into the ceiling cavity when a new ceiling tile was installed. ECS also observed this sporadically in a number of classrooms throughout the building. **Recommendation**: See recommendation #1 and #2.
8. In the North wing ECS observed sporadic rodent droppings above the drop ceilings (on top of the ceiling tiles). **Recommendation**; Consult with pest control to see if there is an active or an on-going concern with rodent infestation and correct. With regards to remediation, ECS recommends further discussions with the facilities. As a temporary measure minimizing any disturbance of droppings is important to prevent generation of dust (i.e. lifting ceiling tiles) until they can be properly cleaned up. Usually, this involves removal of the impacted ceiling tiles under controlled conditions. See also recommendations further in this report for ppe and training.
9. In the North wing ECS observed elevated moisture readings associated with the base of the toilet in the Room 104 bathroom. This may indicate that the wax ring on the toilet is failing and water is infiltrating beneath the bathroom flooring material. **Recommendation:** Inspect the wax rings of all the toilets in the North wing and remove and replace them as needed by a qualified plumbing contractor or maintenance technician.
10. The interior relative humidity measured in many of the classrooms was elevated above the recommended EPA and industry range of 30% to 60%. **Recommendation**: ECS recommends further review by a building envelope engineer and mechanical contractor as the issue maybe interrelated.
11. The blown-in insulation in the soffit around the perimeter classrooms and fiberboard panels above the windows in the library and cafeteria were visibly discolored and stained in some areas. This appears to indicate infiltration of outdoor air and potentially moisture through gaps in the exterior corrugated soffit panels. **Recommendation**: ECS recommends further review by a building envelope engineer for the appropriate corrective action.
12. On the exterior ECS observed some of the window sash glazing missing in some of the windows and there were gaps in the exterior masonry wall where mortar was missing or the brick was damaged or cracked. **Recommendation**: ECS recommends further review by a building envelope engineer for the appropriate corrective action.

<u>Trailers</u>

- Evidence of moisture intrusion or mold growth was not observed within the interior of the four (4) on-site trailers.
- An area of the trailer skirt was damaged on trailer 2 in between trailer 2 and trailer 3. Recommendation: Repair the skirt in this area to help prevent water infiltration beneath the trailer.

General Recommendations

ECS recommends remediation be performed for all water and mold impacted materials within the surveyed areas as soon as reasonably possible. This includes all materials that have visible suspected mold and/or have been subjected to elevated moisture conditions for greater than 48 hours without proper drying efforts.

ECS recommends that a qualified mold remediation/drying contractor be retained to properly remove mold impacted materials. Remediation activities should be performed in general accordance with the guidelines described in EPA's March 2001 document "Mold Remediation in Schools and Commercial Buildings" and under the OSHA 2010 Guidelines for mold removal. Additional remedial guidance documents are also referenced in Section at the end of this report. Workers performing this work should wear proper personal protective equipment (PPE) including HEPA filtered respirators and disposable clothing (per OSHA standards for PPE).

Correction of building envelope and water intrusion issues should be performed prior to or concurrent with the mold abatement activities.

Setup

In general accordance with the EPA and OSHA guidelines, ECS recommends containment of the remediation areas using plastic barriers and tape to create negative pressure containment during removal of mold impacted materials. The contractor should seal HVAC vents in the work area(s), as well as all other penetrations and openings. A HEPA-filtered local exhaust ventilation (negative air machine) should be utilized within the work area directly adjacent to the area(s) being cleaned and should maintain negative pressure and HEPA filtration continuously inside the containment during remediation activities and prior to clearance sampling. If greater than 100 square feet, or an occupied area adjacent to 30 square feet or more: A manometer should be used to measure the pressure difference between the remediation area and adjacent areas. The target pressure differential in the containment should be -0.02 inches of water gauge.

Scope of Work

General: All impacted building materials that have visible growth and/or have sustained water impacts should be removed in excess of 2 feet beyond the visible extent of mold or water stains where feasible. Further observation of the wall and ceiling systems may be necessary during remediation efforts to determine if additional materials will need to be removed. This includes various ceiling tiles and pipe insulations in areas throughout the school. As noted previously any active moisture leaks into the building should be properly accessed and corrected prior to or concurrent with mold remediation activities.

The mold impacted pipe insulation (associated with fan coil hot water return loop) was observed in the connector hallway and adjacent bathrooms, the exit vestibules and storage rooms near room 111 and 118, the side of the building with the Multi-Purpose Room and the Media Center, Cafeteria and classrooms in the North wing. This pipe system insulation should be abated anywhere it exists in the building and the piping should be properly re-insulated by a qualified insulation contractor.

Water and mold impacted ceiling tiles were observed in various areas throughout the school. ECS recommends that all the water and mold impacted ceiling tiles be removed and replaced by a qualified mold remediation contractor. ECS recommends further investigation be performed into all the areas above impacted ceiling tiles to determine the cause of the water intrusion and how to correct it.

The fan coil units in each of the classrooms should be properly cleaned and maintained per the manufacturer's recommendations. ECS recommends that the fan coil condensate drains be inspected and cleaned as needed to prevent condensate water from impacting the building envelope. ECS recommends further investigation into each of the fan coil chases in each classroom to investigate for mold or moisture impacted building materials and clean, remove or dry them as needed.

Following remediation/removal of mold-impacted materials, ECS recommends that the contained areas of the building undergo a thorough cleaning following guidelines described in EPA's March 2001 document “Mold Remediation in Schools and Commercial Buildings.” Surface remediation should include HEPA vacuuming of vertical and horizontal surfaces and a clean-wipe with a mild detergent. The surfaces should not be saturated and discard cleaning cloths. All areas (affected and unaffected) should be left dry, visibly free from contamination and debris prior to build back activities.

Although not accessible during the survey, ECS is concerned that underlying structural materials (CMU walls, wood framing, poured concrete, etc…) contain excess moisture which will need to be thoroughly dried prior to installation of new materials. Where elevated moisture is still present in building materials, mechanical drying efforts should be performed. The use of portable dehumidifiers should be implemented immediately. Following removal of mold-affected materials and fine cleaning, the fans should also be utilized to accelerate drying efforts. For large areas with significant moisture load, the use of desiccant de-humidification systems should be considered.

Follow-up

Prior to removal of the containment barriers, a post-remediation survey and testing should be performed to assess the remediation efforts. Visible suspect mold and moisture-affected porous materials should not be present in the work area (although ECS recognizes that some semi-porous materials may still have stains present following cleaning). The moisture content of materials that have been dried or cleaned and will remain should be confirmed to be below recommended guidelines prior to re-construction of new materials. The indoor relative humidity in and around the work area should also be maintained below 60%.

Air sampling should be performed by fungal spore trap method to document mold levels following remediation efforts prior to re-occupancy of the building. Total spore counts and fungal genera found on indoor samples should be generally comparable to, and less then spore counts found on outdoor samples collected.

Water staining was observed on the other paper wrapped pipe insulation systems in the building but elevated moisture levels or visible mold were generally not observed. These water stained areas of pipe insulation should be investigated further for active moisture leaks. ECS does not believe at this time that this water stained pipe insulation should cause elevations in airborne mold spores unless active moisture leaks or condensation are occurring.

ECS recommends that further investigation be performed of the fiberboard wall material in the cafeteria and library and spray-in fireproofing in the soffit areas in the classrooms to assess for water or mold impacted building materials. ECS recommends that a Building Envelope survey be performed for the building to determine if there is a source of water intrusion in these areas, and if other potential moisture intrusion sources maybe present associated with the building. The ECS facilities group can provide these services for an additional fee if requested. A member of ECS' Facilities Services team had previously visited the site and observed the potential concerns raised during this survey and is familiar with the site and the concerns noted in this report.

Note: The purpose of this survey was to evaluate areas where moisture intrusion or suspected visible mold growth has occurred and provide findings and recommendations for remedial work efforts. Identification and recommendations for correction of sources of moisture should be performed by a qualified engineer. Because of the nature of the environment, complete elimination of all microbial organisms within a building cannot be expected and is not the goal of remediation. The goal of remediation is to restore the affected materials to at least the condition of unaffected materials. It is important to note that the reported mold levels are only reflective of conditions at the time of this test and that mold populations can vary over time, depending upon a number of conditions, including environmental factors (i.e., temperature and relative humidity). If significant mold growth reappears, or if the occupants experience prolonged allergic-type health complaints, they should seek further investigation of the problem.

6.0 LIMITATIONS

The conclusions and recommendations presented within this report are based upon a reasonable level of assessment within normal bounds and standards of professional practice for a site in this particular geographic setting. ECS is not responsible or liable for the discovery and elimination of hazards that may potentially cause damage, accidents, or injuries.

This survey is not intended to represent an exhaustive research of every potential hazard or condition that may exist, nor does it claim to represent indoor conditions or events that arise after the survey. This report has been prepared in accordance with generally accepted environmental practices. Our conclusions and findings are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided by others. The scope of services performed was limited to those requested by the Client and does not constitute a full microbial assessment of the site or a comprehensive moisture survey of the site. The data provided in this study is only indicative of conditions sampled at the immediate time of the study.

This report does not warrant against future operations or conditions, nor does it warrant against extant, or future, conditions of a type or at a location not investigated. Because of the nature of this type of work and the difficulties involved in conducting remediation work, ECS cannot guarantee that the methods or recommendations described in this report will eliminate all potential indoor air quality issues. Since performance of the remediation work is also beyond ECS scope of services, ECS also cannot be held responsible for the execution of the remediation work. The reported microbial levels are only reflective of conditions at the time of this test and that microbial populations can

vary over time, depending upon a number of conditions, including environmental factors (i.e., temperature and relative humidity). The work performed in conjunction with this assessment and the data developed is intended as a description of available information at the dates and locations given.

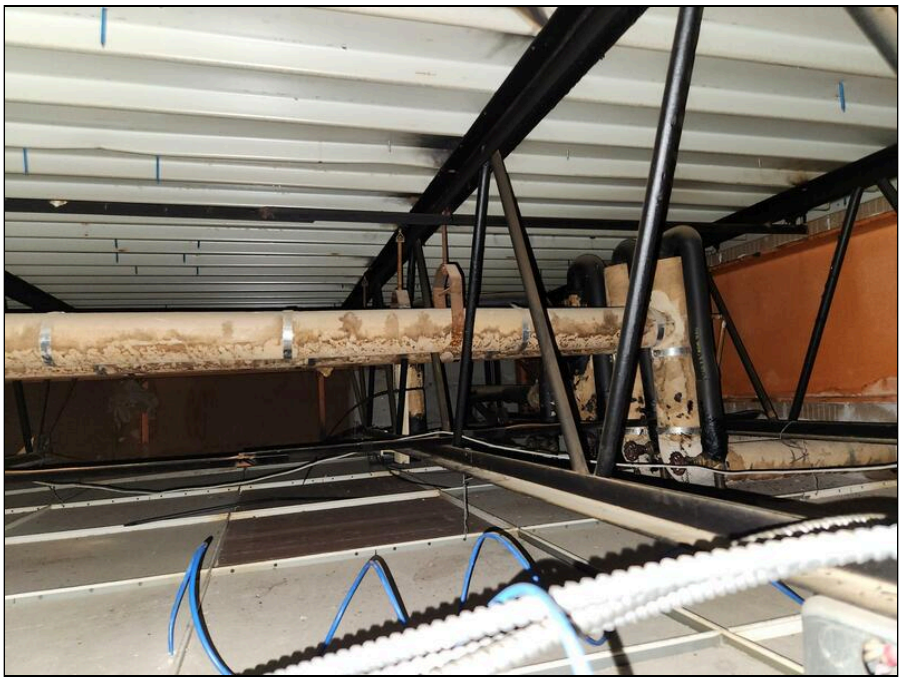
The observations, conclusions, and recommendations pertaining to environmental conditions at the subject site are necessarily limited to conditions observed, and/or materials reviewed at the time this study was undertaken. No warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.

Our recommendations are in part based on federal, state, and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies, any conditions at the site that may present a potential danger to public health, safety, or the environment. Under this scope of services, ECS assumes no responsibility regarding any response actions initiated as a result of these findings. General compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements.

Appendix I: Site Photographs

1 - Water and mold impacted ceiling tiles in the Conference Room/Locker Room

2 - Mold and water impacted insulation on the fan coil loop plumbing in the Faculty Lounge



3 - View of mold impacted fan coil loop insulation above the faculty lounge

4 - Fan coil condensate backing up outside the classrooms

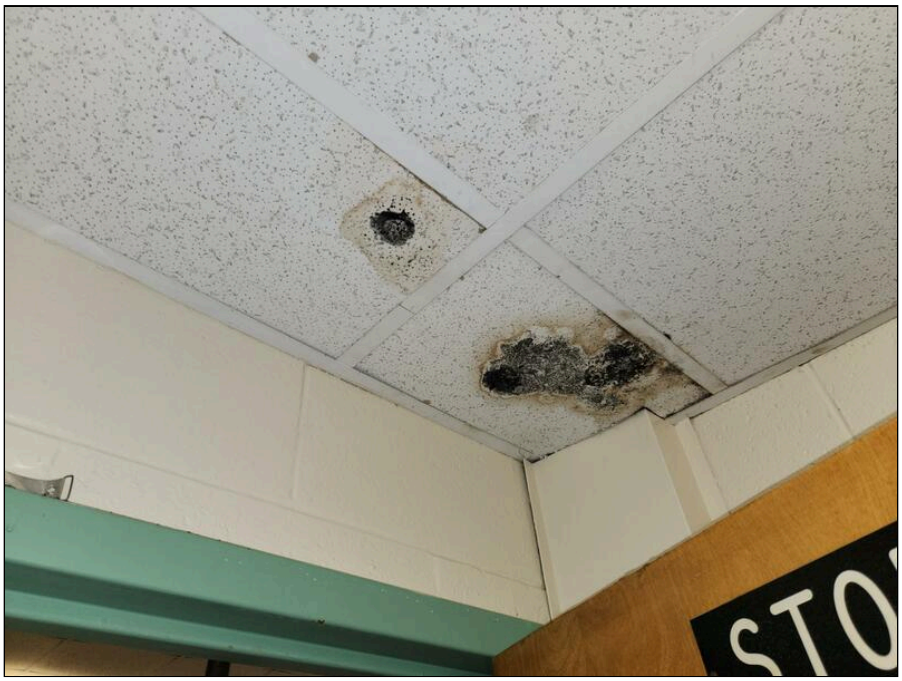
5 - Staining on floor tile and elevated moisture meter reading in room 112

6 - View of overflowing condensate drain

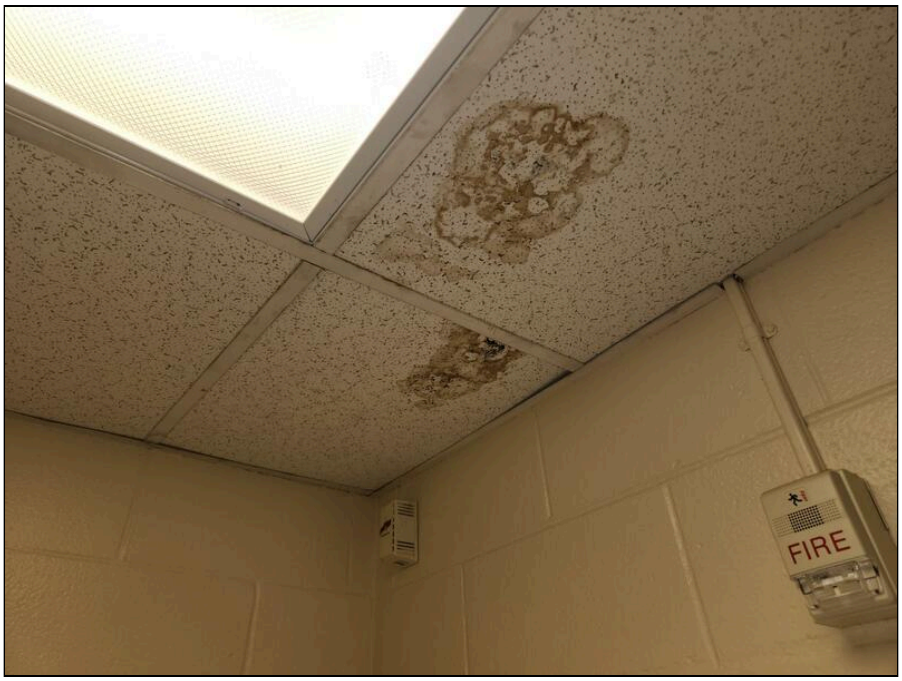
7 - Mold and water impacted ceiling tiles above exit near room 110

8 - Discolored blown in Soffit insulation in room 112

9 - Visible evidence of mold on the back of the older ceiling tiles in Room 113.

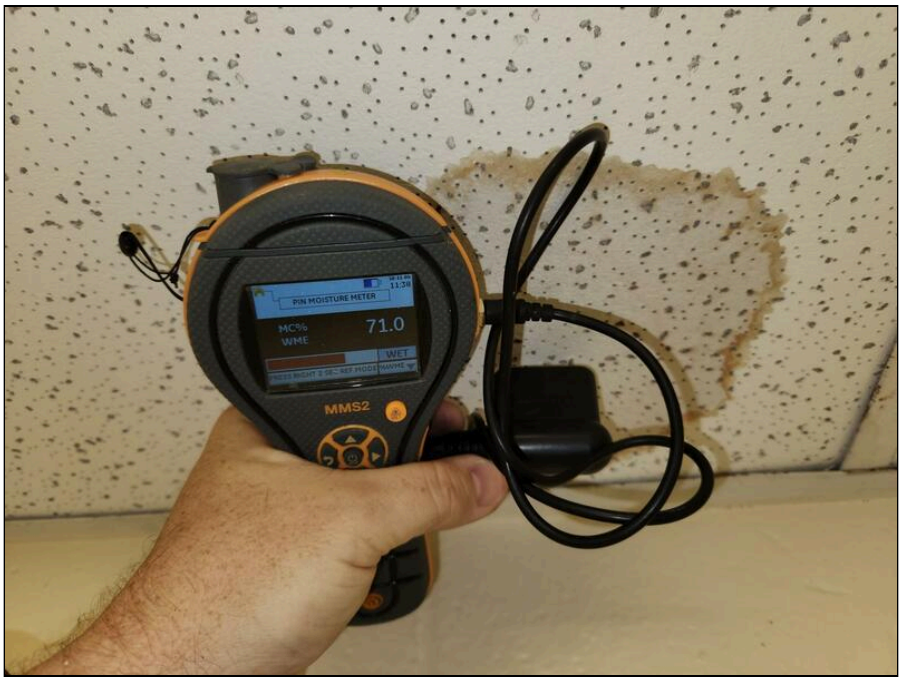


10 - Mold and moisture impacted ceiling tile in storage Room by Room 118



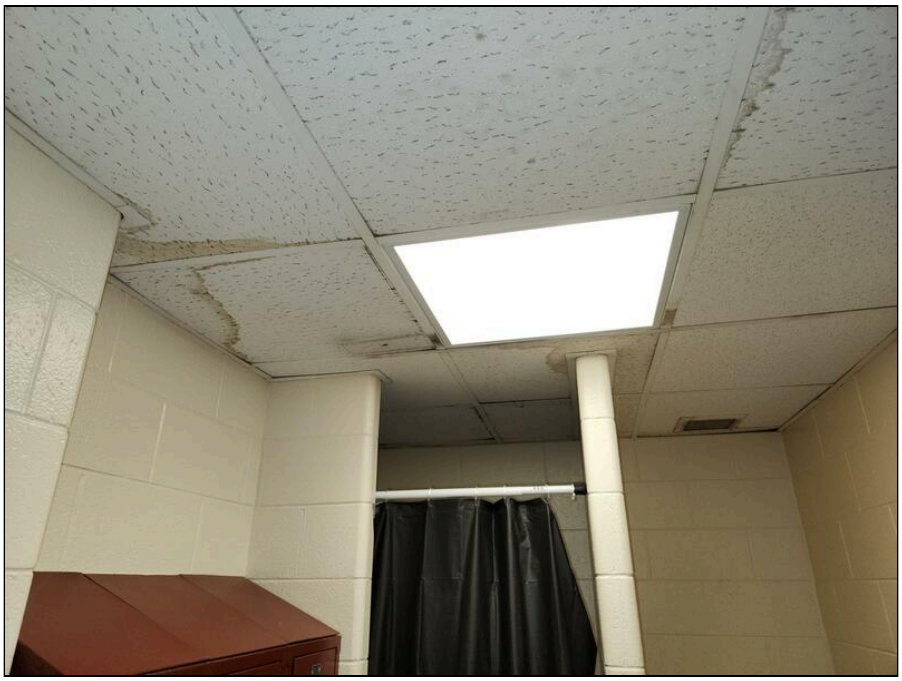
11 - Water and mold impacted ceiling tile in the Room 108 bathroom

12 - Wet moisture meter reading and active hydronic plumbing leak in Room 104



13 - Wet ceiling tile in Room 106 bathroom

14 - Source of leak in Room 106 Bathroom



15 - Mold and moisture impacted ceiling tiles in the employee locker room

16 - Elevated moisture meter reading collected from the base of the toilet in the Room 104

Appendix II: Laboratory Report(s)

Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Telephone: 800.347.4010

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Report Number: 23-09-03049

Received Date: 09/21/2023
Analyzed Date: 09/28/2023, 09/27/2023
Reported Date: 09/28/2023

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Client Number: 200625

Fax Number: 804-353-9478

Laboratory Results

Lab # :	23-09-03049-001		23-09-03049-002		23-09-03049-003		23-09-03049-004		23-09-03049-005	
Client Sample ID :	A1		A2		A3		A4		A5	
Date Collected :	9/20/2023		9/20/2023		9/20/2023		9/20/2023		9/20/2023	
Collection Location :	OUTSIDE		101		102		103		104	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	513	3400	32	210	27	180	57	380	63	420
Penicillium/Aspergillus group spores	72	480	12	80	10	67	39	260	112	750
Alternaria spores			1	6.7	1	6.7				
Aureobasidium spores			2	13	1	6.7				
Drechslera/Bipolaris group spores	4	27	1	6.7					3	20
Curvularia spores	15	100	7	47	2	13	4	27	5	33
Stachybotrys spores			2	13						
Torula spores	6	40								
Pithomyces spores	3	20	1	6.7	2	13			2	13
Epicoccum spores	2	13							1	6.7
Pestalotia spores	1	6.7								
Cercospora spores	4	27								
Nigrospora spores	1	6.7							1	6.7
Fusarium spores	23	150					2	13		
Spegazzinia spores	2	13								
smuts, Periconia, myxomycetes	9	60	5	33	1	6.7	4	27	8	53

Environmental Hazards Services, L.L.C

Client Number: 200625 Report Number: 23-09-03049

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Lab # :	23-09-03049-001		23-09-03049-002		23-09-03049-003		23-09-03049-004		23-09-03049-005	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
TOTAL SPORES(Spores/m3)		4400		420		290		710		1300
Analyst:		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher

Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Telephone: 800.347.4010

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Report Number: 23-09-03049

Received Date: 09/21/2023
Analyzed Date: 09/28/2023, 09/27/2023
Reported Date: 09/28/2023

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Client Number: 200625

Fax Number: 804-353-9478

Laboratory Results

Lab # :	23-09-03049-006		23-09-03049-007		23-09-03049-008		23-09-03049-009		23-09-03049-010	
Client Sample ID :	A6		A7		A8		A9		A10	
Date Collected :	9/20/2023		9/20/2023		9/20/2023		9/20/2023		9/20/2023	
Collection Location :	105		106		107		108		GAA MS SPENCER	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	54	360	87	580	48	320	64	430	121	810
Penicillium/Aspergillus group spores	20	130	24	160	15	100	24	160	26	170
Alternaria spores							1	6.7		
Aureobasidium spores	1	6.7	2	13	1	6.7				
Drechslera/Bipolaris group spores			3	20			1	6.7	1	6.7
Curvularia spores	3	20	5	33	2	13	1	6.7	2	13
Stachybotrys spores			1	6.7	1	6.7	1	6.7	1	6.7
Fusarium spores	1	6.7								
smuts, Periconia, myxomycetes	6	40	12	80			6	40	1	6.7
TOTAL SPORES(Spores/m3)		570		890		450		650		1000
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	

Non-Viable Spore Trap Analysis Report

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Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Client Number: 200625

Fax Number: 804-353-9478

Laboratory Results

Lab # :	23-09-03049-011		23-09-03049-012		23-09-03049-013		23-09-03049-014		23-09-03049-015	
Client Sample ID :	A11		A12		A13		A14		A15	
Date Collected :	9/20/2023		9/20/2023		9/20/2023		9/20/2023		9/20/2023	
Collection Location :	CAFETERIA		KITCHEN		LIBRARY		NURSES OFFICE		OFFICE LOBBY	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	15	100	49	330			34	230	59	390
Penicillium/Aspergillus group spores	55	370	21	140			5	33	9	60
Alternaria spores			1	6.7						
Aureobasidium spores	1	6.7					1	6.7		
Drechslera/Bipolaris group spores							4	27	3	20
Curvularia spores			1	6.7			4	27	2	13
Stachybotrys spores							1	6.7	1	6.7
Pithomyces spores									1	6.7
Fusarium spores									1	6.7
smuts, Periconia, myxomycetes			1	6.7			10	67	7	47
No fungal spores observed						See Notes				
TOTAL SPORES(Spores/m3)		470		490				390		550
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	

Notes (Sample 013): No fungal spores observed

Non-Viable Spore Trap Analysis Report

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2119 D North Hamilton St
Richmond, VA 23230

Report Number: 23-09-03049

Received Date: 09/21/2023
Analyzed Date: 09/28/2023, 09/27/2023
Reported Date: 09/28/2023

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Client Number: 200625

Fax Number: 804-353-9478

Laboratory Results

Lab # :	23-09-03049-016		23-09-03049-017		23-09-03049-018		23-09-03049-019		23-09-03049-020	
Client Sample ID :	A16		A17		A18		A19		A20	
Date Collected :	9/20/2023		9/20/2023		9/20/2023		9/20/2023		9/20/2023	
Collection Location :	OUTSIDE		GYM		CONFERENCE ROOM		FACULITY LOUNGE		109	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	232	13000	63	420	9	60	12	80	43	290
Peronospora/Oidium spores	1	6.7								
Penicillium/Aspergillus group spores	56	370	29	190						
Alternaria spores	5	33					1	6.7		
Aureobasidium spores	3	20					2	13		
Drechslera/Bipolaris group spores	42	280	1	6.7	4	27	8	53		
Pyricularia spores	1	6.7								
Curvularia spores	63	420			6	40	12	80		
Torula spores	8	53								
Pithomyces spores					1	6.7	2	13		
Epicoccum spores	4	27								
Cercospora spores	13	87			1	6.7				
Nigrospora spores	2	13			1	6.7				
Fusarium spores	13	87								
smuts, Periconia, myxomycetes	210	5600			12	80	10	67	3	20

Environmental Hazards Services, L.L.C

Client Number: 200625 Report Number: 23-09-03049

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Lab # :	23-09-03049-016		23-09-03049-017		23-09-03049-018		23-09-03049-019		23-09-03049-020	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
TOTAL SPORES(Spores/m3)		20000		620		230		310		310
Analyst:		Kitana Usher		Kitana Usher		Felicia Butler		Felicia Butler		Felicia Butler

Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Telephone: 800.347.4010

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Report Number: 23-09-03049

Received Date: 09/21/2023
Analyzed Date: 09/28/2023, 09/27/2023
Reported Date: 09/28/2023

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Client Number: 200625

Fax Number: 804-353-9478

Laboratory Results

Lab # :	23-09-03049-021		23-09-03049-022		23-09-03049-023		23-09-03049-024		23-09-03049-025	
Client Sample ID :	A21		A22		A23		A24		A25	
Date Collected :	9/20/2023		9/20/2023		9/20/2023		9/20/2023		9/20/2023	
Collection Location :	110		111		112		113		114	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	4	27	43	290	22	150	7	47	5	33
Penicillium/Aspergillus group spores	1	6.7	1	6.7	1	6.7				
Aureobasidium spores									1	6.7
Drechslera/Bipolaris group spores									1	6.7
Curvularia spores	5	33							1	6.7
Pithomyces spores	2	13							2	13
smuts, Periconia, myxomycetes	7	47	1	6.7	1	6.7	1	6.7		
TOTAL SPORES(Spores/m3)		130		300		160		53		67
Analyst:	Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler	

Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Telephone: 800.347.4010

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Report Number: 23-09-03049

Received Date: 09/21/2023
Analyzed Date: 09/28/2023, 09/27/2023
Reported Date: 09/28/2023

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Client Number: 200625

Fax Number: 804-353-9478

Laboratory Results

Lab # :	23-09-03049-026		23-09-03049-027		23-09-03049-028		23-09-03049-029		23-09-03049-030	
Client Sample ID :	A26		A27		A28		A29		A30	
Date Collected :	9/20/2023		9/20/2023		9/20/2023		9/20/2023		9/20/2023	
Collection Location :	CIS SITE COORDINATOR		SCHAVER		115		116		117	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	5	33	6	40	3	20	4	27	71	470
Penicillium/Aspergillus group spores					3	20	1	6.7	10	67
Drechslera/Bipolaris group spores			4	27					2	13
Curvularia spores	1	6.7	2	13	1	6.7			1	6.7
Ulocladium spores									1	6.7
Pithomyces spores			2	13	1	6.7			1	6.7
smuts, Periconia, myxomycetes			2	13					13	87
TOTAL SPORES(Spores/m3)		40		110		53		33		660
Analyst:	Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler	

Non-Viable Spore Trap Analysis Report

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Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Client Number: 200625

Fax Number: 804-353-9478

Laboratory Results

Lab # :	23-09-03049-031		23-09-03049-032		23-09-03049-033		23-09-03049-034			
Client Sample ID :	A31		A32		A33		A34			
Date Collected :	9/20/2023		9/20/2023		9/20/2023		9/20/2023			
Collection Location :	118		119		120		OUTSIDE			
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell			
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7			
Volume (L) :	150		150		150		150			
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	19	130	11	73	24	160	224	6900		
Peronospora/Oidium spores			1	6.7			1	6.7		
Penicillium/Aspergillus group spores	1	6.7	8	53			21	140		
Alternaria spores							28	190		
Aureobasidium spores							2	13		
Drechslera/Bipolaris group spores							2	13		
Arthrinium spores							4	27		
Pyricularia spores							3	20		
Curvularia spores	1	6.7					2	13		
Pithomyces spores							8	53		
Epicoccum spores							8	53		
Pestalotia spores							4	27		
Cercospora spores	2	13	4	27			52	350		
Nigrospora spores							6	40		
Fusarium spores							9	60		
Spegazzinia spores							2	13		

Environmental Hazards Services, L.L.C

Client Number: 200625 Report Number: 23-09-03049

Project/Test Address: Fox Elementary at Clark Springs; 1101 Dance Street; Richmond, VA

Lab # :	23-09-03049-031		23-09-03049-032		23-09-03049-033		23-09-03049-034			
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
smuts, Periconia, myxomycetes	4	27	5	33			38	250		
TOTAL SPORES(Spores/m3)		180		190		160		8200		
Analyst:	Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler			

Sample Narratives:

(Sample 016) M09: Due to the high number of Cladosporium spores, a partial trace was analyzed for this spore. The analytical sensitivity for this spore on this sample is 57 spores/m3. Due to the high number of Smuts, Periconia, Myxomyctes spores, a partial trace was analyzed for these spores. The analytical sensitivity for these spores on this sample is 27 spores/m3.

(Sample 034) M07: Due to the high number of Cladosporium spores, a partial trace was analyzed for this spore. The analytical sensitivity for this spore on this sample is 31 spores/m3.

(Sample 013) M01: No visible trace, no particulate observed.

Method: Non-Culturable Spore Trap Examination

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119 North Hamilton Street	City/State/Zip	Richmond/VA/23230
Phone	804-353-6333	Email	rcurran@ecslimited.com
Project / Testing Address	Fox Elementary @ Clark Springs /1101 Dance Street, Richmond, VA		
PO Number	47! 14153-A	Collected By	Rob Curran
Collection Date & Time	09-20-23	Outside Air Temp	Indoor Air Temp
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?	☐ Yes	☒ No	

Turn-Around Time: ⊗ 5 Day ○ 3 Day ○ 2 Day ○ 1 Day ○ Same Day / Weekend - Must Call Ahead

SAMPLE TYPE CODES

AIR/ NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	B	Air-O-Cell	AOC	Non Porous	NP
Swab	S	Cyclex D	C	Semi Porous	SP
Bio-Tape	T	BioSiS	B	Porous	P
Wall Check	W	Micro 5	M5		

LAB NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
	A1	outside							3661 6472
1	A2	101	B	AOC	150				3661 6471
2	A3	102							3661 6489
3	A4	103							3661 6567
4	A5	104							3661 9825
5	A6	105							3661 6481
6	A7	106							3689 9199
7	A8	107							3661 6507
8	A9	108							3661 6482
9	A10	GAA/ Ms Spencer							3661 6473
10	A11	Cafeteria							3661 6479
11	A12	Kitchen							3661 6468
12	A13	Library							3661 6483
13	A14	Nurses Office							3661 6549

Released By:	Anahke P. Sauter	Date:	09/21/2023	Time:	2:55 pm
Signature:					

LAB USE ONLY – BELOW THIS LINE

Received By: HHumphrey

Signature:

Date: 9/21/23 Time: 3:10 ☐ AM ☑ PM

☐ Portal Contact Added

23-09-03049

Due Date:
09/28/2023
(Thursday)
ER

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

3049

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119 North Hamilton Street	City/State/Zip	Richmond/VA/23230
Phone	804-353-6333	Email	rcurran@ecslimited.com
Project / Testing Address	Fox Elementary @ Clark Springs /1101 Dance Street, Richmond, VA		
PO Number	47: 14153-A	Collected By	Rob Curran
Collection Date & Time		Outside Air Temp		Indoor Air Temp	
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?	☐ Yes	☒ No	

Turn-Around Time: ⊗ **5 Day** ○ **3 Day** ○ **2 Day** ○ **1 Day** ○ **Same Day / Weekend - Must Call Ahead**

SAMPLE TYPE CODES

AIR/ NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	B	Air-O-Cell	AOC	Non Porous	NP
Swab	S	Cyclex D	C	Semi Porous	SP
Bio-Tape	T	BioSiS	B	Porous	P
Wall Check	W	Micro 5	M5		

LAB NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
1	A15	Office Lobby	B	AOC	150				3689 9193
2	A16	Outside							3689 9185
3	A17	Gym							3689 9184
4	A18	Conference Rm							3661 6502
5	A19	Faculty Lounge							3661 6519
6	A20	109							3689 9211
7	A21	110							3689 9196
8	A22	111							3661 6467
9	A23	112							3661 6520
10	A24	113							3661 6490
11	A25	114							3689 9165
12	A26	CIS Site Coordinator							3689 9160
13	A27	Schaver	↓	↓	↓				3689 9163

Released By:		Date:		Time:	
Signature:					

LAB USE ONLY – BELOW THIS LINE

Received By: HHumphrey

Signature: H

Date: 9/21/23 Time: 3 10 ☐ AM ☑ PM

☐ Portal Contact Added

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RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

30419

Page 3 of 3

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119 North Hamilton Street	City/State/Zip	Richmond/VA/23230
Phone	804-353-6333	Email	rcurran@ecslimited.com
Project / Testing Address	Fox Elementary @ Clark Springs /1101 Dance Street, Richmond, VA		
PO Number	47:' 14153-A	Collected By	Rob Curran
Collection Date & Time		Outside Air Temp	Indoor Air Temp
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?	☐ Yes ☒ No		

Turn-Around Time: ⊗ 5 Day ○ 3 Day ○ 2 Day ○ 1 Day ○ Same Day / Weekend - Must Call Ahead

SAMPLE TYPE CODES

AIR/ NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	B	Air-O-Cell	AOC	Non Porous	NP
Swab	S	Cyclex D	C	Semi Porous	SP
Bio-Tape	T	BioSiS	B	Porous	P
Wall Check	W	Micro 5	M5		

LAB NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
1	A28	115	B	AOC	150				3689 9188
2	A29	116							3689 9149
3	A30	117							3689 9156
4	A31	118							3689 9155
5	A32	119							3689 9195
6	A33	120							3689 9161
7	A34	Outside							3689 9153
8									
9									
10									
11									
12									
13									

Released By:		Date:		Time:	
Signature:					

LAB USE ONLY – BELOW THIS LINE

Received By: HHumphrey

Signature:

Date: 9/21/23 Time: 3:11 ☐ AM ☑ PM

☐ Portal Contact Added

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RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Non-Viable Surface/Bulk Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Telephone: 800.347.4010

Report Number: 23-09-04144

Received Date: 09/28/2023
Analyzed Date: 09/28/2023
Reported Date: 09/29/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Project/Test Address: Fox Elementary & Spring Hill; 1101 Dance Street

Client Number:
200625

Laboratory Results

Fax Number:
804-353-9478

Lab # :	23-09-04144-001	Collection Location:	ROOM 113
Client Sample ID :	Tape T1	Date Analyzed:	9/28/2023
Date Collected :	9/21/2023	Analyst:	Felicia Butler

Few	basidiospores
Few	Cladosporium spores
Occasional	Bispora spores
Few	smuts, Periconia, myxomycetes
Occasional	Arthrinium spores
Occasional to Few	Pithomyces spores
Occasional	Torula spores
Occasional to Few	Stachybotrys spores
Few	hyphal elements*
Occasional	ascospores
Occasional	Alternaria spores
Occasional to Few	pollen grains*

Note:

Lab # :	23-09-04144-002	Collection Location:	ROOM 118
Client Sample ID :	Tape T2	Date Analyzed:	9/28/2023
Date Collected :	9/21/2023	Analyst:	Felicia Butler

Few to Moderate	smuts, Periconia, myxomycetes
Occasional	Alternaria spores
Occasional	pollen grains*
Occasional	Epicoccum spores
Few	hyphal elements*
Occasional	Pithomyces spores
Occasional	Bispora spores
Occasional	Cladosporium spores
Few	ascospores
Few	basidiospores
Occasional	Drechslera/Bipolaris group spores

Note:

Environmental Hazards Services, L.L.C

Client Number: 200625 Report Number: 23-09-04144

Project/Test Address: Fox Elementary & Spring Hill; 1101 Dance Street

Quantification Key:

Numerous: Several spores seen in every field
Moderate: At least 1 spore seen in 5 fields
Few: Over 5 spores seen per cover slip, but less than 1 spore seen in 5 fields
Occasional: 1-5 spores seen per a cover slip

Method: Direct Microscopic Exam

Reviewed By Authorized Signatory: Candace Mason

Candace Mason
QA Chemist

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name	ECS mid-Atlantic	Account #	
Company Address	2114 N Hamilton ST	City/State/Zip	Richmond VA 23230
Phone	804 355 6323	Email	rcurran@ecslimited.com
Project / Testing Address	Fox Elementary @ Spring Hill / 1101 Dance Street		
PO Number	47:14153-A	Collected By	Rob Curran
Collection Date & Time	09-28-23	Outside Air Temp	Indoor Air Temp
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?	☐ Yes	☐ No	
Turn-Around Time	○ 5 Day ○ 3 Day ○ 2 Day ⊗ 1 Day ○ Same Day / Weekend - Must Call Ahead		

SAMPLE TYPE CODES

AIR/ NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	B	Air-O-Cell	AOC	Non Porous	NP
Swab	S	Cyclex D	C	Semi Porous	SP
Bio-Tape	T	BioSiS	B	Porous	P
Wall Check	W	Micro 5	M5		

LAB NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
1	T1	Room 113	T						Back of ceiling tile
2	T2	Room 118	↓						↓
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									

Released By:	Rob Curran	Date:	09-28-23	Time:	13:00
Signature:	Robert Curran				

LAB USE ONLY – BELOW THIS LINE

Received By: Sadler

Signature: Sadler

Date: 9/29/23 Time: 12 : 27 ☐ AM ☐ PM

☐ Portal Contact Added

23-09-04144

Due Date:
09/29/2023
(Friday)
ER

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Telephone: 800.347.4010

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Report Number: 23-09-03598

Received Date: 09/25/2023
Analyzed Date: 10/02/2023
Reported Date: 10/02/2023

Project/Test Address: 1101 Dance Street; Richmond, VA 23220

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-09-03598-001		23-09-03598-002		23-09-03598-003		23-09-03598-004		23-09-03598-005	
Client Sample ID :	3689-9182		3689-9180		3689-9154		3689-9197		3689-9176	
Date Collected :	9/25/2023		9/25/2023		9/25/2023		9/25/2023		9/25/2023	
Collection Location :										
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	230	1500	22	150	30	200	215	1400	277	1800
Peronospora/Oidium spores									1	6.7
Penicillium/Aspergillus group spores	30	200	17	110	22	150	22	150	16	110
Alternaria spores									1	6.7
Aureobasidium spores	1	6.7	1	6.7	1	6.7				
Drechslera/Bipolaris group spores	3	20			1	6.7	3	20	2	13
Arthrinium spores									3	20
Pyricularia spores	2	13	1	6.7			1	6.7	1	6.7
Curvularia spores	4	27	1	6.7	1	6.7	8	53	2	13
Stachybotrys spores					1	6.7				
Torula spores									1	6.7
Pithomyces spores	2	13					1	6.7		
Epicoccum spores	2	13					1	6.7	1	6.7
Pestalotia spores					1	6.7				
Tetraploa spores							1	6.7		
Cercospora spores	12	80			1	6.7	5	33	9	60
Nigrospora spores	1	6.7							2	13

Environmental Hazards Services, L.L.C

Client Number: 200625 Report Number: 23-09-03598

Project/Test Address: 1101 Dance Street; Richmond, VA 23220

Lab # :	23-09-03598-001		23-09-03598-002		23-09-03598-003		23-09-03598-004		23-09-03598-005	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Fusarium spores	3	20			1	6.7	2	13	6	40
smuts, Periconia, myxomycetes	8	53	6	40	1	6.7	13	87	5	33
TOTAL SPORES(Spores/m3)		2000		320		400		1800		2200
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	

Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Telephone: 800.347.4010

Report Number: 23-09-03598

Received Date: 09/25/2023
Analyzed Date: 10/02/2023
Reported Date: 10/02/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Project/Test Address: 1101 Dance Street; Richmond, VA 23220

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-09-03598-006									
Client Sample ID :	3689-9183									
Date Collected :	9/25/2023									
Collection Location :										
Sampling Media :	Air-O-Cell									
Analytical Sensitivity (spores/m3) :	6.7									
Volume (L) :	150									
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	66	440								
Penicillium/Aspergillus group spores	10	67								
Alternaria spores	1	6.7								
Aureobasidium spores	3	20								
Curvularia spores	2	13								
Pithomyces spores	5	33								
Epicoccum spores	3	20								
smuts, Periconia, myxomycetes	18	120								
TOTAL SPORES(Spores/m3)		720								

Analyst: Kitana Usher

Environmental Hazards Services, L.L.C

Client Number: 200625 Report Number: 23-09-03598

Project/Test Address: 1101 Dance Street; Richmond, VA 23220

Method: Non-Culturable Spore Trap Examination

Reviewed By Authorized Signatory:

Tasha Eaddy
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119-D N. Hamilton St.	City/State/Zip	Richmond, VA, 23230
Phone	804-246-3457	Email	Rcurran@ecslimited.com
Project / Testing Address	1101 Dance street, Richmond, VA 23220		
PO Number		Collected By	Rob Curran
Collection Date & Time	09/25/23	Outside Air Temp	75°F
Indoor Air Temp	~72-75		
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?	☐ Yes	☑ No	

Turn-Around Time: ☑ 5 Day ○ 3 Day ○ 2 Day ○ 1 Day ○ Same Day / Weekend - Must Call Ahead

SAMPLE TYPE CODES

AIR/ NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	B	Air-O-Cell	AOC	Non Porous	NP
Swab	S	Cyclex D	C	Semi Porous	SP
Bio-Tape	T	BioSiS	B	Porous	P
Wall Check	W	Micro 5	M5		

LAB NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
1	3689-9182			AOC	150				
2	3689-9180								
3	3689-9154								
4	3689-9197								
5	3689-9176								
6	3689-9183								
7									
8									
9									
10									
11									
12									
13									

Released By: Anamke P. Sauter Date: 09/25/2023 Time: 3:50 pm

Signature: [signature]

LAB USE ONLY – BELOW THIS LINE

Received By: ECHRISTMAS

Signature: [signature]

Date: 9/25/23 Time: 3:52 ☐ AM ☒ PM

☐ Portal Contact Added

23-09-03598

Due Date: 10/02/2023 (Monday) ER

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix III: Mold Reference and Guidance Documents

MOLD REFERENCE DOCUMENTS AND GUIDANCE

Standards and Publications

Mold Remediation in Schools and Commercial Buildings, EPA, EPA 402-K-01-001, September 2008

A Brief Guide to Mold in the Workplace, Occupational Safety Health Administration (OSHA), SHIB 03-10-10, updated 11-08-13

ANSI/IICRC S520-2015 Standard and Reference Guide for Professional Mold Remediation, Institute of Inspection, Cleaning, and Restoration Certification, Third Edition

ANSI/IICRC S500-2021 Standard and Reference Guide for Professional Water Damage Restoration, Institute of Inspection, Cleaning, and Restoration Certification, Fifth Edition

Bioaerosols: Assessment and Control, American Conference of Governmental Industrial Hygienists, 1999.

Building Air Quality: A Guide for Building Owners and Facility Managers, National Institute for Occupational Safety and Health (NIOSH) and Environmental Protection Agency (EPA) EPA 402F-91-102, December 1991

Mold Moisture and Your Home, EPA, EPA-402-K-02-003, September 2012

WHO Guidelines for Indoor Air Quality: Dampness and Mould, World Health Organization (WHO), 2009

Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

Damp Buildings, Human Health, and HVAC Design, Report of the ASHRAE Multidisciplinary Task Group: Damp Buildings, American Society of Heating, Refrigerating, and Air Conditioning Engineers, 2020

Websites

EPA – Mold Resources, https://www.epa.gov/mold

Centers for Disease Control and Prevention (CDC), https://www.cdc.gov/mold/faqs.htm

Department of Energy and the Environment (DOEE), Mold Assessment and Remediation Licensure Regulations https://doee.dc.gov/service/mold-professional-licensing

Virginia Department of Health, Environmental Health, Public Health Toxicology, Mold https://www.vdh.virginia.gov/environmental-health/public-health-toxicology/mold/