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MEMBERS OF:



LIMITED MICROBIAL & IAQ SURVEY CLOSING REPORT

WEST MIDDLE SCHOOL

AUGUST 19, 2015

PROJECT LOCATION:

417 MAIN STREET
FAWN GROVE, PA 17321

PROJECT CONTRACT FOR:

MR. BRIAN MCCLEARY

Respectfully Submitted
PROAC CORPORATION

Reviewed By:
PROAC CORPORATION

Walter Saunders, CIEC, LEED™ GA, ASCS
Industrial Hygienist

Dean R. Klopp, CIE, CMR, ASCS, VSMR
President



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EXECUTIVE SUMMARY:

On August 19, 2015 a *Limited Microbial and IAQ Survey* was performed at West Middle School, located in Fawn Grove PA. The survey was completed by:

Walt Saunders, CIEC, Industrial Hygienist, LEED™ GA, PROAC Corporation

The baseline survey and testing was completed in selected areas throughout the school. The areas selected were based on information obtained from previous surveys. The survey was intended to document present environmental conditions in the school.

The survey included both direct reading measurements of Carbon Dioxide (CO₂), Carbon Monoxide (CO), Temperature, Relative Humidity, and Particle Counts as well as air samples for total, non viable fungi. Additionally, visible indications of past or present mold, if present, were noted. The school was not occupied at the time of the survey.

An "AMPROBE" digital sling psychrometer was used to obtain temperature and relative humidity readings. Carbon Dioxide (CO₂), Carbon Monoxide (CO) and Total Volatile Organic Compounds (TVOC's) were sampled using a "MultiRAE IR", PGM-54 Multi-Gas Monitor. Range of gases begins at "0" and the resolution is 10 parts per million (ppm) for CO₂, 1ppm for CO. Particle Counts were obtained using a Arti HHPC-6 laser particle counter. Particle counts were recorded in five sizes of microscopic particulate including 0.3, 0.5, 1.0, 2.0 and 5.0 microns (ug). No significant findings were observed.

Airborne, total, non viable fungi were sampled using a Bio Pump sampler and Allergenco D sampling cassettes as recommended by the Environmental Protection Agency (EPA) and the American Industrial Hygiene Association (AIHA). The pump was calibrated to 15 liters/minute and samples were drawn for 5 minutes. No significant findings were revealed.

SUMMARY OF FINDINGS:

A) GAS SAMPLING AND PARTICLE COUNTS

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) suggests optimal indoor temperatures between 68.5°F and 76°F during the heating months and between 73°F and 79 °F during the cooling season. ASHRAE also suggests RH levels should range between 30% and 60%. The outdoor temperature ranged between 79° F and 85°F. Temperatures in the school ranged between 72°F and 80°F. The RH outdoors ranged between 74% and 91%. Indoor RH levels ranged between 47% and 73%. Sustained RH above 66% could result in fungal growth.

CO readings were 0.0 ppm throughout the survey and the CO₂ readings were within the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standard of not exceeding the outdoor levels by more than 700 ppm. Outdoor levels of CO₂ ranged between 410 ppm and 540 ppm while indoor levels ranged between 500 ppm and 650 ppm. It should be noted that the OSHA permissible Exposure Limit for CO₂ is 5000 ppm.

Total Volatile Organic Compound readings were generally low throughout the school.

Particle Counts were recorded in five sizes of microscopic particulate and counts should be lower indoors as compared to the outdoors. On the day of the survey, particle counts were lower as compared to the outdoors.

B) MICROBIOLOGICAL AIR SAMPLES

Airborne, total, non viable fungi were sampled in nineteen (19) indoor locations and five (5) outdoors for comparison with the indoor environment. The samples were obtained using a Bio Pump and Allergenco D as recommended for IAQ studies by the *Environmental Protection Agency (EPA)* and *American Industrial Hygiene Association (AIHA)*. The pump was calibrated to meet the flow rate of 15 L/minute +/- 1% and samples were drawn for five minutes.

There are currently no standards regarding the amount of fungal or bacterial (microbial) contamination on surfaces or in the air. There are, however, guidelines to assist IAQ professionals with comparing their survey data to study data. The areas where microbiological samples were obtained included:

Outside W 21	Room # 45
Room # 407	Room # 301
Room # 303	Room # 305
Room # 201	Outside 300 Wing
Room # 202	Boys Team Room
Remedial Gym	Gym
Girls Locker Room Office	Outside W 8
Music Room	Room # 104
Outside W 14	Cafeteria
Library	LGI
Main Office	Outside Front

In a healthy fungal environment, fungal concentrations indoors should be of a lower concentration and of a similar rank and order to those of the outdoors.

The outdoor samples revealed seasonably high levels of fungal spores with *Cladosporium* and basidiospores being the primary contaminants. All areas indoors revealed an overall lower fungal concentration as compared to the outdoor samples and a similar fungal profile indicating that a normal fungal environment exists within the school.

C) **MICROBIOLOGICAL SURFACE SAMPLES**

Fourteen (14) Air handler units were inspected for general hygiene. A swab sample was obtained from each unit. The units inspected and sampled included;

AHU for Room # 405	AHU for Room # 407
AHU # 07189	AHU # 4
AHU # 3	Mechanical Room # 1 (Right)
AHU # 1	AHU # 6
AHU # 9	AHU # 5
AHU 07197	AHU 07198
AHU # 7	Mechanical Room # 1 (Left)

Each unit was found to be clean. Coils and filters were in good condition. No fungal growth was noted in the samples obtained from AHU for Room # 407, AHU # 07196, AHU # 4, AHU # 3, AHU # 6, AHU # 5, AHU # 07197 and the Unit in Mechanical Room # 1 (Left). The samples obtained in the remaining units revealed minimal fungal contamination.

D) **RECOMMENDATIONS**

- A) All commercial AHU's should be inspected and/or cleaned on a yearly basis and the associated ductwork should be inspected and/or cleaned *at least* every two (2) years, according to the National Air Duct Cleaning Association (NADCA) ACR 2013.
- B) Place AHU's under a proactive maintenance program that includes: 1) Clean, sanitize, coat coils with anti-foulant; 2) Clean and sanitize HVAC – wipe surfaces of grease and dirt; 3) Clean returns and O.A.; 4) Biocidal drain pan treatment.

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Prestige Proj.#: 150821-02
Page 1 of 4

Chain-of-Custody and Analysis Request Form

Client name: Proac Corp Tel: _____ Client proj.#: West Middle School
 Address: _____ Fax: _____ P.O.#: _____
 E-mail: _____ Date sampled: 8/19/15

Sample ID	Location or source	Sample type	Air vol (L) Area (inch ²)	Water: potable or non-potable	Analysis requests code or description	Turnaround time	Notes or special instructions
#1	OUTSIDE W-31	SPICE TRAP	75 L		POOL		
#2	Rm 405						
#3	Rm 407						
#4	Rm 301						
#5	Rm 303						
#6	Rm 305						
#7	OUTSIDE 300 WING						
#8	Rm 201						
#9	Rm 203						
#10	Rm 205						
#11	Boys Team Rm						

Contact name: W Scardullo Submitted by: (sign & print) _____ Date submitted: _____
 Received by: (sign & print) [Signature] Date & time received: 8/21/2015 Delivered by: Fedex, UPS, DISPO, in person
9:25 AM
 (For lab use only) Processed by: _____ Sample type: _____ Date: _____

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Chain-of-Custody and Analysis Request Form

West Middle School

Client name: Proac Corp Tel: _____ Client proj.#: _____
 Address: _____ Fax: _____ P.O.#: _____
 E-mail: _____ Date sampled: _____

Sample ID	Location or source	Sample type	Air vol (L)/ Area (inch ²)	Water: potable or non-potable	Analysis requests code or description	Turnaround time	Notes or special instructions
#12	Remediate Gym	Spore Trap	75 L		Pool		
#13	Gym						
#14	Classroom	Room Office					
#15	Outside W-2						
#16	Music Rm						
#17	Room 101						
#18	Rm 104						
#19	outside 10-14						
#20	Cafe						
#21	LIBRARY						
#22	KFE						

Contact name: _____ Submitted by: (sign & print) _____ Date submitted: _____

Received by: (sign & print) [Signature] Date & time received: 8/21/2015 Delivered by: Fedex, UPS, USPS, in person 9:25 AM

(For lab use only) Processed by: _____ Sample type: _____ Date: _____

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Page 3 of 4

Chain-of-Custody and Analysis Request Form

Client name: Proac Corp Tel: _____ Client proj.#: West Middle School
 Address: _____ Fax: _____ P.O.#: _____
 E-mail: _____ Date sampled: _____

Sample ID	Location or source	Sample type	Air vol (LY Area (in ²))	Water: potable or non-potable	Analysis requests code or description	Turnaround time	Notes or special instructions
#23	Main office	SPRUE TRAP	75L		P001		
#24	OUTSIDE FRONT	1	↓		↓		
#25	ANALYTES ROOM 405 SWING		2" SWG		P001		
#26	ANALYTES RM #147						
#27	ANALYTES RM #14						
#28	ANALYTES RM #3						
#29	ANALYTES RM #1 RIGHT						
#30	ANALYTES RM #1						
#31	ANALYTES RM #1						
#32	ANALYTES RM #6						
#33	ANALYTES RM #9						

Contact name: _____ Submitted by: (sign & print) _____ Date submitted: _____

Received by: (sign & print) [Signature] Date & time received: 8/21/2015 Delivered by: Feder, UPS/USPO, in person
9:25 AM

(For lab use only) Processed by: _____ Sample type: _____ Date: _____

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Prestige Proj.#: 150821-02

Chain-of-Custody and Analysis Request Form

Page 4 of 4

Client name: Proac Corp Tel: _____ Client proj.#: West Middle School
 Address: _____ P.O.#: _____ Date sampled: _____
 E-mail: _____

Sample ID	Location or source	Sample type	Air vol (LY Area (inh ²))	Water: potable or non-potable	Analysis requests code or description	Turnaround time	Notes or special instructions
#34	AHLL # 5	SWAB	2" sq		PCR		
#35	AHLL 0197						
#36	AHLL 0792						
#37	MCH 1 km 1 left						
#38	AHLL 7						

Contact name: _____ Submitted by: (sign & print) _____ Date submitted: _____
 Received by: (sign & print) [Signature] Date & time received: 8/21/15 Delivered by: Fedex, UPS, USPS, in person 9:25 AM
 (For lab use only) Processed by: _____ Sample type: _____ Date: _____

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Analytical Test Report

Client: Proac Corporation, 8401 South Lancaster Ave, Bethel, PA 19507

Client Project: West Middle School

Sample date: 8-19-2015

Submittal date: NA

Samples submitted by: Walt Saunders

Date analysis completed: August 26, 2015

Prestige report number: 150821-02

Microscopic Method (P001): Analysis of Allergenco Samples for Total Fungal Structures by Optical Microscopy

Prestige # Client sample ID Location	Air vol. (m ³)	% read	Presumptive fungal ID	Counts of fungal structures	Fungal structures/m ³	Percentage	Background rating
150821-02-008 #1 Outside W-21	0.075	25.5	ascospores	8	420	12%	1
			basidiospores	14	730	21%	
			<i>Cercospora</i>	3	160	4%	
			<i>Cladosporium</i>	34	1,800	51%	
			<i>Curvularia</i>	1	52	1%	
			<i>Ganoderma</i>	1	52	1%	
			<i>Nigrospora</i>	1	52	1%	
			Pen/Asp-like	4	210	6%	
			<i>Pithomyces</i>	1	52	1%	
			Total				
150821-02-009 #2 Rm 405	0.075	25.5	ascospores	1	52	100%	1
Total					52		
150821-02-010 #3 Rm 407	0.075	25.5	<i>Cladosporium</i>	1	52	100%	1
Total					52		
150821-02-011 #4 Rm 301	0.075	25.5	basidiospores	1	52	50%	1
<i>Cladosporium</i>	1	52	50%				
Total				100			
150821-02-012 #5 Rm 303	0.075	25.5	ascospores	1	52	50%	1
<i>Cladosporium</i>	1	52	50%				
Total				100			
150821-02-013 #6 Rm 305	0.075	25.5	<i>Alternaria</i>	1	52	100%	1
Total					52		
150821-02-014 #7 Outside 300 Wing	0.075	25.5	<i>Alternaria</i>	1	52	1%	1
			ascospores	2	100	3%	
			basidiospores	4	210	5%	
			<i>Cercospora</i>	1	52	1%	
			<i>Cladosporium</i>	55	2,900	71%	
			<i>Ganoderma</i>	1	52	1%	
			myxomycetes	1	52	1%	
			<i>Nigrospora</i>	1	52	1%	
			Pen/Asp-like	10	520	13%	
			<i>Pithomyces</i>	1	52	1%	
			smuts	1	52	1%	
			Total				

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150821-02-015 #8 Rm 201	0.075	25.5	<i>Alternaria</i> ascospores basidiospores	1 1 1	52 52 52	33% 33% 33%	1
					Total 160		
150821-02-016 #9 Rm 202	0.075	25.5	ascospores basidiospores hyphal fragments <i>Pithomyces</i>	1 1 1 1	52 52 52 52	25% 25% 25% 25%	1
					Total 210		
150821-02-017 #10 Rm 208	0.075	25.5	ascospores	1	52	100%	1
					Total 52		
150821-02-018 #11 Boys Team Rm	0.075	25.5	<i>Alternaria</i> ascospores basidiospores <i>Cladosporium</i> unknowns	1 3 1 5 1	52 160 52 260 52	9% 27% 9% 45% 9%	1
					Total 580		
150821-02-019 #12 Remedial Gym	0.075	25.5	ascospores <i>Cladosporium</i> <i>Curvularia</i> hyphal fragments myxomycetes	1 1 1 1 1	52 52 52 52 52	20% 20% 20% 20% 20%	1
					Total 260		
150821-02-020 #13 Gym	0.075	25.5	ascospores <i>Cladosporium</i> <i>Pithomyces</i>	1 1 1	52 52 52	33% 33% 33%	1
					Total 160		
150821-02-021 #14 Girls Locker Rm office	0.075	25.5	ascospores basidiospores <i>Cladosporium</i> myxomycetes	1 1 2 1	52 52 100 52	20% 20% 40% 20%	1
					Total 260		
150821-02-022 #15 Outside W-8	0.075	25.5	<i>Alternaria</i> ascospores basidiospores <i>Cercospora</i> <i>Cladosporium</i> <i>Curvularia</i> <i>Drechslera/Bipolaris</i> hyphal fragments <i>Nigrospora</i> Pen/Asp-like <i>Periconia</i> <i>Pithomyces</i>	1 5 5 1 47 1 1 2 1 2 1 1	52 260 260 52 2,500 52 52 100 52 100 52 52	1% 7% 7% 1% 69% 1% 1% 3% 1% 3% 1% 1%	1
					Total 3,600		
150821-02-023 #16 Music Rm	0.075	25.5	myxomycetes <i>Pithomyces</i>	1 1	52 52	50% 50%	1
					Total 100		
150821-02-024 #17 Rm 101	0.075	25.5	ascospores	1	52	100%	1
					Total 52		

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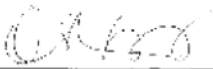
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150821-02-025 #18 Rm 104	0.075	25.5	<i>Cladosporium</i>	6	310 Total 310	100%	1
150821-02-026 #19 Outside W-14	0.075	25.5	<i>Alternaria</i> ascospores basidiospores <i>Cercospora</i> <i>Cladosporium</i> <i>Curvularia</i> hyphal fragments myxomycetes <i>Pithomyces</i> unknowns	1 15 9 2 49 1 1 2 3 1	52 780 470 100 2,600 52 52 100 160 52	1% 18% 11% 2% 58% 1% 1% 2% 4% 1%	1
150821-02-027 #20 Cafe	0.075	25.5	ascospores <i>Cladosporium</i> <i>Pithomyces</i>	1 1 1	52 52 52 Total 160	33% 33% 33%	1
150821-02-028 #21 Library	0.075	25.5	<i>Epicoccum</i> <i>Pithomyces</i>	1 1	52 52 Total 100	50% 50%	1
150821-02-029 #22 LGI	0.075	25.5	<i>Pithomyces</i> smuts	1 1	52 52 Total 100	50% 50%	1
150821-02-030 #23 Main office	0.075	25.5	ascospores	1	52 Total 52	100%	1
150821-02-031 #24 Outside Front	0.075	25.5	<i>Alternaria</i> ascospores basidiospores <i>Cercospora</i> <i>Cladosporium</i> <i>Drechslera/Bipolaris</i> <i>Fusarium</i> <i>Ganoderma</i> hyphal fragments myxomycetes <i>Nigrospora</i> Pen/Asp-like <i>Pithomyces</i> <i>Polythrincium</i> <i>Spegazzinia</i> <i>Torula herbarum</i>	2 5 9 3 147 1 1 1 1 1 1 5 1 1 1 1	100 260 470 160 7,700 52 52 52 52 52 260 52 52 52 52	1% 3% 5% 2% 81% 1% 1% 1% 1% 1% 3% 1% 1% 1% 1%	1
					Total 9,500		

Report approved: _____


Theresa Lehman, MPH, Lab Director

Technical Manager: _____


Chin S Yang, Ph.D.

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Analyst: Theresa Lehman

1. The samples in this report were received in good, acceptable conditions. Prestige EnviroMicrobiology has not performed sample collection for the sample items listed in this report. Results relate only to the items tested.
2. Percentage is for each group in total population.
3. Concentrations and percentages are rounded to the nearest two significant digits. Total percentage may not add up to 100% due to rounding.
4. Background rating 1-5 (1 being the lowest and 5 the highest) indicates density of sample deposit. The higher the sample deposit is, the more likely some fungal structures are obscured. A "0" background indicates no trace was observed.
5. The detection limit of this analysis is one fungal colony, one bacterial colony or one fungal structure. The analytical sensitivities vary from analysis to analysis or by air volume. For calculation of your analytical sensitivities, please visit our webpage <http://prestige-em.com/index-tech.htm> or contact us by calling 856-767-8300 or by email info@Prestigeem.com.
6. For technical information on result interpretation, please visit www.Prestige-EM.com.

Prestige EnviroMicrobiology, Inc

AHJ Environmental Microbiology PAT Program participant

EMLAP Laboratory ID Number 192810

Website: www.prestige-em.com

Analytical Test Report

Client: Proac Corp. 8401 South Lancaster Ave, Bethel, PA 19507

Client Project: West Middle School

Sample date: 8-19-2015

Submittal date: NA

Date samples received: 8-21-2015

Date of inoculation: 8-21-2015

Samples submitted by: Walt Saunders

Date analysis completed: August 28, 2015

Prestige report number: 150821-02

Culture Method (P009): Culture Analysis of Swab Samples for Fungi

Prestige # Client sample ID Location	Area (in ²)	Media used	Dilution factor	Fungal Identification	Colony counts	Conc. (CFU/ in ²)	Percentage
150821-02-032 25 AHU for Rm 405	2	MEA	100x	yeasts	8	400 Total 400	100%
150821-02-033 26 AHU for Rm 407	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA
150821-02-034 27 AHU 07196	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA
150821-02-035 28 AHU #4	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA
150821-02-036 29 AHU #3	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA
150821-02-037 30 MECH Rm #1 Right	2	MEA	100x	<i>Acremonium strictum</i> <i>Fusarium sp.</i> <i>Pithomyces chartarum</i> <i>Sporobolomyces roseus</i>	1 1 1 1	50 50 50 50 Total 200	25% 25% 25% 25%
150821-02-038 31 AHU #1	2	MEA	100x	<i>Aspergillus fumigatus</i> <i>Pithomyces chartarum</i> <i>Rhodotorula minuta</i> yeasts	1 2 3 1	50 100 150 50 Total 350	14% 29% 43% 14%
150821-02-039 32 AHU #6	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA

Prestige EnviroMicrobiology, Inc

AIHA Environmental Microbiology PAT Program participant

EMLAP Laboratory ID Number 192810

Website: www.prestige-em.com


150821-02-040 33 AHU #9	2	MEA	100x	<i>Acremonium</i> sp. <i>Alternaria alternata</i> <i>Aureobasidium pullulans</i> <i>Cladosporium</i> spp. <i>Sporobolomyces roseus</i> sterile fungi	1 1 2 2 4 2	50 100 100 200 100 50	8% 17% 17% 33% 17% 8%
						Total 600	
150821-02-041 34 AHU #5	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA
150821-02-042 35 AHU 07197	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA
150821-02-043 36 AHU 07198	2	MEA	100x	<i>Acremonium strictum</i> <i>Alternaria alternata</i>	1 1	50 50 Total 100	50% 50%
150821-02-044 37 MECH Rm 1 Left	2	MEA	100x	No fungal colony detected	ND	<50 Total <50	NA
150821-02-045 38 AHU 7	2	MEA	100x	yeasts	1	50 Total 50	100%

Report approved: _____



Theresa Lehman, MPH, Lab Director

Technical Manager: _____



Chin S Yang, Ph.D.

Analyst: _____
Ching-yi, Tsai, Ph.D./Chin S. Yang, Ph.D.

- The samples in this report were received in good, acceptable conditions. Prestige EnviroMicrobiology has not performed sample collection for the sample items listed in this report. Results relate only to the items tested.
- Percentage is for each group in total population.
- Concentrations and percentages are rounded to the nearest two significant digits. Total percentage may not add up to 100% due to rounding.
- Abbreviations where applicable: CMA = cornmeal agar, DG18 = Dichloran 18% glycerol agar, MEA = 2% malt extract agar, PCA = plate count agar, TSA = tryptic soy agar, ND = not detected, NA = not applicable.
- All culture samples are incubated at 25±0.5°C unless otherwise indicated.
- The detection limit of this analysis is one fungal colony, one bacterial colony or one fungal structure. The analytical sensitivities vary from analysis to analysis or by air volume. Please visit our webpage <http://prestige-em.com/index-tech.htm> for calculation of your analytical sensitivities or contact us by calling 856-767-8300 or by email info@Prestigeem.com for calculation of the analytical sensitivities.

LIMITED MICROBIAL & IAQ SURVEY

WEST MIDDLE SCHOOL



UNIT # 07196



UNIT # 07196- COIL

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



UNIT # 07196- FILTER



UNIT # 07196- PAN

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



UNIT # 07196- TRAP



AHU #07197

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #07197- COIL



AHU #07197- FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #07197- TRAP



AHU #07197- FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #07198



AHU #07198- COIL

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #07198- FILTER



AHU #07198- PAN

LIMITED MICROBIAL & IAQ SURVEY

WEST MIDDLE SCHOOL



AHU #07198- TRAP



AHU #10

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #10 COIL



AHU #10

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #10 PAN VERY DIRTY



AHU #10- TRAP

LIMITED MICROBIAL & IAQ SURVEY

WEST MIDDLE SCHOOL



AHU #9



AHU #9 COIL

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #9 FILTER



AHU #9 PAN UNABLE TO ACCESS

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



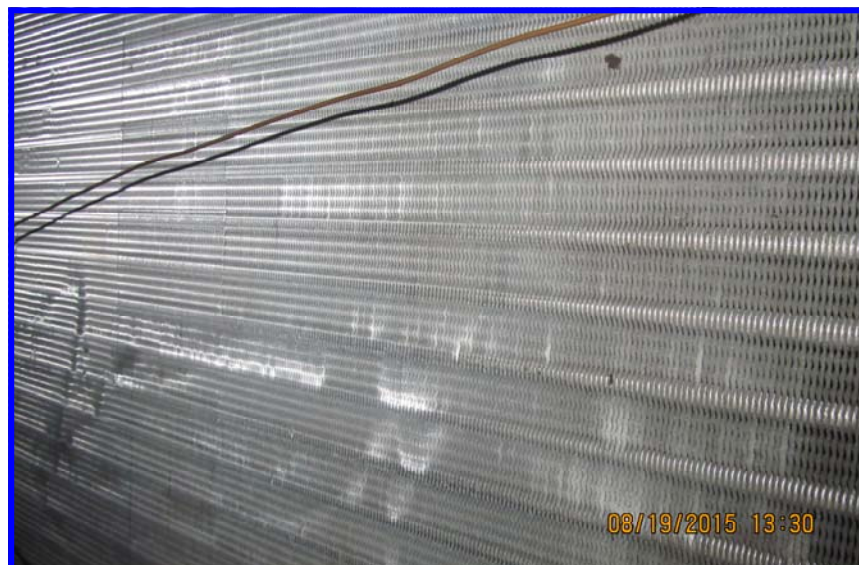
AHU #9 TRAP



MECHANICAL ROOM # 1 AHU ON RIGHT

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



MECHANICAL ROOM # 1AHU ON RIGHT – COIL



MECHANICAL ROOM # 1AHU ON RIGHT – FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



MECHANICAL ROOM # 1- AHU ON RIGHT PAN



MECHANICAL ROOM # 1AHU ON RIGHT- TRAP

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



MECHANICAL ROOM # 1 AHU LEFT MECH ROOM- PAN



MECHANICAL ROOM # 1AHU ON LEFT- FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



MECHANICAL ROOM # 1 AHU LEFT - COIL



MECHANICAL ROOM # 1 AHU ON LEFT- PAN

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



MECHANICAL ROOM # 1 AHU LEFT - TRAP



AHU #3 MECH ROOM

LIMITED MICROBIAL & IAQ SURVEY

WEST MIDDLE SCHOOL



AHU #3 FILTER



AHU #3 COIL

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #3 PAN



AHU #3 TRAP

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #4



AHU #4 FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #4 COIL



AHU #4 PAN

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #4 TRAP



AHU #5

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #5 COIL



AHU #5 FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #5 PAN



AHU #5 TRAP

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #6



AHU #6 FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #6 COIL



AHU #6 PAN

LIMITED MICROBIAL & IAQ SURVEY

WEST MIDDLE SCHOOL



AHU #6 TRAP



AHU #7

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



AHU #7 COIL



AHU #7- FILTER

LIMITED MICROBIAL & IAQ SURVEY

WEST MIDDLE SCHOOL



AHU #7 PAN



AHU #7- TRAP

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



UNIT FOR ROOM #407



UNIT FOR ROOM #407 -FILTER

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



UNIT FOR ROOM #407 COIL



UNIT FOR ROOM #407 -PAN

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



UNIT FOR ROOM #407 TRAP



UNIT FOR ROOM #405

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



UNIT FOR ROOM #405- FILTER



UNIT FOR ROOM #405- COIL

**LIMITED MICROBIAL
& IAQ SURVEY**

WEST MIDDLE SCHOOL



UNIT FOR ROOM #405- PAN



UNIT FOR ROOM #405- TRAP



INDOOR AIR QUALITY SURVEY

Purpose: **LIMITED MICROBIAL & IAQ SURVEY**

Location: **WEST MIDDLE SCHOOL**

Outside Air: % HUMIDITY °F PPM CO²

NO.	TIME	TEMP °F	RELATIVE HUMIDITY %	CARBON DIOXIDE PPM	CO	TVOC	OCCUPANCY #PERSONS	COMMENTS
1	9:45	79	74	540	0	0	0-1	OUTSIDE W-21
2	9:51	76	73	500	0	0	0-1	ROOM #405
3	9:57	72	56	500	0	0	0-1	ROOM #407
4	10:05	73	56	590	0	0	0-1	ROOM #301
5	10:14	73	51	500	0	0	0-1	ROOM #303
6	10:19	73	50	480	0	0	0-1	ROOM #305
7	10:27	79	91	460	0	0	0-1	OUTSIDE 300
8	10:34	77	47	480	0	0	0-1	ROOM #201
9	10:42	75	46	460	0	0	0-1	ROOM #202
10	10:49	75	46	480	0	0	0-1	ROOM #208
11	11:49	77	65	540	0	0	0-1	BOYS TEAM ROOM
12	11:56	77	66	480	0	0	0-1	REMEDIAL GYM
13	12:06	74	63	430	0	0	0-1	GYM
14	12:16	74	69	660	0	0	0+-1	GIRL'S LR OFFICE
15	12:18	80	83	450	0	0	0-1	OUTSIDE W-3
16	12:27	78	58	510	0	0	1-2	MUSIC ROOM
17	12:46	70	67	430	0	0	0-1	ROOM #101
18	12:52	70	68	430	0	0	0-1	ROOM #104
19	12:59	83	77	410	0	0	0-1	OUTSIDE W-14

*Denotes areas that reached or exceeded the ASHRAE comfort standards for CO²



PARTICLE COUNTS

Purpose: IAQ MEASUREMENT & DOCUMENTATION Location/No: WEST MIDDLE SCHOOL

NO.	.3	.5	1.0	2.0	5.0	COMMENTS
1	125556	8574	496	188	12	OUTSIDE W-21
2	74920	3079	61	14	0	ROOM #405
3	70471	2700	77	19	2	ROOM #407
4	40609	1237	44	12	1	ROOM #301
5	35050	973	85	31	6	ROOM #303
6	34350	975	33	13	2	ROOM #305
7	117470	7545	482	209	17	OUTSIDE 300
8	59766	1930	58	17	1	ROOM #201
9	32599	941	28	8	1	ROOM #202
10	31754	846	19	4	0	ROOM #208
11	56370	1853	120	45	8	BOYS TEAM RM
12	73125	2675	119	42	4	REMEDIAL GYM
13	55942	1921	47	9	0	GYM
14	57690	2021	102	39	6	GIRL'S LR OFFICE
15	106227	5752	352	135	13	OUTSIDE W-8
16	51069	1807	67	30	10	MUSIC ROOM
17	51587	1723	47	10	0	ROOM #101
18	57250	2026	57	7	0	ROOM #104
19	105623	5634	394	154	15	OUTSIDE W-14

*Denotes areas that reached or exceeded the ASHRAE comfort standards for CO²



Purpose: AHU INSPECTION

LOCATION: WEST MIDDLE SCHOOL

DATE	UNIT	LOCATION	COMMENTS
8/19/15	07196	BALLFIELD SIDE	MANU- TRANE (AMER STANDARD), MODEL #WSC120A4RKA2FD0000, LOCATION- ROOFTOP, TYPE- COMBINATION, OAI- UNIT, CONTAMINATION- NO, BIRDSCREENS- YES, COND- GOOD, SIGNS OF BEES BIRDS, ETC- NO, FILTRATION-MANU- TRI DIM, MODEL #A 825P, COND- GOOD, COIL COND- GOOD, DRAIN PAN STAINLESS COND- GOOD, TRAP INSTALLED & FUNCTIONING, AHH INSUL COND- GOOD, PLENUM COND- GOOD
8/19/15	09197		MANU- TRANE (AMER STANDARD), MODEL #WSC120A4RKA2FD0000, LOCATION- ROOFTOP, TYPE- COMBINATION, OAI- UNIT, CONTAMINATION- NO, BIRDSCREENS- YES, COND- GOOD, SIGNS OF BEES BIRDS, ETC- NO, FILTRATION-MANU- TRI DIM, MODEL #A 825P, COND- GOOD, COIL COND- BLOCKED AROUND EDGES, DRAIN PAN STAINLESS COND- GOOD, TRAP INSTALLED & FUNCTIONING, AHH INSUL COND- GOOD, PLENUM COND- GOOD
8/19/15	07198		MANU- CARRIER, MODEL #50HJ-006-G31HS, LOCATION- ROOFTOP, TYPE- COMBINATION, OAI- UNIT, CONTAMINATION- NO, BIRDSCREENS- YES, COND- GOOD, SIGNS OF BEES BIRDS, ETC- NO, FILTRATION-MANU- TRI DIM, MODEL #A 825P, COND- DIRTY, COIL COND- FOULED, DRAIN PAN STAINLESS COND- GOOD, TRAP INSTALLED & FUNCTIONING, AHH INSUL COND- GOOD, PLENUM COND- GOOD
8/19/15	#10	GYM	MANU- YORK, MODEL #CA0061242,25X074GOBCC0203035WA06L, LOCATION- MECH ROOM, TYPE- COMBINATION, OAI- UNIT, CONTAMINATION- NO, BIRDSCREENS- YES, COND- GOOD, SIGNS OF BEES BIRDS, ETC- NO, FILTRATION-MANU- TRI DIM, MODEL #A 825P, COND- GOOD, COIL COND- GOOD
8/19/15	#9	GYM	MANU- YORK, MODEL #???, LOCATION- MECH ROOM, TYPE- COMBINATION, OAI- DUCTED, CONTAMINATION- NO, BIRDSCREENS- YES, COND- GOOD, SIGNS OF BEES BIRDS, ETC- NO, FILTRATION-MANU- TRI DIM, MODEL #A 825P, COND- FAIR, COIL COND- GOOD
8/19/15	RIGHT MECH ROOM		MANU- CARRIER, MODEL #3302F73779, LOCATION- MECH ROOM, TYPE- COMBINATION, OAI- DUCTED, CONTAMINATION- NO, BIRDSCREENS- YES, COND- GOOD, SIGNS OF BEES BIRDS, ETC- NO, FILTRATION-MANU- TRI DIM, MODEL #A 825P, COND- GOOD, COIL COND- GOOD



Purpose: AHU INSPECTION

LOCATION: WEST MIDDLE SCHOOL

DATE	UNIT	LOCATION	COMMENTS
8/19/15	LEFT MECH ROOM		MANU- CARRIER MODEL #3302F73753, LOCATION- MECH ROOM, OAI- UNIT, DUCTED, CONTAMINATION- NO, BIRD-SCREENS- NO, COND- GOOD, SIGNS OF BEES BIRDS, ETC- NO, FILTRATION-MANU- TRI DIM, MODEL #A 825P, COND- DIRTY, COIL COND- GOOD
8/19/15	#3	CLASSROOMS	MANU- CARRIER MODEL #781897, LOCATION- MECH ROOM, OAI- DUCTED, FILTRATION-MANU-TYPE- PLEATED- AEROSTAR, COND- GOOD, COIL- CHILLED WATER, COND- GOOD, DRAIN PAN- STAINLESS, TRAP INSTALLED & FUNCTIONING, AHH COND - GOOD, PLENUM COND- GOOD
8/19/15	#4	CLASSROOMS	MANU- CARRIER, MODEL ???, LOCATION- MECH ROOM, OAI- DUCTED, FILTRATION-TYPE- PLEATED- MANU- AEROSTAR, COND- GOOD, COIL- CHILLED WATER, COND- GOOD, DRAIN PAN- STAINLESS, TRAP INSTALLED & FUNCTIONING, AHH COND - GOOD, PLENUM COND- GOOD
8/19/15	AHU #5	CLASSROOMS	MANU- CARRIER, MODEL ???, LOCATION- MECH ROOM, OAI- DUCTED, FILTRATION-TYPE- PLEATED- COND- GOOD, COIL- CHILLED WATER, COND- GOOD, DRAIN PAN- STAINLESS, TRAP INSTALLED & FUNCTIONING, AHH COND- GOOD, PLENUM COND - GOOD
8/19/15	AHU #6	CLASSROOMS	MANU- CARRIER, MODEL ???, LOCATION- MECH ROOM, TYPE- COMBINATION, OAI-DUCTED, FILTRATION-TYPE- PLEATED- MANU- TRI DIM, COND- GOOD, COIL- CHILLED WATER, COND- GOOD,
8/19/15	AHU #7	CAFETERIA	MANU- CARRIER, MODEL ???, LOCATION- MECH ROOM, TYPE- COMBINATION, OAI-DUCTED, FILTRATION-TYPE- PLEATED- MANU- TRI DIM, COND- GOOD, COIL- CHILLED WATER, COND- GOOD, DRAIN PAN- STAINLESS, TRAP INSTALLED & FUNCTIONING, AHH COND- GOOD, PLENUM COND- GOOD



Purpose: AHU INSPECTION

LOCATION: WEST MIDDLE SCHOOL

DATE	UNIT	LOCATION	COMMENTS
8/19/15	FOR ROOM #407	ROOM #407	MANU- MAJICAIRE, MODEL ???, LOCATION- MECH ROOM, TYPE-COMB, OAI-DUCTED, FILTRATION-TYPE- PLEATED- MANU- TRI DIM, COND- GOOD, COIL- CHILLED WATER, COND- GOOD, DRAIN PAN- STAINLESS, TRAP INSTALLED & FUNCTIONING, AHH COND- GOOD, PLENUM COND- GOOD
8/19/15	FOR ROOM #405	ROOM #405	MANU- MAJICAIRE, MODEL ???, LOCATION- MECH ROOM, TYPE-COMB, OAI-DUCTED, FILTRATION-TYPE- PLEATED- MANU- TRI DIM, COND- GOOD, COIL- CHILLED WATER, COND- GOOD, DRAIN PAN- STAINLESS, TRAP INSTALLED & FUNCTIONING, AHH COND- GOOD, PLENUM COND- GOOD

REFERENCES

Information and excerpts may be taken from:

- Guidelines for the Assessment of Bioaerosols in the Indoor Environment, American Conference of Governmental Industrial Hygienists, 1989 (ACGIH)
- U.S. Environmental Protection Agency (EPA)
- Occupational Safety and Health Administration (OSHA)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) Standard 62-1989 and 2001, 55-1992
- Field Guide for the Determination of Biological Contaminants in Environmental Samples, American Industrial Hygiene Association, 1996 (AIHA)
- Bioaerosol Assessment and Control, American Conference of Governmental Industrial Hygienists, 1999
- Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health, 2000 (NYCDOH)
- Micromenaces, P & K Microbiology Services, Inc., November 1998, Volume 1, Issue 2
- National Air Duct Cleaners Association-Assessment, Cleaning, & Restoration of HVAC Systems, ACR 2013 (NADCA)

REPORT CONDITIONS

This report is not to be considered a warranty, but an Limited Microbial & IAQ Survey

Closing report on the conditions existing in the areas included in the scope

of work at the time of the work only. Conditions only include work

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