March 8, 2021

Mr. Alex Baylor via email: alex.baylor@pgcps.org
Environmental Specialist
Environmental Safety Office
Prince George's County Public Schools
Division of Supporting Services / Building Services
13306 Old Marlboro Pike
Upper Marlboro, MD 20772

RE: Indoor Air Quality (IAQ) and Mold Assessment Services
Prince George's County Public Schools – Tall Oaks High School
2112 Church Road, Mitchellville, Maryland 20721
Contract No.: IFB 022-19: Indoor Air Quality Services at Various Locations
Tidewater Project No.: 5419-034

Dear Mr. Baylor:

Tidewater, Inc. (Tidewater) is pleased to present this final report regarding the results of the Indoor Air Quality (IAQ) and Mold Assessment Services conducted by Tidewater at Tall Oaks High School located at 2112 Church Road in Michellville, Maryland. Tidewater's Project Manager and Certified Industrial Hygienist, Mr. Skanda Abeyesekere MS, CIH, CSP, CHMM conducted these services on December 1, 2020.

The scope of work for the IAQ assessment and mold survey included:

- Inspecting, taking direct read measurements and conducting air sampling at the following select areas of the school: Media Center, Classroom 14, Classroom 17, Classroom 11, Classroom 7, Health Aid Room, Guidance Room, Classroom 5, Main Office, and Multipurpose Room. These areas were inspected for evidence of potential indoor air quality problems (including suspect microbial growth, water damage, chemical use/ storage, drain traps, sources of allergens/ contaminants, etc.) that may contribute to indoor air quality problems;
- Taking direct read air measurements for comfort parameters including temperature (T), relative humidity (RH), carbon dioxide (CO_2), and carbon monoxide (CO) for comparison with standards established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62.1–2019, *Ventilation for Acceptable Indoor Air Quality*, and The United States Environmental Protection Agency (US EPA) National Ambient Air Quality Standards (NAAQS);
- Taking direct read measurements for Particulate Matter less than 10 microns (PM10) for comparison with standards established by the US EPA NAAQS Final Action (December 7, 2020); and
- Air sampling for microbial spores in the above locations for total airborne fungal spore analysis.

Visual Observation

The school building was occupied by a limited number of staff, and no students were present at the time of the survey because of the on-going COVID-19 pandemic. The majority of the classrooms and other common areas inspected were vacant. The results of Tidewater's visual inspection are presented below:

Classroom 12 (Media Center)

A wall-mounted fan coil unit and a window-mounted air conditioning unit were observed in the Media Center. The wall-mounted fan coil unit was operating at the time of the inspection and was emitting warm air. A water-stained ceiling tile was observed. No mold growth nor notable odors were detected. The Media Center appeared to be clean and well maintained. Housekeeping appeared to be satisfactory.

Classroom 14

Water stains were observed on the pipe insulation of the overhead pipelines running across the classroom. A wall-mounted fan coil unit was operating at the time of the inspection and was emitting warm air. No notable odors were detected in the classroom. Housekeeping appeared to be satisfactory.

Classroom 11

No signs of ongoing water-intrusion problems or mold growth were observed in the classroom. Furthermore, no odors were detected. One (1) wall-mounted fan coil unit was operating and was emitting warm air at the time of the inspection. The supply grill of this unit was partially covered with a cardboard sheet placed on top of the unit which hindered the flow of air into the classroom. The return air and supply grills located on the walls of the classroom appeared to be clean. Housekeeping appeared to be satisfactory.

Classroom 17

A wall-mounted fan coil unit and a window-mounted air conditioning unit were observed in the classroom. The wall-mounted fan coil unit was operating at the time of the inspection and was emitting warm air. No mold growth nor notable odors were detected. The return air and supply grills located on the walls of the classroom appeared to be clean. The classroom appeared to be clean and well maintained.

Classroom 7

Visible water stains and potential mold growth were observed on the pipe insulation of the overhead pipelines running across the classroom. A wall-mounted fan coil unit was operating at the time of the inspection and was emitting warm air. No notable odors were detected in the classroom. Numerous water-stained ceiling tiles were observed in the classroom. Housekeeping appeared to be satisfactory.

Health Aid Room

Numerous water-stained ceiling tiles were observed in the Health Aid Room. The ceiling-mounted supply air and return air grills appeared to have accumulations of dust. No mold growth nor notable odors were detected. The Health Aid Room appeared to be clean and well maintained. Housekeeping appeared to be satisfactory.

Guidance Room

Numerous water-stained ceiling tiles were observed above the entrance to the guidance room. No signs of surface mold growth or odors were detected in the Guidance Room. A window in the rear of the Guidance Room was opened at the time of the inspection allowing outside air to enter the room. The return air and supply grills located on the ceiling of the Guidance Room appeared to be clean. Housekeeping appeared to be satisfactory.

Classroom 5

No signs of ongoing water-intrusion problems or mold growth were observed in the classroom. Furthermore, no odors were detected. The ceiling-mounted exhaust grill located in the bathroom appeared to have dust accumulations. The supply grill of the wall-mounted fan coil unit was covered with various storage items that hindered the flow of air into the classroom.

Main Office

No signs of ongoing water-intrusion problems or mold growth were observed in the main office. Furthermore, no odors were detected. The air supply grills located on the ceiling of the main office appeared to be clean. Housekeeping appeared to be satisfactory.

Multipurpose Room

No signs of ongoing water-intrusion problems or mold growth were observed in the multipurpose room. Furthermore, no notable odors were detected. The air supply grills located on the walls of the multi-purpose room appeared to have dust accumulations. The metal air supply grills located on the ceiling and on the overhead pipes contained rust deposits.

Comfort Parameter Air Testing

During the IAQ assessment, Tidewater obtained temperature (T), relative humidity (RH), carbon dioxide (CO_2), and carbon monoxide (CO) measurements within select locations using a TSI VelociCalc Indoor Air Quality instrument (Model Number 9565-X, Serial Number 9565X 1945 002, Calibration Date: November 8, 2019.) Measurements were taken after allowing the instrument to become acclimated to the ambient temperature and relative humidity for approximately five (5) minutes. Measurements were taken over a 5-minute time period at each designated location and the average concentration was recorded. Samples were obtained for comparison with standards established by the American Society for Heating Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2019, *Ventilation for Acceptable Indoor Air Quality*. Tidewater also obtained an "outdoors background" measurement in front of the main entrance of the school building for comparison to the interior readings. The results of the IAQ comfort parameter monitoring are provided in Table 1, in **Attachment A.**

According to the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 62.1 – 2019, *Ventilation for Acceptable Indoor Air Quality,* the temperature range in summer months should be maintained between 73.0°F and 79.0°F for maximum occupant comfort. The ASHRAE standard for temperature for winter months is between 68.0°F and 74.5°F. The indoor temperature levels within the assessed areas on December 1, 2020 ranged between 66.9°F and 76.0°F. The background temperature outside the building was 60.4°F. The temperature levels recorded within most areas monitored were within the temperature levels typically observed during the fall-winter transitional period. The temperature levels in the Guidance Room marginally exceeded the upper temperature standard of 74.5°F

recommended by ASHRAE for winter months. Most areas inspected were vacant at the time of the inspection. Indoor temperature levels fluctuate with the number of occupants present within the work area.

Per the same ASHRAE standard, a maximum relative humidity level of 65.0% or below is recommended to reduce the likelihood of condensation on cold surfaces. Relative humidity levels within the assessed areas on December 1, 2020 ranged between 22.6% and 33.7%. The background relative humidity level outside the building was 30.9%. The relative humidity levels in all areas assessed were below the ASHRAE recommended maximum relative humidity standard of 65.0%.

ASHRAE Standard 62.1 – 2019 recommends that indoor CO_2 levels not exceed 700 ppm above the outdoor background CO_2 level. The CO_2 levels in the assessed areas on December 1, 2020 ranged between 426 ppm and 470 ppm. The background CO_2 level outside the building was 431 ppm. The CO_2 levels within all interior locations assessed did not exceed 700 ppm above the outdoor background CO_2 level of 431 ppm.

The CO levels in all areas assessed on December 1, 2020 were below the maximum standard of 9.0 ppm recommended by the Indoor Air Quality Association (IAQA) for CO in occupied indoor environments.

Particulate Matter Less Than 10 microns (PM10)

During the assessment, Tidewater obtained particulate matter less than 10 microns (PM10) dust particulate measurements within select locations using a TSI® DUST TRAK II™ Aerosol Monitor (Model 8534, Serial Number 8534170101.) Measurements were taken after allowing the device to become acclimated to the ambient temperature and relative humidity for five (5) minutes. Measurements were taken over a 5-minute time period at each sampling location and the average concentration was recorded for comparison with standards established by the US EPA NAAQS Final Action (December 7, 2020.)

Tidewater also obtained a background exterior sample near front of the main entrance of the school building for comparison to the interior readings.

The results of the particulate matter sampling are provided in Table 2, in **Attachment A**.

Based on the EPA NAAQS for Particulate Matter, Final Action (December 7, 2020), the 24-hour primary and secondary exposure standard for particulate matter less than 10 microns (PM10) is 150.0 micrograms per cubic meter of air (µg/m^3) or 0.150 milligrams per cubic meter of air (mg/m^3.) The results of the PM10 analysis indicate that the average PM10 dust concentrations in all assessed areas ranged between 0.067 mg/m^3 and 0.078 mg/m^3. The average PM10 dust concentration in the background sample obtained outside the building was 0.070 mg/m^3. The PM10 concentrations in all areas assessed were below the EPA 24-hour primary and secondary NAAQS of 0.150 mg/m^3.

Spore Trap Bioaerosol Sampling

Tidewater collected spore trap air samples from the same locations where the comfort parameters were recorded. Tidewater obtained the spore trap samples using Allergenco-D cassettes affixed to a Buck BioAire™ Bioaerosol Sampling Pump (Pump Model Number B520 and Serial Number B153043) calibrated to a flow rate of 15.0 Liters per minute. Each sample was run for a period of five (5) minutes to collect a total sample volume of 75.0 liters of air. Tidewater also obtained an

outdoor background sample in front of the main entrance of the school building for comparison to the interior readings.

Once collected, the samples were transported to EMSL Analytical Laboratory (EMSL) located in Beltsville, Maryland for analysis via a standard turn-around time. The samples were transported following rigorous chain-of-custody guidelines to ensure proper handling and delivery of the samples. EMSL is accredited in the American Industrial Hygiene Association (AIHA) Environmental Microbiology Laboratory Accreditation Program (EMLAP) and is a successful participant in AIHA's Environmental Microbiology Proficiency Analytical Testing (EMPAT) program (Laboratory Number 102891.) The samples were analyzed via light microscopy at the standardized magnification of 600X. This technique does not allow for the differentiation between *Aspergillus* and *Penicillium* spores because they are morphologically identical. Additionally, the technique does not allow for cultivation, or the identification of spores to the species level, except in a few cases.

There are no universally accepted federal or State of Maryland standards for acceptable airborne concentrations of bioaerosols in an indoor occupational environment. In general, indoor airborne concentrations should be less than that found in the outdoor air, with similar species composition. Indoor spore counts significantly greater than those identified in the outdoors environment, or the presence of large numbers of different types of spores identified in indoor versus the outdoor environments, may indicate contamination and potential indoor air quality problems.

The total mold spore counts in all assessed areas of the school ranged between 40 spores/m^3 and 1,680 spores/m^3. The total mold spore concentrations in the background sample obtained outdoors was 1,860 spores/m^3. The total mold spore concentrations in all indoor samples were below the background sample concentration of 1,860 spores/m^3 (sample # TOES-BG.) Additionally, the fungal species observed in the interior samples were consistent with those observed in the background sample, and no significant concentrations of an individual fungal species were identified in the interior samples. These results do not indicate elevated levels of airborne total fungal spores in the interior locations sampled, nor do the results suggest the presence of potential significant sources of indoor fungi in the interior sampled locations.

Although significant sources of visible mold were not observed in any of the classrooms inspected, black spots which appeared to be surface mold were observed in a localized area of pipe insulation on the overhead pipes running across classroom 7. This section of pipe insulation needs to be abated and the surrounding area cleaned and sanitized.

The summary of the results for the spore trap sampling are provided in Table 3 in **Attachment A**. The laboratory analytical results, including speciation and chain of custody forms for the spore trap samples are included in **Attachment B**.

CONCLUSIONS

- The follow issues were identified during the visual inspections:
  - Classroom 12, Classroom 7, Health Aid Room and Guidance Room: Multiple water-stained ceiling tiles were observed in these locations.
  - Classroom 14: Water stains were observed in a section of overhead pipe insulation running across the classroom.

- Classrooms 11 and Classroom 5: The supply grills of the wall-mounted fan coil units were covered with various items stored on top of the units which hinders the air flow into these classrooms.
- Classroom 7: Visible water stains and visible mold growth were observed on a section of overhead pipe insulation running across the classroom.
- Classroom 5: The ceiling-mounted exhaust grill located in the bathroom appeared to have accumulations of dust.
- Health Aid Room: Dust accumulations were noted in the ceiling-mounted supply and return air grills.
- Multipurpose Room: Dust accumulations were noted in the air supply grills located on the walls. Rust deposits were noted on the metal air supply grills located on the ceiling and on the overhead pipes.

- The temperature level in the Guidance Room was marginally above the upper temperature standard of 74.5°F recommended by ASHRAE for winter months.
- The Relative humidity, CO_2, CO readings and particulate matter less than 10 microns (PM10) recorded within the assessed areas were within industry standards and guidelines;
- The total mold spore concentrations in all interior locations sampled were below the background sample concentration and were also consistent with those observed in the background sample. The results do not indicate elevated levels of airborne total fungal spores in the interior locations sampled.

RECOMMENDATIONS

Based on the results of our visual inspection, Tidewater proposes the following:

- Investigate the drop ceiling above the water-stained ceiling tiles in Classroom 12, Classroom 7, Health Aid Room, and the Guidance Room for any ongoing water leaks. If any ongoing water leaks are detected, take immediate action to repair them. Remove the water-stained ceiling tiles in these areas and replace with new ceiling tiles.
- Appropriate steps should be taken to remediate the sections of overhead pipe insulation with water damage and visible surface mold in Classroom 14 and Classroom 7 and sanitize the surrounding areas with a commercially available (EPA approved) fungicide to mitigate existing fungal spores prior to installing new pipe insulation in the affected areas;
- The following areas should be cleaned with a commercially available (EPA approved) disinfectant on a routine basis to remove dust and grime buildup.
  - The ceiling-mounted exhaust grill located in the bathroom in classroom 5,
  - Wall-mounted supply air grills and metal air supply grills located on the ceiling and on the overhead pipes of the multi-purpose room.
  - Ceiling-mounted supply and return air grills in Heath Aid Room.
- Ensure the Heating Ventilation and Air Conditioning (HVAC) System supplying air to all common areas and classrooms is properly balanced per design requirements and are

turned on and are operating at all times to ensure adequate ventilation throughout the classrooms and common areas before the school re-opens.

- Maintain good housekeeping practices in all common areas and classrooms. All common area and classrooms floors should be broom cleaned at the end of each day once the school re-opens for students. Furthermore, all horizontal surfaces including desktops, furniture, window sills, and light fixtures should be cleaned on a routine basis to prevent the accumulation of dust.

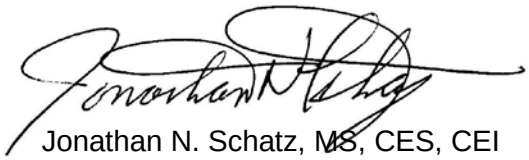
Qualifications

Tidewater endeavored to investigate existing conditions in select areas of Tall Oaks High School located at 2112 Church Road in Michellville, Maryland as they pertain to indoor air quality and mold contamination. Our conclusions and recommendations are based on observations made on the day of our assessment, laboratory data from the time of the assessment, and information provided by both our Client and the area occupants. Actual conditions vary from day to day throughout the year.

Tidewater appreciates the opportunity to provide Industrial Hygiene consulting services for Prince George's County Public Schools. Please contact us should any questions arise concerning this report or if we may be of further assistance.

Sincerely,

Tidewater, Inc.



Skanda Abeyesekere, MS, CIH, CSP, CHMM
Project Manager

Jonathan N. Schatz, MS, CES, CEI
Manager, IH Services

SA/JNS

Attachments: **Attachment A – Summary of Comfort Parameters, PM10 Particulate Dust, and Microbial Results**
Attachment B – Laboratory Reports and Chain of Custody Forms
Attachment C – Instrument Calibration Certificates
Attachment D – Relevant Certifications
Attachment E – Floor Plan with Sampling Locations

APPENDIX A

COMFORT PARAMETERS, PM10 PARTICULATE DUST, AND MICROBIAL RESULTS

Table 1: Indoor Air Quality Comfort Parameters Tall Oaks High School				
Location	**Temperature (°F)**	**Carbon Dioxide (ppm)**	**Relative Humidity (%)**	**Carbon Monoxide (ppm)**
December 1, 2020				
Library (Classroom 12)	71.0	32.3	470	0.0
Classroom 14	71.6	25.3	430	0.0
Classroom 17	70.9	27.4	427	0.0
Classroom 11	71.5	27.0	432	0.0
Classroom 7	71.4	27.1	432	0.0
Health Aid Room	71.9	33.7	450	0.0
Guidance Room	**76.0**	22.6	442	0.0
Classroom 5	74.5	24.2	426	0.0
Main Office	72.0	31.0	439	0.0
Multipurpose Room	66.9	32.0	440	0.0
Background (Outdoors)	60.4	30.9	435	0.0

*Highlighted Areas indicate locations in which temperature levels were above the American Society for Heating Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2019 recommended standards for winter months.

Table 2: Particulate Matter Less than 10 Microns (PM10) Tall Oaks High School	
Location	**Particulate Matter (PM10)** **Concentration (mg/m^3)**
December 1, 2020	
Library (Classroom 12)	0.067
Classroom 14	0.073
Classroom 17	0.069
Classroom 11	0.067
Classroom 7	0.070
Health Aid Room	0.070
Guidance Room	0.070
Classroom 5	0.071
Main Office	0.073
Multipurpose Room	0.078
Background (Outdoors)	0.070

Table 3: Spore Trap Sampling Results Tall Oaks High School				
December 1, 2020				
Sample Number	**Sample Location**	**Sample Volume (L)**	***Aspergillus Penicillium* Concentration (Counts/m^3)**	**Total Fungi Concentration (Counts/m^3)**
TOES-1	Library (Classroom 12)	75.0	80	980
TOES-2	Classroom 14	75.0	ND	910
TOES-3	Classroom 17	75.0	80	650
TOES-4	Classroom 11	75.0	200	1,680
TOES-5	Classroom 7	75.0	100	540
TOES-6	Health Aid Room	75.0	300	700
TOES-7	Guidance Room	75.0	300	1,200
TOES-8	Classroom 5	75.0	40	220
TOES-9	Main Office	75.0	ND	140
TOES-10	Multipurpose Room	75.0	ND	40
TOES-BG	Background	75.0	100	1,860

APPENDIX B

LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS

EMSL Analytical, Inc.

10768 Baltimore Avenue Beltsville, MD 20705
Tel/Fax: (301) 937-5700 / (301) 937-5701
http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 192011889
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Tall Oaks ES

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected Date: 12/01/2020
Received Date: 12/02/2020
Analyzed Date: 12/05/2020

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

Lab Sample Number:	192011889-0001			192011889-0002			192011889-0003		
Client Sample ID:	TOES-1			TOES-2			TOES-3		
Volume (L):	75			75			75		
Sample Location:	Library Classroom 12			Classroom 14			Classroom 17		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	2	80	8.2	1*	10*	1.1	1	40	6.2
Aspergillus/Penicillium	2	80	8.2	-	-	-	2	80	12.3
Basidiospores	19	780	79.6	17	700	76.9	12	490	75.4
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	5	200	22	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	4.1	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	1	40	6.2
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**24**	**980**	**100**	**23**	**910**	**100**	**16**	**650**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	41	-	-	41	-	-	41	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

Sample Comment: 192011889-0001 No background submitted
Sample Comment: 192011889-0002 No background submitted
Sample Comment: 192011889-0003 No background submitted

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

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

Abubakar Barry, Microbiology Lab Manager
or other Approved Signatory

High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed.

Samples analyzed by EMSL Analytical, Inc. Beltsville, MD AIHA-LAP, LLC-EMLAP Accredited #102891

Initial report from: 12/07/2020 10:58 AM

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

EMSL Analytical, Inc.

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Phone: (410) 540-8700
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Collected Date: 12/01/2020
Received Date: 12/02/2020
Analyzed Date: 12/05/2020

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

Lab Sample Number:	192011889-0004			192011889-0005			192011889-0006		
Client Sample ID:	TOES-4			TOES-5			TOES-6		
Volume (L):	75			75			75		
Sample Location:	Classroom 11			Classroom 7			Health Aid room		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	1	40	2.4	-	-	-	-	-	-
Aspergillus/Penicillium	5	200	11.9	3	100	18.5	7	300	42.9
Basidiospores	34	1400	83.3	9	400	74.1	9	400	57.1
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	2.4	1	40	7.4	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**41**	**1680**	**100**	**13**	**540**	**100**	**16**	**700**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	1	40	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	41	-	-	41	-	-	41	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

Sample Comment: 192011889-0004 No background submitted
Sample Comment: 192011889-0005 No background submitted
Sample Comment: 192011889-0006 No background submitted

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

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

Abubakar Barry, Microbiology Lab Manager
or other Approved Signatory

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Received Date: 12/02/2020
Analyzed Date: 12/05/2020

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

Lab Sample Number:	192011889-0007			192011889-0008			192011889-0009		
Client Sample ID:	TOES-7			TOES-8			TOES-9		
Volume (L):	75			75			75		
Sample Location:	Guidance Room			Classroom 5			Main office		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	1	40	3.3	1	40	18.2	-	-	-
Aspergillus/Penicillium	8	300	25	1	40	18.2	-	-	-
Basidiospores	20	820	68.3	3	100	45.5	3	100	71.4
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	3.3	1	40	18.2	1	40	28.6
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**30**	**1200**	**100**	**6**	**220**	**100**	**4**	**140**	**100**
Hyphal Fragment	2	80	-	-	-	-	-	-	-
Insect Fragment	-	-	-	1	40	-	1*	10*	-
Pollen	-	-	-	2*	30*	-	-	-	-
Analyt. Sensitivity 600x	-	41	-	-	41	-	-	41	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	2	-	-	1	-
Background (1-5)	-	1	-	-	2	-	-	1	-

Sample Comment: 192011889-0007 No background submitted
Sample Comment: 192011889-0008 No background submitted
Sample Comment: 192011889-0009 No background submitted

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

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

Abubakar Barry, Microbiology Lab Manager
or other Approved Signatory

High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed.

Samples analyzed by EMSL Analytical, Inc. Beltsville, MD AIHA-LAP, LLC-EMLAP Accredited #102891

Initial report from: 12/07/2020 10:58 AM

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

EMSL Analytical, Inc.

10768 Baltimore Avenue Beltsville, MD 20705

Tel/Fax: (301) 937-5700 / (301) 937-5701

http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 192011889
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Tall Oaks ES

Phone: (443) 983-0362
Fax: (410) 997-8713
Collected Date: 12/01/2020
Received Date: 12/02/2020 09:16 AM
Analyzed Date: 12/05/2020

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

Lab Sample Number:	192011889-0010			192011889-0011		
Client Sample ID:	TOES-10			TOES-BG		
Volume (L):	75			75		
Sample Location:	Multipurpose			Background		
Spore Types	**Raw Count**	**Count/M³**	**% of Total**	**Raw Count**	**Count/M³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-
Ascospores	-	-	-	8	300	16.1
Aspergillus/Penicillium	-	-	-	3	100	5.4
Basidiospores	1	40	100	29	1200	64.5
Bipolaris++	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-
Cladosporium	-	-	-	4	200	10.8
Curvularia	-	-	-	-	-	-
Epicoccum	-	-	-	1*	10*	0.5
Fusarium	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-
Myxomycetes++	-	-	-	1*	10*	0.5
Pithomyces++	-	-	-	-	-	-
Rust	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-
Polythrincium	-	-	-	1	40	2.2
Total Fungi	**1**	**40**	**100**	**47**	**1860**	**100**
Hyphal Fragment	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-
Pollen	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	41	-	-	41	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-

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

Abubakar Barry, Microbiology Laboratory Manager or other Approved Signatory

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

Initial report from: 12/07/2020 10:58 AM

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

OrderID: 192011889

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*: 192011889

PHONE:
FAX:

Company: Tidewater Inc	**EMSL-Bill to:** ☐ Different ☐ Same If Bill to is Different note instructions in Comments**
Street: 6625 Selnick Drive, Suite A	*Third Party Billing requires written authorization from third party*
City: Elkridge **State/Province:** MD	**Zip/Postal Code:** **Country:**
Report To (Name): Skanda Abeyesekere	**Telephone #:**
Email Address: skanda@tideh2o.net	**Fax #:** **Purchase Order:**
Project Name/Number: Tall OAKS ES	**Please Provide Results:** ☐ FAX ☒ E-mail ☐ Mail
U.S. State Samples Taken: Maryland	**Connecticut Samples:** ☒ Commercial ☐ Residential

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour ☐ 6 Hour ~~☒ 24 Hour~~ ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ~~☐ 2 Week~~

*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

Non Culturable Air Samples (Spore Traps) – Test Codes

• M001 Air-O-Cell	• M173 Allegro M2	• M004 Allergenco	• M032 Allergenco-D	• M172 Versa Trap
• M049 BioSIS	• M003 Burkard	• M043 Cyclex	• M002 Cyclex-d	
• M030 Micro 5	• M174 MoldSnap	• M176 Relle Smart	• M130 Via-Cell	

Other Microbiology Test Codes

• M041 Fungal Direct Examination	• M014 Endotoxin Analysis	• M029 *Enterococci*
• M005 Viable Fungi ID and Count	• M015 Heterotrophic Plate Count	• M019 Fecal Coliform
• M006 Viable Fungi ID and Count (Speciation)	• M180 Real Time Q-PCR-ERMI 36	• M133 MRSA Analysis
• M007 Culturable Fungi	• Panel	• M028 *Cryptococcus neoformans*
• M008 Culturable Fungi (Speciation)	• M018 Total Coliform	Detection
• M009 Gram Stain Culturable Bacteria	(Membrane Filtration)	• M120 *Histoplasma capsulatum*
• M010 Bacterial Count and ID – 3 Most	• M020 Fecal *Streptococcus*	Detection
Prominent	(Membrane Filtration)	• M033-39 Allergen Testing
• M011 Bacterial Count and ID – 5 Most	• M210-215 *Legionella* Detection	• M044 Group Allergen
Prominent	• M026 Recreational Water Screen	(Cat, Dog, Cockroach, Dustmites)
• M013 Sewage Contamination in Buildings	• M027 Mycotoxin Analysis	• Other See Analytical Price Guide

Preservation Method (Water):

Name of Sampler: Skanda Abeyesekere **Signature of Sampler:** Skanda Abeyesekere

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
Example: A1	Kitchen	Air	M001	75L	1/1/12 4:00 PM
TOES-1	Library Classroom 12	Air	M032	75-0	12/01/2020
-2	classroom 14				
-3	classroom 17				
-4	classroom 11				
-5	classroom 7				
-6	Health Ard room				
-7	Guidance Room				
-8	classroom 5				
-9	Main office.				

Client Sample # (s): 1 - **Total # of Samples:** 11

Relinquished (Client): Skanda Abeyesekere **Date:** 12/01/2020 **Time:**

Received (Client): K. Smith Drop Box **Date:** **Time:**

Comments:

RECEIVED
EMSL ANALYTICAL, INC.
BELTSVILLE, MD
2020 DEC -2 A 9:16

OrderID: 192011889

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

192011889

PHONE:
FAX:

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
~~TOES-9~~	multipurpose room	Air	~~M001~~ M032	75.0	12/01/2020
TOES-10	multipurpose	Air	M001	75-0	12/01/~~20~~
TOES-~~BG~~	Background	Air	M001	75	12/01/

**Comments/Special Instructions:

Page 2 of 2 pages

APPENDIX C

INSTRUMENT CALIBRATION CERTIFICATES

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	74.1 (23.4)	°F (°C)
RELATIVE HUMIDITY	26	%RH
BAROMETRIC PRESSURE	29.26 (990.9)	inHg (hPa)

MODEL	9565-X
SERIAL NUMBER	9565X1945002

☒ AS LEFT ☒ IN TOLERANCE
☐ AS FOUND ☐ OUT OF TOLERANCE

-- CALIBRATION VERIFICATION RESULTS --

THERMO COUPLE^ — **SYSTEM PRESSURE01-01** — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	71.6 (22.0)	71.6 (22.0)	69.6~73.6 (20.9~23.1)				

BAROMETRIC PRESSURE — **SYSTEM PRESSURE01-01** — *Unit: inHg (hPa)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	29.26 (990.9)	29.26 (990.9)	28.67~29.85 (970.9~1010.8)				

^ *Circuit portion of temperature measurement only, not including probe.*

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003299	06-06-19	12-31-20	DC Voltage	E003300	06-06-19	12-31-20
Temperature	E004626	01-09-19	01-31-20	Pressure	E003302	08-07-19	02-29-20
Pressure	E003303	08-26-19	02-29-20				

Rose Germain — CALIBRATED

November 8, 2019 — DATE

Doc. ID CERT_GEN_WCC_TM

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

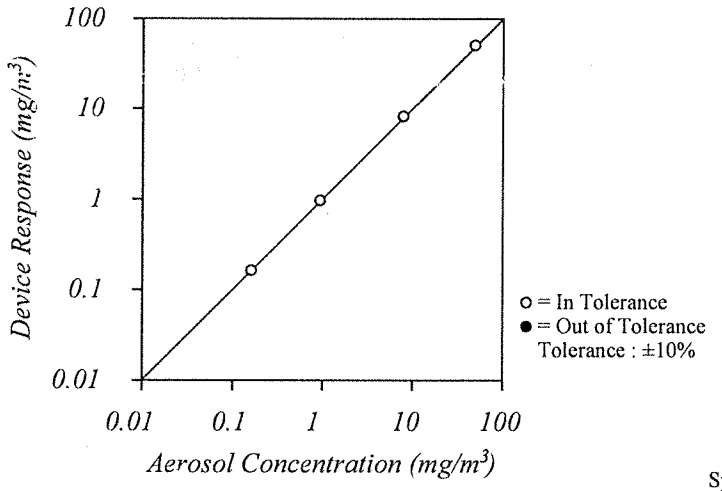
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.83 (24.4)	°F (°C)
Relative Humidity	43.6	%RH
Barometric Pressure	28.93 (979.7)	inHg (hPa)

Model	**8534**
Serial Number	**8534170101**

☒ As Left ☒ In Tolerance
☐ As Found ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

FLOW AND PRESSURE VERIFICATION — SYSTEM DTII01-01

Parameter	Standard	Measured	Allowable Range	Parameter	Standard	Measured	Allowable Range
Flow lpm	3.00	3.03	2.88 ~ 3.12	Pressure kPa	97.8	97.8	92.95 ~ 102.73
Full Flow lpm	N/A	4.54	>3.80				

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003314	01-15-20	01-31-21
Microbalance	M001324	10-03-18	10-31-20
3 um PSL	221853	n/a	n/a
Pressure	E003511	10-04-19	10-31-20
DC Voltage	E003315	01-15-20	01-31-21
Flowmeter	E005922	06-29-20	06-30-21
Microbalance	M001324	10-03-18	10-31-20
1 um PSL	698880	n/a	n/a
10 um PSL	212455	n/a	n/a

Measurement Variable	System ID	Last Cal.	Cal. Due
Photometer	E005612	08-19-20	02-28-21
1 um PSL	698880	n/a	n/a
10 um PSL	212455	n/a	n/a
Flowmeter	E005140	01-09-20	01-31-21
Photometer	E003433	09-15-20	03-31-21
DC Voltage(Keithley)	E002859	06-15-20	06-30-21
Pressure	E005651	07-06-20	07-31-21
3 um PSL	206030	n/a	n/a

David Farrell
Calibrated

September 24, 2020
Date

Certificate of Conformance

(X) Buck BioAire™ ( ) Buck BioSlide™

Serial number: B153043 **Date Issued:** 3-18-20

Flow Calibration

The instrument listed above is in conformance with factory specifications and the flow is set to nominal using a BUCK Calibrator which is N.I.S.T. traceable to A. P. Buck, Inc. Calibration Procedure APB-1, Ver. 6.2.

QA APPROVAL BY: Thomas J. Cranmer

A.P. BUCK, INC.
7101 Presidents Drive, Suite 110
Orlando, FL 32809
Phone: 407-851-8602 • Fax: 407-851-8910

BUCK
A.P. BUCK, INC.

APPENDIX D

RELEVANT CERTIFICATIONS

ABIH®

american board of industrial hygiene®

organized to improve the practice of industrial hygiene
proclaims that

Skandakumar Harshanath Abeyesekere

having met all requirements of
education, experience and examination, and
ongoing maintenance,
is hereby certified in the

COMPREHENSIVE PRACTICE
of
INDUSTRIAL HYGIENE

and has the right to use the designations

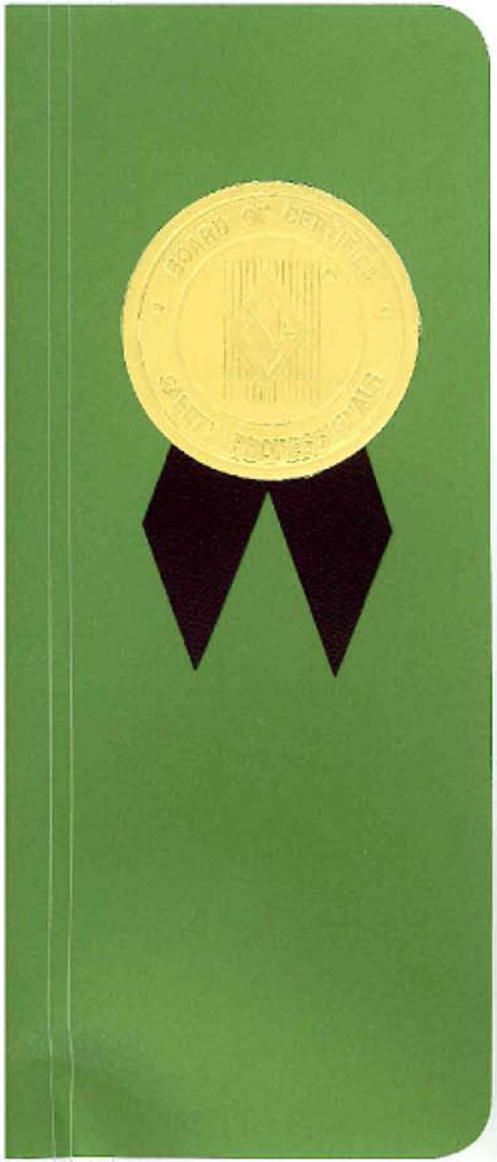
CERTIFIED INDUSTRIAL HYGIENIST

CIH®

Certificate Number	**9928 CP**
Awarded:	**May 11, 2011**
Expiration Date:	**December 1, 2021**

Susan Ripple
Chair, ABIH

Chief Executive Officer, ABIH



BOARD OF CERTIFIED SAFETY PROFESSIONALS

affirms that

Skandakumar Abeyesekere

Has applied for, met qualifications, and passed required examination(s) and is hereby authorized to use the designation

Certified Safety Professional®

in Comprehensive Practice

So long as this certificate is not suspended or revoked and the certificant renews this authorization annually and meets Continuance of Certification requirements.

Board of Examiners in witness whereof we have here unto set our hands and affixed the Seal of the Board this 7th Day of April, 2008

Paul S Adams — President

Linda Tapp — Secretary

20110 — CSP No.

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT

THIS CERTIFIES THAT

Skandakumar Abeyeskere

HAS SUCCESSFULLY MET ALL THE REQUIREMENTS OF EDUCATION, EXPERIENCE AND EXAMINATION, AND IS HEREBY DESIGNATED A

CERTIFIED HAZARDOUS MATERIALS MANAGER
CHMM

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT IHMM CORPORATE SEAL 1984 DISTRICT OF COLUMBIA

May 13, 2016
DATE OF CERTIFICATION

19053
CREDENTIAL NUMBER

May 31, 2021
CERTIFICATION EXPIRES

M. Patricia Buley
ACTING EXECUTIVE DIRECTOR

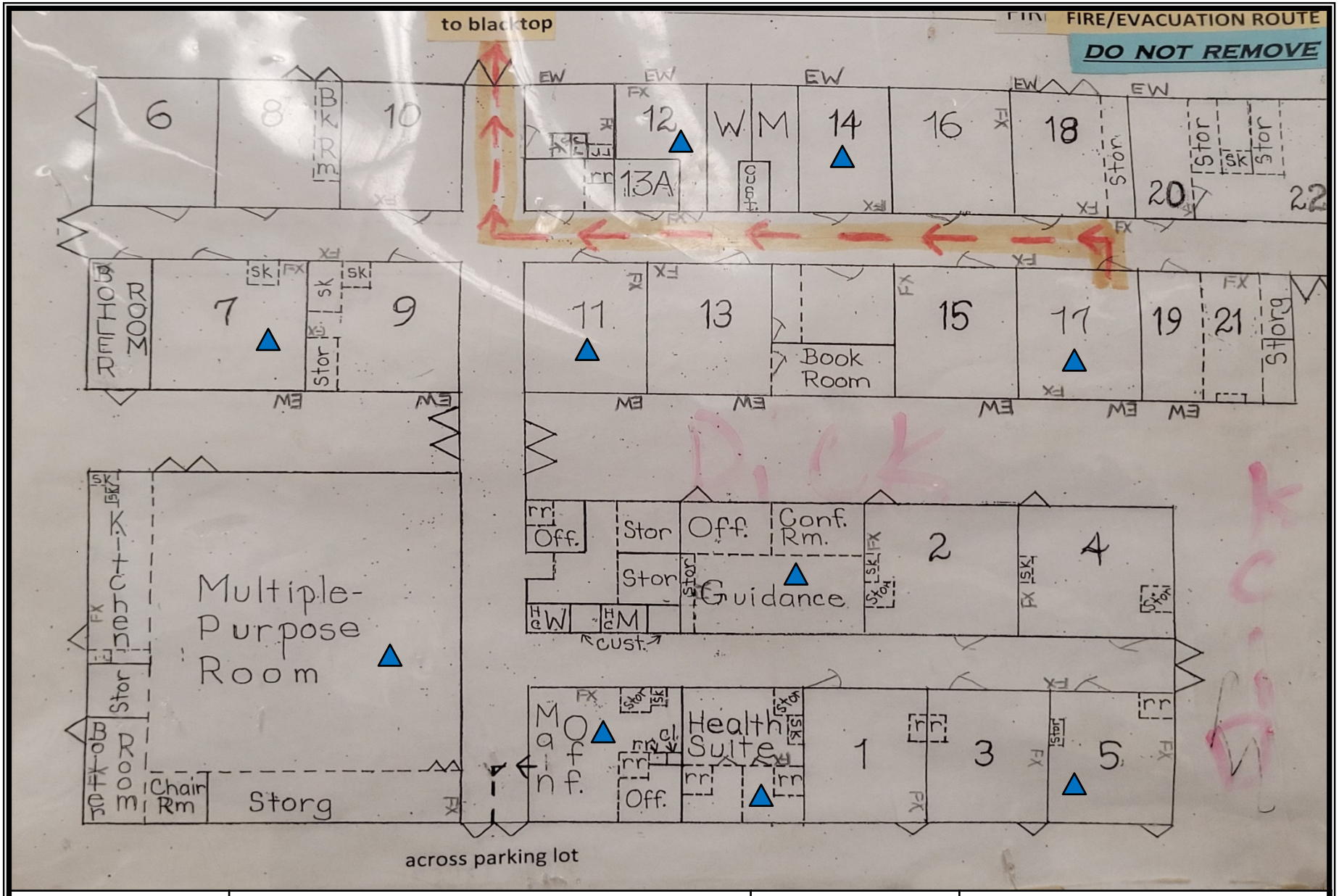
VALID SO LONG AS THIS CREDENTIAL IS RENEWED ACCORDING TO SCHEDULE AND IS NOT OTHERWISE REVOKED.

ANSI Accredited Program PERSONNEL CERTIFICATION

Accredited by the American National Standards Institute and the Council of Engineering and Scientific Specialty Boards

APPENDIX E

FLOOR PLAN WITH SAMPLING LOCATIONS



TIDEWATER INC	**Attachment C** **Tal Oaks High School** **Floor Plan with Sampling Locations**	Scale: N/A Project #: 5419-034 Date: December 1, 2020	**General Notes** ▲ = Sample Location