



July 5, 2019

Mr. Alex Baylor, Environmental Specialist
Environmental Safety Office
Prince Georges County Public Schools
Division of Supporting Services / Building Services
13306 Old Marlboro Pike
Upper Marlboro, MD 20772

via email: alex.baylor@pgcps.org

**RE: Indoor Air Quality (IAQ) and Mold Assessment Services
Scotchtown Hills Elementary School
15950 Dorset Road, Laurel, Maryland 20707
Tidewater Project No.: 5419-025**

Dear Mr. Baylor:

Tidewater, Inc. (Tidewater) is pleased to present this Indoor Air Quality (IAQ) and Mold Assessment Report describing the results of the IAQ assessment and mold survey conducted by Tidewater at Scotchtown Hills Elementary School located at 15950 Dorset Road in Laurel, Maryland. The IAQ and Mold survey was conducted on May 30, 2019, by Tidewater's Project Manager and Certified Industrial Hygienist, Mr. Skanda Abeyesekere MS, CIH, CSP, CHMM.

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

- Visual inspections of the following areas of the school: Library, Gymnasium, Classroom K-10, Classroom Primary 3, Pre-K Classroom 6, Classroom 30, Classroom 23, Classroom 19 and Classroom 14 of Scotchtown Hills Elementary School 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.
- Comfort parameter air testing at the above areas utilizing a direct-reading IAQ monitor for temperature (T), relative humidity (RH), carbon monoxide (CO), and carbon dioxide (CO₂.) Measurements were taken for comparison with guidelines established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62.1–2016, Ventilation for Acceptable Indoor Air Quality, and The United States Environmental Protection Agency (US EPA) National Ambient Air Quality Standards (NAAQS.)
- Measurement of particulate matter less than 10 microns (PM10) concentrations utilizing a direct-reading instrument at the above areas for comparison with guidelines established by the United States Environmental Protection Agency (US EPA.)
- Measurement of Total Volatile Organic Compounds (TVOCs) concentrations utilizing a direct-reading instrument at the above areas for comparison with relevant guidelines.
- Air sampling for total airborne fungal spore concentrations at the above areas using Allergenco-D cassettes affixed to a Buck BioAire™ Model B520 Bioaerosol Sampling Pump.



Visual Observations

Tidewater's assessment included a visual inspection of select areas of the school including Library, Gymnasium, Classroom K-10, Classroom Primary 3, Pre-K Classroom 6, Classroom 30, Classroom 23, Classroom 19 and Classroom 14 of Scotchtown Hills Elementary School. The results of Tidewater's visual inspection are as follows:

Library

The Library was vacant at the time of the inspection. The supply and return grills located on the ceiling appeared to be clean. No signs mold growth or water-intrusion problems were observed in the Library. No unusual odors were detected. General housekeeping appeared to be satisfactory.

Gymnasium

Gymnasium had over 100 students at the time of the inspection. The supply air grills located on the ceiling contained dust. The ceiling-mounted supply air diffusers appeared to be clean. The air conditioning unit was in operation at the time of the inspection. General housekeeping within the Gymnasium appeared to be good. Multiple water-stained ceiling tiles were observed in the area. No unusual odors were detected in the Gymnasium.

Classroom 16

Classroom 16 had two (2) wall-mounted fan coil units that were not in operation at the time of the inspection. The supply and return grills located on the ceiling appeared to be dusty. No signs mold growth or water-intrusion problems were observed in the classroom. No unusual odors were detected in the area. General housekeeping appeared to be satisfactory.

Classroom K-10

Classroom K-10 had 10 occupants at the time of the inspection. One (1) wall-mounted fan coil unit was in operation at the time of the inspection. There were no supply and return grills located on the ceiling. Multiple water-stained ceiling tiles were observed in Classroom K-10. No unusual odors were detected from the classroom. General housekeeping appeared to be satisfactory.

Classroom Primary 3

Classroom Primary 3 had over 10 occupants at the time of the inspection. One (1) wall-mounted fan coil unit was observed in classroom. This fan coil unit was not in operation at the time of the inspection. There were no supply and return grills located on the ceiling. No unusual odors were noted in the classroom. General housekeeping appeared to be satisfactory.

Classroom Pre K-6

Classroom K-10 had 10 occupants at the time of the inspection. One (1) wall-mounted fan coil unit was in operation at the time of the inspection. There were no supply and return grills located on the ceiling. No unusual odors were detected in the classroom. General housekeeping appeared to be satisfactory.



Classroom 30

Classroom 30 was vacant at the time of the inspection. Classroom 30 had one (1) wall-mounted fan coil unit that was not operating at the time of the inspection. There were no supply and return grills located in the ceiling. No signs of mold growth or water-intrusion problems were observed in the classroom. No unusual odors were detected. General housekeeping appeared to be satisfactory.

Classroom 23

Classroom 23 was vacant at the time of the inspection. One (1) wall-mounted fan coil unit was in operation at the time of the inspection. There were no supply and return grills located in the ceiling. No unusual odors were detected. General housekeeping appeared to be satisfactory.

Classroom 19

Classroom 19 had over 10 occupants at the time of the inspection. One (1) wall-mounted fan coil unit was in operation at the time of the inspection. There were no supply and return grills located in the ceiling. No unusual odors were detected from the classroom. General housekeeping appeared to be satisfactory.

Classroom 14

Classroom 14 had 10 occupants at the time of the inspection. One (1) wall-mounted fan coil unit was in operation at the time of the inspection. There were no supply and return grills located in the ceiling. No unusual odors were detected. General housekeeping appeared to be satisfactory.

Comfort Parameter Air Testing

During the assessment, Tidewater recorded temperature, relative humidity, carbon dioxide (CO₂), and carbon monoxide (CO) measurements in the above-mentioned locations of Scotchtown Hills Elementary School using a TSI Q-Track Air Quality Meter (Model Number TSI Q-Track 7565, Serial Number 7565x0931002, Calibration Date: April 18, 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 guidelines established by the American Society for Heating Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2016, Ventilation for Acceptable Indoor Air Quality. A background sample was obtained in front of the main entrance to 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 – 2016, the temperature range in summer months should be maintained between 73.0°F and 79.0°F for maximum occupant comfort. The ASHRAE guideline for temperature for winter months is between 68.0°F and 74.5°F. The indoor temperature levels recorded in the assessed areas ranged between 75.3°F and 83.4°F, and the background temperature outside the building was 83.5°F. The temperature levels recorded in



the Library and Classrooms 30, 23, 19 and 14 exceeded the upper temperature guideline of 79.0°F recommended in ASHRAE Standard 62.1 – 2016 for summer months.

Per the same guideline, a maximum recommended relative humidity level of 65.0% is recommended to reduce the likelihood of condensation on cold surfaces. Relative humidity levels recorded in the assessed areas ranged between 49.4% and 61.6%. The background relative humidity level outside the building was 55.9%. The relative humidity levels in all areas assessed did not exceed the maximum relative humidity guideline of 65.0% recommended in ASHRAE Standard 62.1 – 2016.

ASHRAE Standard 62.1 – 2016 recommends that indoor CO₂ concentrations not exceed 700 ppm above the outdoor background CO₂ level. The CO₂ levels recorded in the assessed areas ranged between 1,027 ppm to 2,348 ppm. The background CO₂ level outside the building was 500 ppm. The CO₂ levels in all areas assessed apart from K-10 exceeded 700 ppm above the outdoor background CO₂ level of 500 ppm and indicated inadequate air exchanges to these areas.

The CO concentrations recorded in all of the assessed areas were below the maximum guideline of 9 ppm recommended by the Indoor Air Quality Association (IAQA) for CO in occupied indoor environments.

Particulate Matter Less than 10 Microns (PM 10)

Tidewater conducted air sampling for respirable dust particulates using a TSI® DUST TRAK DRX™ Aerosol Monitor (Serial Number 8534170101, Calibrated Date: March 1, 2019.) The TSI® DUST TRAK DRX™ Aerosol Monitor was equipped with a PM10 (10 µm) respirable impactor. 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 designated location and the average concentration was recorded. Samples were taken for comparison with guidelines established by the EPA NAAQS. Tidewater also obtained a background sample from outside 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 National Ambient Air Quality Standard (NAAQS) for Particulate Matter, Final Rule (January 15, 2013), 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/m³) or 0.150 milligrams per cubic meter of air (mg/m³.) The results of the PM10 analysis indicate that the average PM10 dust concentration recorded in all of the assessed areas ranged between 0.026 mg/m³ and 0.057 mg/m³. The average PM10 dust concentration in the background sample obtained in front of the main entrance was 0.028 mg/m³.

The results of the PM10 monitoring indicate that the PM10 dust concentrations all areas assessed were below the EPA 24-hour primary and secondary NAAQS of 0.150 mg/m³.

Total Volatile Organic Compound (TVOC) Air Testing

Tidewater obtained direct read measurements for Total Volatile Organic Compounds (TVOCs) using a Mini-RAE 2000 Hand Held VOC meter (Model Number MINIRAE 2000, Serial Number 110-010833, Calibration Date April 9, 2019.) 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 threshold limits recommended for typical indoor occupied environments.

A background sample was also obtained outdoors in front of the main entrance of the school building for comparison to the indoor readings. The results of the particulate matter sampling are provided in Table 3, in **Attachment A**.

There are no OSHA published guidelines for TVOCs. However, in general, the indoor air quality TVOC threshold for typical indoor occupied environments should not exceed 1,000 ppb (1.0 ppm) isobutylene units. The TVOC concentrations recorded in all of the assessed areas were below the recommended threshold level of 1.0 ppm.

Spore Trap Bioaerosol Sampling

On May 30, 2019, Tidewater collected a total of nine (9) spore trap air samples using Allergenco-D cassettes to characterize potential airborne fungal spores within select areas of Scotchtown Hills Elementary School. A background sample was collected outside the main entrance to the school building for comparison purposes.

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, Calibration Date: February 6, 2019) calibrated to a flow rate of 15.0 Liters per minute. Each sample was run for a period of five (5) minutes at each sample location to collect a total sample volume of 75.0 liters of air.

Once collected, the samples were transported to EMSL Analytical Laboratory (EMSL) located in Beltsville, Maryland for analysis. 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, airborne concentrations indoors should be less than that found in the outdoor air, with similar species composition. Indoor spore counts significantly greater than those detected outdoors, or the presence of large numbers of different types of spores indoors that are not found outdoors, may indicate contamination and potential indoor air quality problems.

The total mold spore counts for the interior samples ranged between 1,450 and 5,100 spores per cubic meter (spores/m³.) The total mold spore concentration in the outdoors (background) sample was 26,140 spores/m³. The total mold spore concentrations in all areas assessed were significantly below the outdoor (background) total mold spore concentration.



Additionally, the individual fungal species concentrations observed in the interior samples were generally consistent with those observed in the background reference sample with no significant concentrations of an individual fungal species identified in the interior samples.

The summary of the results for the spore trap sampling are provided in Table 4 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

Based on this IAQ and mold assessment survey, Tidewater offers the following conclusions:

- Tidewater's visual inspection did not reveal any evidence of standing water, active water intrusion or suspect mold growth on accessible walls, floors and ceilings in the assessed areas. Water-stained ceiling tiles were observed in the Gymnasium and K-10.
- The supply grills in the Gymnasium were dirty.
- General housekeeping in most classrooms appeared to be satisfactory.
- Relative humidity, CO, PM10 and TVOC readings recorded within the assessed areas were all within industry standards and guidelines.
- The temperature levels recorded in the Library and Classrooms 30, 23, 19 and 14 exceeded the upper temperature guideline of 79.0°F recommended in ASHRAE Standard 62.1 – 2016 for summer months.
- The CO₂ levels in all areas assessed apart from K-10 exceeded 700 ppm above the outdoor background CO₂ level of 500 ppm and indicated inadequate air exchanges to these areas.
- The mold spore concentrations in all interior locations sampled were significantly below the outdoors (background) total mold spore concentration. Additionally, the individual fungal species concentrations observed in the interior samples were generally consistent with those observed in the background reference samples with no significant concentrations of an individual fungal species identified in the interior samples

Recommendations

Based on the results of the assessment, Tidewater offers the following recommendations:

- Abate the water-stained ceiling tiles in the Gymnasium and K-10. Ensure that the perimeters of the ceiling grids are cleaned with a 10% bleach solution to mitigate exiting fungal spores prior to installing new ceiling tiles.
- Clean air supply grills and return air grills in the Gymnasium with a 10% bleach solution to mitigate dust deposits.
- Ensure that all cleaning activities are conducted after hours when the above areas are vacant to minimize exposure to occupants.
- 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. Furthermore, all horizontal surfaces including desktops, furniture, window sills and



suspended light fixtures should be cleaned on a routine basis to prevent the accumulations of dust.

- Ensure HVAC System supplying is properly balanced per design requirements and current use/occupancy in order to ensure adequate ventilation throughout the classrooms.
- Ensure the ventilation systems are turned on in all classrooms and are operating at all times when the classrooms are occupied to provide sufficient air flow and ventilation to the classrooms.
- Adjust the HVAC system in the Library and Classrooms 30, 23, 19 and 14 to achieve a temperature level between 73.0°F and 79.0°F recommended by ASHRAE.
- Increase the air exchange rates to all classroom on the 1st and 2nd floors in order to improve the air circulation within the classrooms. Consider running pedestal fans when the classrooms are fully occupied if the general air circulation is inadequate.

Qualifications

Tidewater has endeavored to investigate existing conditions in representative areas of the Scotchtown Hills Elementary School located at 15950 Dorset Road, Laurel, Maryland as they pertain to indoor air quality. Our conclusions and recommendations are based on the 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 Georges 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
Manager, IH Services

SA/JNS

- Attachments: **Attachment A – Summary of Comfort Parameters, Total (Nuisance) Dust, TVOC and Non-Viable Spore Trap Sampling**
Attachment B – Laboratory Reports for Non-Viable Spore Trap Sampling
Attachment C – Calibration Certificates
Attachment D – Qualifications
Attachment E – Floor Plan with Sampling Locations



Attachment A

Summary of Comfort Parameters, Total (Nuisance) Dust, TVOC and Non-Viable Spore Trap Sampling



Table 1: Indoor Air Quality Comfort Parameters Scotchtown Hills Elementary School				
Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
May 30, 2019				
Library	79.4	55.8	1,235	0.0
Gymnasium	77.9	57.4	1,261	0.0
Classroom K-10	76.7	60.4	1,027	0.0
Classroom Primary 3	76.2	58.6	2,094	0.0
Classroom Pre-K 6	75.3	61.6	1,629	0.0
Classroom 30	83.4	49.4	1,684	0.0
Classroom 23	81.5	53.3	2,348	0.0
Classroom 19	79.8	49.8	1,412	0.0
Classroom 14	79.4	51.3	2,336	0.0
Background	83.5	55.9	510	0.0

- Numbers highlighted in red indicates locations in which temperature and relative humidity levels exceeded the guidelines recommended by the American Society for Heating Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2016.



Table 2: Particulate Matter Less than 10 Microns (PM10) Scotchtown Hills Elementary School	
Location	Particulate Matter (PM10)
	Concentration (mg/m³)
May 30, 2019	
Library	0.026
Gymnasium	0.026
Classroom K-10	0.030
Classroom Primary 3	0.057
Classroom Pre-K 6	0.027
Classroom 30	0.036
Classroom 23	0.028
Classroom 19	0.041
Classroom 14	0.041
Background (Outdoors)	0.028

- Numbers highlighted in red indicates locations where PM10 dust concentration exceeded the EPA 24-hour primary and secondary NAAQS of 0.150 mg/m³.



Table 3: Total Volatile Organic Compounds (TVOCs) Scotchtown Hills Elementary School	
Location	Concentration (ppm)
May 30, 2019	
Library	0.0
Gymnasium	0.0
Classroom K-10	0.0
Classroom Primary 3	0.0
Classroom Pre-K 6	0.0
Classroom 30	0.0
Classroom 23	0.0
Classroom 19	0.0
Classroom 14	0.0
Background (Outdoors)	0.0



Table 4: Spore Trap Sampling Results Scotchtown Hills Elementary School			
May 30, 2019			
Sample Number	Sample Location	Sample Volume (L)	Total Fungi Concentration (Counts/m³)
SHES-1	Library	75.0	2,530
SHES-2	Gymnasium	75.0	2,370
SHES-3	Classroom K-10	75.0	2,460
SHES-4	Classroom Primary 3	75.0	1,450
SHES-5	Classroom Pre-K 6	75.0	1,650
SHES-6	Classroom 30	75.0	2,920
SHES-7	Classroom 23	75.0	1,540
SHES-8	Classroom 19	75.0	2,490
SHES-9	Classroom 14	75.0	5,100
BG-1	Background (Outdoors)	75.0	26,140

- Highlighted Area indicates location where the concentrations of the indoor sample exceeded the level detected in the background sample.



TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment B

Laboratory Reports for Non-Viable Spore Trap Mold Sampling



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
 Phone/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

Order ID: 061910775
 Customer ID: TIDE50
 Customer PO:
 Project ID:

Attn: Skanda Abeyeskere
 Tidewater, Inc.
 6625 Selnick Drive
 Suite A
 Elkridge, MD 21075

Phone: (410) 540-8700
 Fax: (410) 997-8713
 Collected: 05/30/2019
 Received: 06/03/2019
 Analyzed: 06/04/2019

Proj: PGCPs Scotchtown Hills ES 5419-025

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	061910775-0001 SHES-1 75 Library			061910775-0002 SHES-2 75 Gymnasium			061910775-0003 SHES-3 75 K-10		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	1	40	1.6
Ascospores	9	400	15.8	5	200	8.4	7	300	12.2
Aspergillus/Penicillium	12	520	20.6	5	200	8.4	6	300	12.2
Basidiospores	21	920	36.4	30	1300	54.9	28	1200	48.8
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	9	400	15.8	13	570	24.1	11	480	19.5
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	1*	10*	0.4	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	4	200	7.9	1	40	1.7	3*	40*	1.6
Pithomyces++	-	-	-	1*	10*	0.4	1*	10*	0.4
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	1	40	1.7	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Bispora	2	90	3.6	-	-	-	2	90	3.7
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Total Fungi	57	2530	100	57	2370	100	59	2460	100
Hyphal Fragment	2	90	-	1	40	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	1*	10*	-	1	40	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	3	-	-	2	-
Fibrous Particulate (1-4)	-	2	-	-	2	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	2	-

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

Jeffrey Lau, Microbiology Laboratory Manager
 or Other Approved Signatory

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

Samples received in good condition unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.
 Samples analyzed by EMSL Analytical, Inc. Carle Place, NY

Initial report from: 06/06/2019 08:23:15

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



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
 Phone/Fax: (516) 997-7251 / (516) 997-7528
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Order ID: 061910775
 Customer ID: TIDE50
 Customer PO:
 Project ID:

Attn: Skanda Abeyeskere
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Phone: (410) 540-8700
Fax: (410) 997-8713
Collected: 05/30/2019
Received: 06/03/2019
Analyzed: 06/04/2019

Proj: PGCPs Scotchtown Hills ES 5419-025

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	061910775-0004 SHES-4 75 Primary 3			061910775-0005 SHES-5 75 Pre-K Classroom 6			061910775-0006 SHES-6 75 2nd fl. Classroom 30		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	1	40	2.8	1	40	2.4	8	300	10.3
Aspergillus/Penicillium	5	200	13.8	2	90	5.5	5	200	6.8
Basidiospores	8	300	20.7	25	1100	66.7	43	1900	65.1
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	7	300	20.7	5	200	12.1	10	440	15.1
Curvularia	1*	10*	0.7	1*	10*	0.6	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	6	300	20.7	-	-	-	1	40	1.4
Pithomyces++	-	-	-	-	-	-	1	40	1.4
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Bispora	8	300	20.7	4	200	12.1	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	1*	10*	0.6	-	-	-
Total Fungi	36	1450	100	39	1650	100	68	2920	100
Hyphal Fragment	10	440	-	5	200	-	1	40	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	1	40	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	3	-	-	3	-	-	3	-
Fibrous Particulate (1-4)	-	2	-	-	2	-	-	2	-
Background (1-5)	-	3	-	-	2	-	-	3	-

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

Jeffrey Lau, Microbiology Laboratory Manager
 or Other Approved Signatory

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

Samples received in good condition unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.
 Samples analyzed by EMSL Analytical, Inc. Carle Place, NY

Initial report from: 06/06/2019 08:23:15

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



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
 Phone/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

Order ID: 061910775
 Customer ID: TIDE50
 Customer PO:
 Project ID:

Attn: Skanda Abeyeskere
 Tidewater, Inc.
 6625 Selnick Drive
 Suite A
 Elkridge, MD 21075

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected: 05/30/2019
Received: 06/03/2019
Analyzed: 06/04/2019

Proj: PGCPs Scotchtown Hills ES 5419-025

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	061910775-0007 SHES-7 75 2nd fl. Classroom 23			061910775-0008 SHES-8 75 2nd fl. Classroom 19			061910775-0009 SHES-9 75 2nd fl. Classroom		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	4	200	3.9
Ascospores	5	200	13	6	300	12	1	40	0.8
Aspergillus/Penicillium	1	40	2.6	4	200	8	1	40	0.8
Basidiospores	27	1200	77.9	38	1700	68.3	9	400	7.8
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	3	100	6.5	3	100	4	61	2700	52.9
Curvularia	-	-	-	-	-	-	6	300	5.9
Epicoccum	-	-	-	4*	50*	2	2	90	1.8
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	3	100	4	27	1200	23.5
Pithomyces++	-	-	-	-	-	-	2	90	1.8
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	1	40	1.6	1	40	0.8
Zygomycetes	-	-	-	-	-	-	-	-	-
Bispora	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Total Fungi	36	1540	100	59	2490	100	114	5100	100
Hyphal Fragment	-	-	-	1	40	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	3	-	-	3	-
Fibrous Particulate (1-4)	-	1	-	-	2	-	-	2	-
Background (1-5)	-	1	-	-	2	-	-	3	-

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

Jeffrey Lau, Microbiology Laboratory Manager
 or Other Approved Signatory

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

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 Samples analyzed by EMSL Analytical, Inc. Carle Place, NY

Initial report from: 06/06/2019 08:23:15

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



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Order ID: 061910775
Customer ID: TIDE50
Customer PO:
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Attn: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Phone: (410) 540-8700
Fax: (410) 997-8713
Collected: 05/30/2019
Received: 06/03/2019
Analyzed: 06/04/2019
Proj: PGCPs Scotchtown Hills ES 5419-025

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

Lab Sample Number:	061910775-0010		
Client Sample ID:	BG-1		
Volume (L):	75		
Sample Location:	Outdoors		
Spore Types	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	-	-	-
Ascospores	107	4670	17.9
Aspergillus/Penicillium	5	200	0.8
Basidiospores	393	17200	65.8
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	86	3800	14.5
Curvularia	-	-	-
Epicoccum	1*	10*	0
Fusarium	-	-	-
Ganoderma	1	40	0.2
Myxomycetes++	2	90	0.3
Pithomyces++	-	-	-
Rust	-	-	-
Scopulariopsis/Microascus	-	-	-
Stachybotrys/Memnoniella	-	-	-
Unidentifiable Spores	1	40	0.2
Zygomycetes	-	-	-
Bispora	-	-	-
Polythrincium	2	90	0.3
Torula-like	-	-	-
Total Fungi	598	26140	100
Hyphal Fragment	1	40	-
Insect Fragment	-	-	-
Pollen	-	-	-
Analyt. Sensitivity 600x	-	44	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	1	-
Fibrous Particulate (1-4)	-	1	-
Background (1-5)	-	1	-

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

Jeffrey Lau, Microbiology Laboratory Manager
or Other Approved Signatory

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

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Samples analyzed by EMSL Analytical, Inc. Carle Place, NY

Initial report from: 06/06/2019 08:23:15

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

061910775

PHONE:
FAX:

Company : Tidewater Inc.		EMSL-Bill to: <input type="checkbox"/> Different <input type="checkbox"/> Same <small>If Bill to is Different note instructions in Comments**</small>	
Street: 6625 Slenick Drive, Suite A		<i>Third Party Billing requires written authorization from third party</i>	
City: Elkridge	State/Province: Maryland	Zip/Postal Code:	Country:
Report To (Name): Skanda Abeyesekere		Telephone #:	
Email Address: skanda@tideh2o.net		Fax #:	Purchase Order:
Project Name/Number: PGCPS 5419-025 5419-025		Please Provide Results: <input type="checkbox"/> FAX <input type="checkbox"/> E-mail <input type="checkbox"/> Mail	
U.S. State Samples Taken: MD <u>Scotchtown Hills ES</u>		Connecticut Samples: <input type="checkbox"/> Commercial <input type="checkbox"/> 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 Cyclcx | • M002 Cyclcx-d | |
| • M030 Micro 5 | • M174 MoldSnap | • M176 Relle Smart | • M130 Via-Cell | |

Other Microbiology Test Codes

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> • M041 Fungal Direct Examination • M005 Viable Fungi ID and Count • M006 Viable Fungi ID and Count (Speciation) • M007 Culturable Fungi • M008 Culturable Fungi (Speciation) • M009 Gram Stain Culturable Bacteria • M010 Bacterial Count and ID - 3 Most Prominent • M011 Bacterial Count and ID - 5 Most Prominent • M013 Sewage Contamination in Buildings | <ul style="list-style-type: none"> • M014 Endotoxin Analysis • M015 Heterotrophic Plate Count • M180 Real Time Q-PCR-ERMI 36 Panel • M018 Total Coliform (Membrane Filtration) • M020 Fecal <i>Streptococcus</i> (Membrane Filtration) • M210-215 <i>Legionella</i> Detection • M026 Recreational Water Screen • M027 Mycotoxin Analysis | <ul style="list-style-type: none"> • M029 <i>Enterococci</i> • M019 Fecal Coliform • M133 MRSA Analysis • M028 <i>Cryptococcus neoformans</i> Detection • M120 <i>Histoplasma capsulatum</i> Detection • M033-39 Allergen Testing • M044 Group Allergen (Cat, Dog, Cockroach, Dustmites) • Other See Analytical Price Guide |
|---|--|---|

Preservation Method (Water):

Name of Sampler: <u>Skanda Abeyesekere</u>	Signature of Sampler:
--	-----------------------

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
Example: A1	Kitchen	Air	M001	75L	1/1/12 4:00 PM
STRES-1	Library	Air	M032	75-0	05/30/19
- 2	Gymnasium		05		
3	primary 2 K-10				
4	primary 3				
5	Pre-K Classroom 6				
6	2nd fl. classroom 80				
7	11 Classroom 23				
8	11 Classroom 19				
9	12 Classroom				

Client Sample # (s): <u>4</u>	Total # of Samples: <u>11</u>
Relinquished (Client):	Date: <u>05/30/2019</u> Time: <u>1:00pm</u>
Received (Client):	Date: <u>6/3/19</u> Time: <u>1:45pm</u>
Comments:	

6/4/19



TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment C
Calibration Certificates



IAQ Meter Calibration Certificate

Cal Standard	Lot #	Expiration
	18-6508	4/18/2020

Carbon Monoxide Gas	Reading ppm	Acceptable Range
35 ppm ▼	35.0	(32 - 38) ▼

Carbon Dioxide Gas	Reading ppm	Acceptable Range
1000 ppm ▼	1008.0	(950 - 1050) ▼

Model	TSI Q-Trak 7565 ▼
S/N	7565x0931002
Barcode	u59038x
Order #	398188

Calibrated By Bryce Spontak ▼

Date of Calibration 05/16/19

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.

All calibration gas used is traceable to NIST. Additional documentation is available upon request.



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services, LLC.

Tidewater MD

Instrument ID 110-010833
Description MINIRAE 2000
Calibrated 4/9/2019

Manufacturer Rae Systems
Model Number MINIRAE 2000
Serial Number 110-010833
Location Maryland
Department CATHY MOORE

Frequency 6 Months
Status Pass
Temp 24
Humidity 39

Calibration Specifications

Group # 1
Group Name ISOBUTYLENE
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

<u>Nom In Val / In Val</u>	<u>In Type</u>	<u>Out Val</u>	<u>Out Type</u>	<u>Fnd As</u>	<u>Lft As</u>	<u>Dev%</u>	<u>Pass/Fail</u>
100.00 / 100.00	ppm	100.00	ppm	92.80	101.00	1.00%	Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

<u>Test Instrument ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number / Lot Number</u>	<u>Last Cal Date</u>	<u>Next Cal Date / Expiration Date</u>
MD ISO 100PPM FBI-248-100-12	MD ISO 100PPM	Pine Environmental Services, Inc.	FBI-248-100-12	34LS-248-100	5/23/2022	
MD ZERO AIR FBI-1-25	ZERO AIR Oxygen 20.9%VOL, Nitrogen Balance	Pine Environmental Services, Inc.	31844	FBI-1-25		

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Ryan Armstrong

Pine Environmental Services, LLC. hereby certifies that this instrument is calibrated and functions to meet the manufacturer's specifications using NIST traceable standards, or is derived from accepted values of physical constants.

Certificate of Conformance

Buck BioAire™

Buck BioSlide™

Serial number: B153043 Date Issued: 2-6-19

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. Gorenover

Information contained in this document should not be reproduced in any form without the written consent of A.P. Buck Inc. It is for reference only and cannot be used as a form of endorsement by any private or governmental regulatory body.

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.

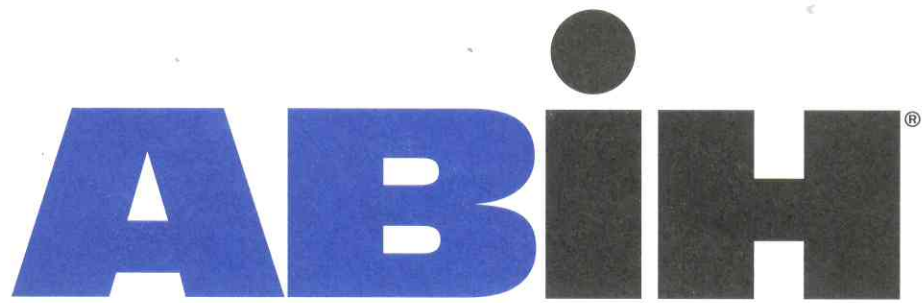
COCR-004 REV-01 3/3/2006



TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment D
Qualifications



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

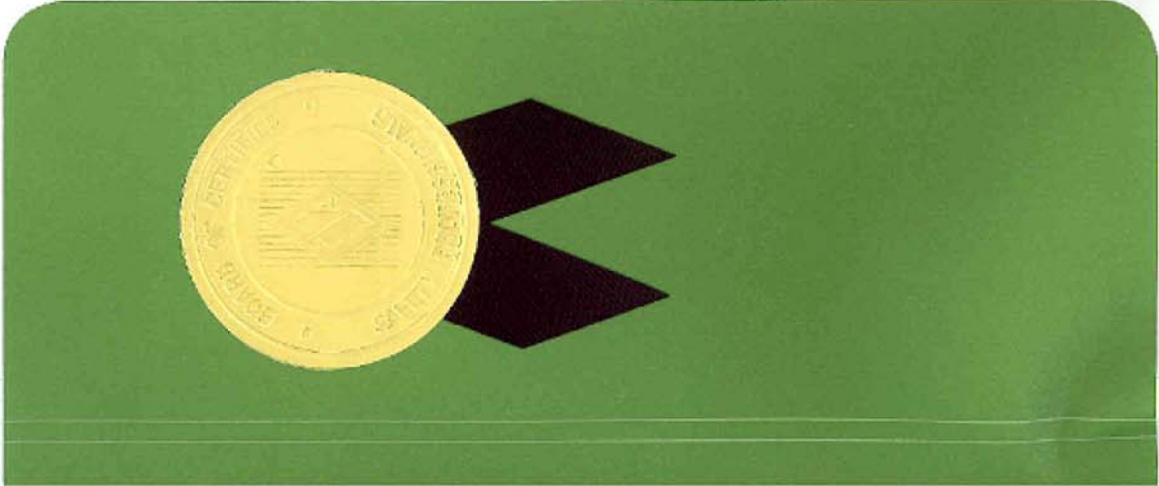
CIH

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



Susan Ripple
Chair, ABIH

William K. Oliver
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



<i>Paul S Adams</i>	President
<i>Linda Japp</i>	Secretary
20110	CSP No.



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**



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.



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





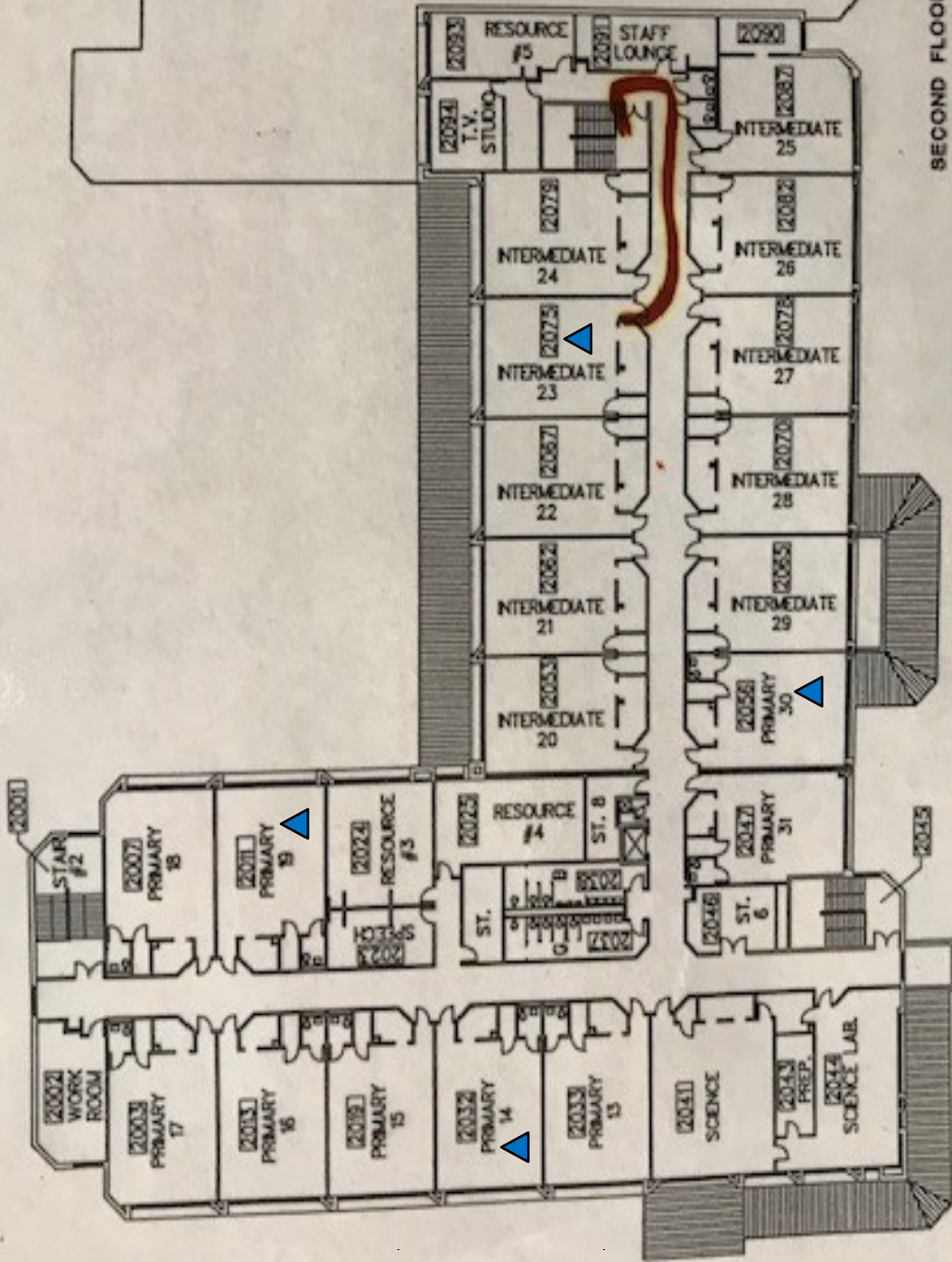
TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment E

Floor Plan with Sampling Locations

EMERGENCY FIRE EXITS



SECOND FLOOR
SCOTCHTOWN HILLS

General Notes

Scale: N/A

Project #: 5419-025
Date: May 30, 2019

▲ = Sample Location

Attachment C
Scotchtown Hill Elementary School
Floor Plan with Sampling Locations