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November 1, 2020

Ms. Kerry Maloney, P.G.
NYSDEC, Division of Environmental Remediation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7015

Via email: Kerry.maloney@dec.ny.gov

Re: Progress Report: October 2020
Frost Street Sites: Site ID#s 1-30043 I, L, M
New Cassel Industrial Area, Westbury, New York

Dear Ms. Maloney:

EnSafe Inc. is pleased to submit this Progress Report for the Frost Street Sites (Site ID#s 1-30043 I, L, M) for operation, maintenance, and monitoring (OM&M) activities completed in October 2020 for the onsite air sparge/soil vapor extraction (AS/SVE) and groundwater extraction systems.

Air Sparge / Soil Vapor Extraction System – Operable Unit 1

- AS/SVE system operations continued this month, per the OM&M Manual. During periodic visits, system parameters were logged on dedicated forms (Appendix A).

  - The AS portion of the system remains off as the Hydrovane compressor requires repair. The part required to complete this repair is on order; repairs will be made once the part arrives which is anticipated to be mid-November.

    In addition to the Hydrovane being repaired in November, a new compressor will be installed in December or January 2021. This work includes removing the Mattei compressor currently not in use and installing a 40 horsepower rotary claw compressor capable of 270 cubic feet per minute at 26 pounds per square inch in its place inside of the trailer. This will also include replacements and upgrades to the ancillary equipment, piping, and gauges for both the AS and SVE portions of the system, as well as a new control panel allowing for remote system access and control. The system enclosure will also be cleaned and removed of all unused parts and materials. Upon completion of the work, a O&M Manual will be prepared for the AS/SVE system as a whole, along with as built drawings. Equipment details are provided in Appendix B.

The downtime anticipated for this work is approximately 1 week. NYSDEC will be notified prior to the start of work.

- The replacement blower for SVE Blower #1 was installed on October 27.

- Quantitative sampling of the SVE system granular activated carbon influent and effluent air flow was conducted on October 29, 2020, using Summa canisters. These samples were obtained by EnviroTrac, submitted to Phoenix Environmental Laboratories, and analyzed by Method TO-15. Results are included in Appendix C.

  - Photoionization detector readings and influent concentrations of Frost Street-related contaminants of concern (tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene [2,344 µg/m^3]) continue to indicate mass extraction but at a lower rate, which is expected considering the AS portion of the system is off.

  - Effluent concentrations are below the carbon exchange indicator concentrations, as shown below.

Frost Street Sites Effluent Compliance			
System Flow Rate =		800	ft^3/min
Compound	**Annual Mass Emission Limit[1] (lbs/year)**	**Carbon Exchange Required Indicator Concentration (µg/m^3)[2]**	**October 2020 Effluent Concentration (µg/m^3)**
Trichloroethene	500	19,000	118
Tetrachloroethene	1,000	38,000	1,090
Vinyl Chloride	100	3,800	ND
Cis-1,2-Dichloroethene[3]	100	3,800	543

Notes:

ft/min cubic feet per minute
lbs/year pounds per year
µg/m^3 micrograms per cubic meter
1 Source of Mass Emission Limit: Part 212-2.2 Table 2 — High Toxicity Air Contaminant List
2 These limits were calculated based on Frost Street-specific system operations (i.e., flow rate) in order to remain below the annual HTAC emissions listed in Part 212-2.2 Table 2. Remaining below these concentrations ensures that annual emissions will not exceed the limit which demonstrates compliance with Part 212 without having to perform compound-specific analyses.
3 Cis-1,2-dichloroethene is not a listed HTAC, so the default is 100 lbs/year.

Groundwater Extraction System – Operable Unit 2

The pumps in EX-1A, EX-1B, EX-1C, and EX-1D operated near design flow rates (30, 30, 48, and 48 gallons per minute, respectively) for all of October.

EnSafe collected and prepared the additional information requested by NYSDEC on February 21, 2019, (additional pressure transducer data and groundwater elevation maps) to facilitate review and comment on the *Expanded Pumping Test Summary, Findings, and Recommendations*, submitted on August 10, 2018. This information was transmitted to NYSDEC on March 22, 2019.

Groundwater Monitoring

The third quarter 2020 groundwater sampling event was completed the week of September 21; analytical data was submitted to NYSDEC on October 30, full results will be submitted in a forthcoming report

If you have any questions or require additional information, please do not hesitate to contact me at 860-665-1140 or astark@ensafe.com.

Sincerely,

EnSafe, Inc., by

Alexandra M. J. Stark

Alexandra Stark, P.E.
Attachments

Copies:	A. Tamuno, Esq., NYSDEC	*Via email to amtamuno@gw.dec.state.ny.us*
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	J. Wilkinson, Envirotrac	*Via email to jamesw@envirotrac.com*

Appendix A
AS/SVE System Operation and Maintenance Logs

Operation & Maintenance Data Sheet
Ensafe-Frost Street
101 Frost Street
Westbury, NY

EnviroTrac Environmental Services
5 Old Dock Road, Yaphank, NY 11980
(631)924-3001, Fax (631)924-5001

Date:	29-Oct	**Arrival Time:**	8:00
Weather / Temp:	Rain / 55 DEG	**Departure Time:**	9:00
Technician / Operator:	JW		

System Status

	Arrival	Departure		Arrival	Departure
SVE Blower 1 (ON/OFF)	OFF	OFF	Sensaphone (ON/OFF)	ON	ON
SVE Blower 2 (ON/OFF)	ON	ON	Surge Protection (ON/OFF)	ON	ON
AS Compressor 1 (ON/OFF)	OFF	OFF	Lightning Protection (White/Black)	White	White
AS Compressor 2 (ON/OFF)	OFF	OFF			

Soil Vapor Extraction System

Blower Air Velocity/Flow Rate (fpm)/(cfm)	4500	884	Blower 1 Total Runtime (hrs)	59,483.1
Blower 1 Fresh Air Valve Open (%)	0		Blower 2 Total Runtime (hrs)	59,926.5
Blower 2 Fresh Air Valve Open (%)	0		Blower 1 Air Filter Differential Pressure ("H2O)	0
Moisture Separator Vacuum ("Hg)	3		Blower 2 Air Filter Differential Pressure ("H2O)	0
VGAC-1 Influent Vacuum ("H2O)	50		VGAC-1 Influent PID (ppm)	2.1
VGAC-1 Effluent Vacuum ("H2O)	55		VGAC-1 Effluent PID (ppm)	0.0
VGAC-2 Influent Vacuum ("H2O)	55		VGAC-2 Influent PID (ppm)	2.1
VGAC-2 Effluent Vacuum ("H2O)	58		VGAC-2 Effluent PID (ppm)	0.0
VGAC-3 Influent Vacuum ("H2O)	70		VGAC-3 Influent PID (ppm)	0.0
VGAC-3 Effluent Vacuum ("H2O)	74		VGAC-3 Effluent PID (ppm)	0.0
VGAC-3 Influent Temp (DegF)	NA		Blower Effluent PID (ppm)	0.0
Blower Effluent Pressure ("H2O)	10			
Transfer Pump Total Runtime (hrs)	25,041.0		Condensate Storage Tank Level (gal)	100

SVE Manifold Legs - Vacuum/Flow Rate/PID

	Vacuum	Velocity	Flow Rate	PID		Vacuum	Velocity	Flow Rate	PID
SVE-1 ("H2O)/(FPM)/(cfm)/(ppm)	42	6500	142	2.0	SVE-4 ("H2O)/(FPM)/(cfm)/(ppm)	34	4000	87	1.6
SVE-2 ("H2O)/(FPM)/(cfm)/(ppm)	44	4000	87	2.0	SVE-5 ("H2O)/(FPM)/(cfm)/(ppm)	34	2900	63	2.0
SVE-3 ("H2O)/(FPM)/(cfm)/(ppm)	36	4800	105	0.0	SVE-6B ("H2O)/(FPM)/(cfm)/(ppm)	32	6000	131	3.0
SVE-3A ("H2O)/(FPM)/(cfm)/(ppm)	34	4200	92	0.0	SVE-7 ("H2O)/(FPM)/(cfm)/(ppm)	34	3000	65	0.0

Air Sparge System

Compressor 1 Pressure (psi)	Off for repairs	Compressor 2 Pressure (psi)	
Compressor 1 Temperature (degF)	Off for repairs	Compressor 2 Temperature (degF)	
Compressor 1 Runtime (hrs)	27,317	Compressor 2 Runtime (hrs)	39,288
Manifold Regulator Pressure (psi)			

AS Manifold Legs - Pressure/Flow Rate

	Pressure	Flow Rate		Pressure	Flow Rate
AS-1 (psi)/(cfm)			AS-11 (psi)/(cfm)		
AS-2 (psi)/(cfm)			AS-12B (psi)/(cfm)		
AS-3 (psi)/(cfm)			AS-13B (psi)/(cfm)		
AS-4 (psi)/(cfm)			AS-14 (psi)/(cfm)		
AS-5 (psi)/(cfm)			AS-15 (psi)/(cfm)		
AS-6 (psi)/(cfm)			AS-16B (psi)/(cfm)		
AS-7 (psi)/(cfm)			AS-17 (psi)/(cfm)		
AS-8 (psi)/(cfm)			AS-18 (psi)/(cfm)		
AS-9 (psi)/(cfm)			AS-19 (psi)/(cfm)		
AS-10B (psi)/(cfm)					

Notes, Comments & Observations:

Collected monthly air samples.

Blower 1 was replaced on 10/27 along with Blower 2 semi-ammual maintenance.

Inspection, Maintenance, Lubrication Schedule
Ensafe-Frost Street
101 Frost Street
Westbury, NY

EnviroTrac Environmental Services
5 Old Dock Road, Yaphank, NY 11980
(631)924-3001, Fax (631)924-5001

Date: 29-Oct
Weather / Temp: Rain / 55 DEG
Technician / Operator: JW

Arrival Time: 8:00
Departure Time: 9:00

Maintenance Item	Perform	Completed (yes/no)	Comments
SVE Blower B-1			
-Inspect	Weekly	Y	Replaced Blower 1 on 10/27.
-Lubricate	As Required	Y	
-Inspect Air Filter	Weekly	Y	
-Amp Draw	Quarterly	N	
-Inspect Belts	Weekly	Y	
SVE Blower B-2			
-Inspect	Weekly	Y	
-Lubricate	As Required	Y	Changed oil and greased bearings on 10/27.
-Inspect Air Filter	Weekly	Y	
-Amp Draw	Quarterly	N	
-Inspect Belts	Weekly	Y	
SVE Piping			
-Inspect	Weekly	Y	
-Valves	Weekly	Y	
Phase Separator/Storage Tank			
-Inspect	Weekly	Y	
-Check Level Switches	As Required	Y	
-Inspect water storage tank	Weekly	Y	
-Pump water to sewer drain	As Required	Y	
AS Compressor 1			
-Inspect	Weekly	N	Off for repairs.
-Lubricate	As Required	N	
-Inspect Filters	Weekly	N	
-Amp Draw	Quarterly	N	
AS Compressor 2			
-Inspect	Weekly	N	Off for repairs.
-Lubricate	As Required	N	
-Inspect Filters	Weekly	N	
-Amp Draw	Quarterly	N	
AS Piping			
-Inspect	Weekly	N	Off for repairs.
-Valves	Weekly	N	
-Drain Filters/Collectors	Weekly	N	
-Drain Pressure Tank	Weekly	N	

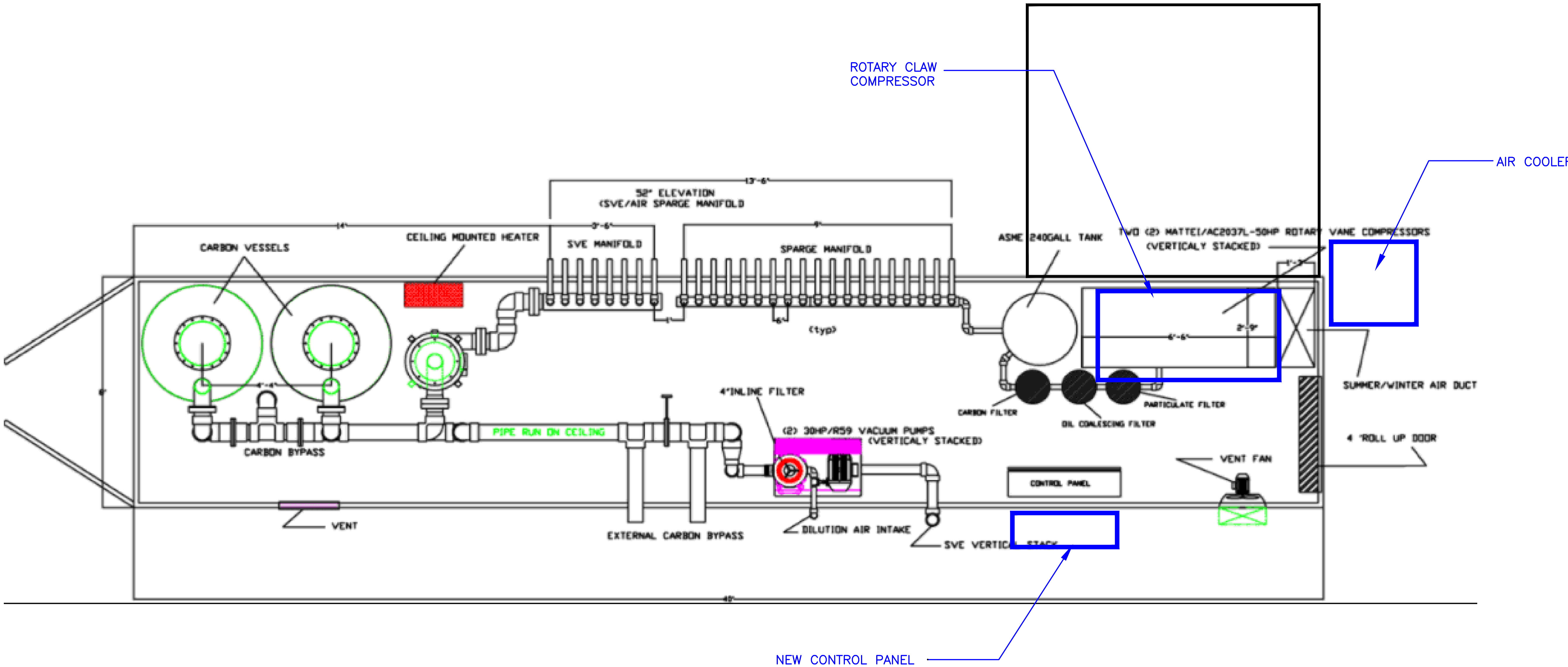
Appendix B
System Upgrades

Equipment List

- Air Sparge System
  - AirTech Rotary Claw Air Compressor Model #PCX405 40 HP, 460V, 3ph, TEFC
  - (To be installed inside system container) Capable of delivering a flow of 270 cfm @ 26 psi
  - Refurbished American Industrial Air Cooled Heat Exchanger Model #ACA-6362-92823 3 HP, 460V, 3ph, TEFC (To be installed outside system container)
  - One (1) - Air Intake Filter/Silencer
  - One (1) - Pressure Gauge
  - One (1) - Pressure Transmitter
  - Two (2) – Temperature Gauges
  - One (1) - Temperature Transmitter
  - One (1) – High Temperature Shutoff Switch
  - 3-inch Galvanized Steel piping to connect claw pump to heat exchanger and heat exchanger to manifold.
  - Check valves to be installed in pipeline to allow for use of Hydrovane compressor as a backup
  - 460V power wiring and conduit to Claw Pump and Air Cooler Motors
  - 24V signal wiring to transmitters and switches

- Soil Vapor Extraction System Upgrades
  - One (1) - Pressure Gauge
  - One (1) - Vacuum Transmitter
  - Four (4) - Vacuum Gauges
  - 24V signal wiring to transmitter

- New PLC Based Control Panel
  - Nema 4 enclosure
  - EOS Procontrol PLC
  - Motor Starters with Thermal Overloads, HOA Switches, and Run Time Meters for each of the following System Motors:
  - 40-HP Rotary Claw Pump (AS-1)
  - 50-HP Hydrovane Compressor (AS-2)
  - 30-HP Positive Displacement Blower (SVE-1)
  - 30-HP Positive Displacement Blower (SVE-2)
  - 3/4-HP Progressive Cavity Transfer Pump (P-1)
  - 3-HP Air Cooled Aftercooler (HX-1)
  - Alarm Lights for Moisture Separator and Condensate Storage Tank High Levels, Low SVE Vacuum, High Air Cooler Discharge Temperature, and Motor Failures
  - Alarm Reset/Test Light Switch
  - Alarm and routine email status reports with the following information:
  - Motor Run Status
  - Alarm Condition Status
  - AS Pressure
  - SVE Vacuum



DRAWN/REVISED BY: JW
REVISION DATE: OCT. 8, 2020

FIGURE: 1

DRAWING TITLE

PROPOSED EQUIPMENT LAYOUT

PREPARED FOR

101 FROST STREET
WESTBURY, NY

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

American Industrial
Heat Transfer Inc.
Manufacturer of Quality Heat Exchangers

website : www.aihti.com
general email : sales@aihti.com
technical email : engineering@aihti.com

Air Cooled After-Cooler Application Request:

For ACA Series

Email form to: sales@aihti.com or engineering@aihti.com or fax to 434-757-1810

Contact Name ______________________ Telephone ______________________ Date __________

Company Name ______________________ Email ______________________

Address: ______________________ Fax ______________________

____

Hot Side

Air / Gas Type __________

If available:

- Density __________ lb/ft3
- Viscosity __________ cP
- Thermal Conductivity __________ Btu/hr.ft.°F
- Specific Heat __________ Btu/lb.°F

1. Flow Rate ______________
2. Temperature In ______________
3. Desired Temperature Out ______________
4. Heat Load ______________

Cold Side

Ambient Air __________

Altitude __________

1. Inlet Pressure ______________
2. Allowable Pressure Drop ______________

ASME Code and Certified Yes ☐ No ☐

To properly size the heat exchanger we need 3 of the 4 perameters on the Hot Side.

Cabinet Material:

Standard : Steel ☐

Options:
- Galvanized Steel ☐
- Stainless Steel ☐

Coating

Standard Enameled Gray Paint ☐

Options:
- Epoxy Paint ☐

Tubing Material:

Standard : Copper ☐

Options:
- Stainless Steel ☐
- 90/10 Copper Nickel ☐

Fins

Standared Aluminum ☐

Options: Copper ☐

Optional Coating: Heresite ☐

Motor

60Hz:
- 230/460 Volt, 3 Phase ☐
- 115/230 Volt, 1 Phase ☐
- 575 Volt, 3 Phase ☐

50Hz
- 230/400 Volt, 3 Phase ☐
- 110/220 Volt, 1 Phase ☐

Pneumatic Motor ☐

Comment: ____

note: AIHTI reserves the right to make reasonable design changes without notice.

ACA SERIES

AIR COOLED

AFTERCOOLERS

For Compressed Gas or Vapor

- Low pressure drop available.
- Standard ports NPT, optional ANSI flange.
- Operating temperature of 300°F & pressure of 300PSI.
- Can be built to ASME Code and Certified as an option
- Computer generated data sheet available for any application
- Custom designs to fit your needs.
- Cools: Air, Compressors, Blowers, Steam vapors, Pneumatic systems, Vapor recovery systems etc...

note: AIHTI reserves the right to make reasonable design changes without notice.

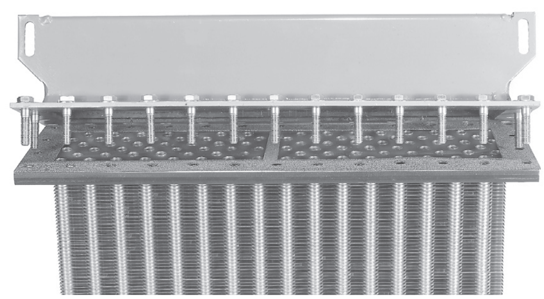
355 American Industrial Drive LaCrosse, VA 23950 tel: 434-757-1800 fax: 434-757-1810 email: sales@aihti.com

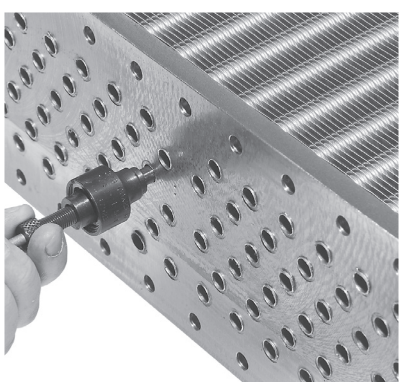
Serviceable Core® Construction

Air coolers are an essential part of any compressed air system, by cooling the air, and condensing water vapor into a liquid state for removal. When air is compressed, the compression induces heat into both the air and the water entrained in the air.
The American Industrial ACA series heat exchanger cools air with air, making it a simple inexpensive way to cool when compared to other water-cooled or refrigerant cooled systems. The unique compact *serviceable core®* design provides efficient cooling and low maintenance under the warmest environmental conditions. By using an ACA series air-cooled after cooler, machine tools will recieve cooler dryer air, provide longer trouble free life, experience less down time, and be cost effective to operate on a continuous basis.

SERVICEABLE CORE®

Core covers disassemble for easy access and cleaning. Repairable design for applications that require limited down time or in the event of a mishap requiring repair. Roller expanded tube to tube-sheet joint. 100% mechanical bond. Positive gasket seal is field replaceable for field maintenance or repair.





SUPERIOR COOLING FINS

Copper tubes are mechanically bonded to highly efficient aluminum cooling fins. Die-formed fin collars provide a durable precision fit for maximum heat transfer. Custom fin design forces air to become turbulent and carry heat away more efficiently than old flat fin designs.

Standard Construction Materials		Standard Unit Ratings	
Tubes	Copper	Operating Pressure	300 psig
Fins	Aluminum	Operating Temperature	300 °F
Cabinet & Pipes	Steel	Consult factory for optional materials and ratings.	
Fan Guard	Zinc Plated Steel		
Manifolds	Steel		

note: AIHTI reserves the right to make reasonable design changes without notice.

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Compressed Air

Normally air compressors have airflow rates based upon the horsepower. Rotary Screw compressors normally discharge air at 180 °f - 200 °f, prior to after-cooling. Reciprocating compressors normally discharge air at 250 °f - 275 °f, prior to after-cooling. Compressors are rated in CFM or cubic feet per minute of free air at inlet conditions. For practical purpose we will use sea level at 68 °f and 36% relative humidity as a norm. Altitude, differing ambient conditions with respect to temperature and humidity will all affect heat exchanger performance to a degree. Moisture content in air actually increases the Btu/hr load requirement for cooling air by adding an additional condensing load to the gas load requirement. As air rapidly cools, moisture in the compressed air stream will condense and separate into droplets, the more humidity present the more condensation will occur.

Sizing

The performance curves provided are for air. However, gases other than air may be applied to this cooler with respect to compatibility by applying a correction factor. Please take time to check the operating specifications thoroughly for material compatibility, pressure, and size before applying an American Industrial heat exchanger into your system.

Terms

Approach Temperature is the desired outlet temperature of the compressed gas minus the inlet ambient air temperature of the external air flowing over the coil.
SCFM (Standard Cubic Feet per Minute)
A cubic foot of air at 68 °f, 14.696 psia, & 36% relative humidity, per minute.
CFM (Cubic Feet per Minute)
Air at inlet atmospheric conditions.
ACFM (Actual Cubic Feet per Minute)
Air at current pressure, temperature, & humidity conditions without reference to a standard.

To Determine the Heat Load

If the heat load (Btu/hr) is unknown a value can be calculated based upon system operational requirements. To properly calculate the heat load (Btu/hr) to be rejected, several items must be known with certainty (see below).

- Flow rate SCFM (standard cubic feet pr minute)
- Type of gas and its makeup.
- System inlet pressure to the heat exchanger.
- Ambient temperature where the heat exchanger will be located (hotest condition).
- Temperature of the gas at the heat exchanger inlet.
- Temperature of the gas desired at heat exchanger outlet.
- Maximum acceptable pressure loss or cooled gas.

Using The Chart

American Industrial has created a quick reference chart for selecting ACA heat exchangers for Rotary Screw compressors (see page 214) [This chart offers basic information based upon compressor horsepower and average airflow rates. To properly use the chart, select the compressor horsepower at the left or the air flow rate. Next select the approach to ambient that is desired. Where the two columns intersect is shown the proper ACA model number.]

Using The Graphs

American Industrial provides performance graphs for ease of model selection. The following calculation examples (page 213), illustrate formulas to determine model selection sizes. It should be noted that there are some assumptions made when applying the basic principles for calculation in the formula. Altitude, humidity, materials, pressures, etc... all contribute to the final selection. Contact American Industrial for more detailed calculation.

Selection

The selection process is important, many considerations should be made when selecting a heat exchanger. Once the proper Fs requirement is calculated, it is time to apply the data to the graph and make a selection.
1) Find the Flow rate in SCFM located at the bottom of the graph. Follow the graph line up until it matches the calculated Fs from your calculations. If the point falls just above one of the model graphed lines, select the next larger size. If the point is on a line select it as your choice.
2) Check carefully the pressure differential. Units with operating pressures from 70+ psig will have no greater than 2.0 psid within the published flow range. For lower inlet pressure see the pressure drop curves for more detail.
3) Calculate a Nozzle size using the nozzle size calculation to verify your selection has the proper port sizes for your required inlet pressure.

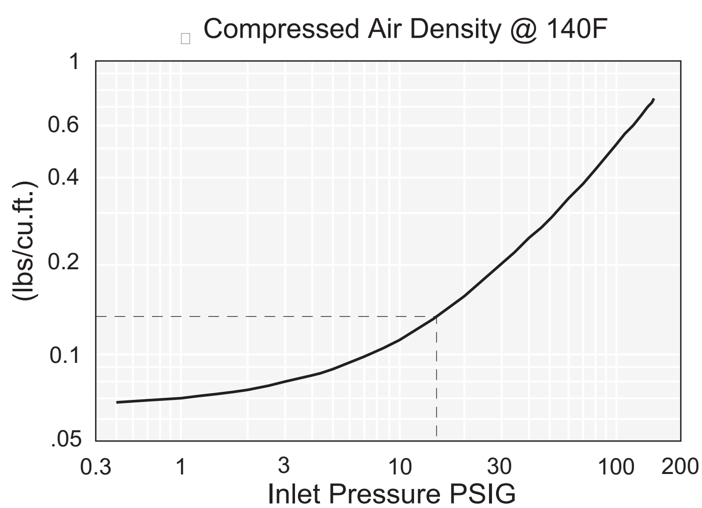
Formula: Nozzle Calculation

$$\text{Nozzle Size} = \sqrt{\frac{\left[\frac{(\text{SCFM} \times 4.512)}{(270{,}000 \times d)} \times 144\right]}{.7854}}$$

All numbers in equation are constants except for SCFM and (d) "density".

Example:
Flow rate = 200 SCFM
Pressure = 15 psig
Density = (d) from Compressed Air Density Graph

$$\sqrt{\frac{\left[\frac{(200 \times 4.512)}{(270{,}000 \times .14)} \times 144\right]}{.7854}} = 2.09\text{" or (2" Nozzle)}$$



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Examples: (Note: All air flow rates must be converted to SCFM)

Application 1 Air Rotary Screw Compressor

Determine the heat load "Q" =Btu/hr — $Q = [SCFM \times CF \times (T_1 - T_2)]$ or $[350 \times 1.13 \times 105^o] = 41{,}528$ Btu/hr

T_1 = Inlet gas temperature: 200ºf

T_2 = Outlet gas temperature: Ambient + 10ºf= (95ºf) — Determine the Fs = $\frac{Btu/hr}{T_2 - T_a}$ or $\frac{41{,}528}{10}$ = **4,153 Fs** (Refer to graph example on page 215)

T_a = Ambient temperature: 85ºf

Airflow rate: 350 SCFM

PSIG = Operating Pressure 100 psig

CF = Correction factor: 1.13 — CF = (.0753 x S x C x60) or (.0753 x 1.0 x .25 x 60) = 1.13

S = Specific gravity with air being 1.0

C = Specific heat (Btu/Lb ºf): .25

Model Selection - ACA-4362

$$\sqrt{\frac{\left[\frac{(350 \times 4.512)}{(270{,}000 \times .50)} \times 144\right]}{.7854}} = 1.46\text{" or (1.5" minimum nozzle)}$$

Application 2 Methane Gas

Determine the heat load "Q" = Btu/hr — $Q = [SCFM \times CF \times (T_1 - T_2)]$ or $[500 \times 1.428 \times 210^o] = 149{,}940$ Btu/hr

T_1 = Inlet gas temperature: 300ºf

T_2 = Outlet gas temperature: 90ºf — Determine the Fs = $\frac{Btu/hr}{T_2 - T_a}$ or $\frac{149{,}940}{30}$ = **4,998 Fs** (Refer to graph example on page 215)

T_a = Ambient temperature: 60ºf

Gas flow rate: 500 SCFM

PSIG = Operating pressure: 150 psig

CF = Correction factor: 1.428 — CF = (.0753 x S x C x 60) or (.0753 x .55 x .575 x 60) = 1.428

S = Specific gravity with air being 1.0: .55

C = Specific heat (Btu/Lb ºf)

Model Selection - ACA-6421

$$\sqrt{\frac{\left[\frac{(500 \times 4.512)}{(270{,}000 \times .74)} \times 144\right]}{.7854}} = 1.44\text{" or (1.5" minimum nozzle)}$$

Application 3 Low Pressure Blower

Determine the heat load "Q" = Btu/hr — $Q = [SCFM \times CF \times (T_1 - T_2)]$ or $[76 \times 1.13 \times 150^o] = 12{,}882$ Btu/hr

T_1 = Inlet gas temperature: 250ºf

T_2 = Outlet gas temperature: 100ºf — Determine the Fs = $\frac{Btu/hr}{T_2 - T_a}$ or $\frac{12{,}882}{10}$ = **1,288 Fs** (Refer to graph example on page 215)

T_a = Ambient temperature: 90ºf

CF = Correction Factor: 1.13

PSIG = Operating pressure: 2 psig

Airflow rate: 90 ACFM

To Convert ACFM to SCFM = $\frac{ACFM \times (PSIG + 14.7) \times 528}{(T_1 + 460) \times 14.7} = \frac{90 \times 16.7 \times 528}{710 \times 14.7} = 76$ SCFM

S = Specific gravity with air being 1.0

C = Specific heat (Btu/lb ºf): .25

△P = 5" water column or less (example pg. 220)

Model Selection - ACA-3302

$$\sqrt{\frac{\left[\frac{(76 \times 4.512)}{(270{,}000 \times .075)} \times 144\right]}{.7854}} = 1.76\text{" or (2.0" minimum nozzle)}$$

Pressure Drop (see page 220 for graphs)

Since gas is compressible the density of the gas changes from one temperature or pressure to the next. While the mass flow rate may not change, the pressure differential across the heat exchanger will change dramatically from high (70-125 psig) to low (1-5 psig) pressure. A low pressure condition requires larger carrying lines to move flow than does the same gas rate under a higher pressure. At lower pressures the differential pressure across the heat exchanger can be quite high compared to the same flow rate at a higher pressure. For that reason it is suggested that the pressure differential graphs on page 220 be consulted prior to making your final selection.

The ACA series heat exchanger is designed to be easily modified to accept larger port sizes in the event your system pressure requires larger nozzles. Consult our engineering department for more exacting information regarding pressure differential issues.

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ROTARY SCREW COMPRESSORS

(200°F @125 PSI & 36% relative humidity)

Compressor Horse Power (HP)	Average Air Discharge Cubic feet per minute (SCFM)	Model Size Selection			
		*Approach Temperature °F (T_2 - T_a)			
		5°F	10°F	15°F	20°F
15	60	ACA - 3302	ACA - 3242	ACA - 3242	ACA - 3182
20	80	ACA - 3302	ACA - 3242	ACA - 3242	ACA - 3182
30	130	ACA - 3362	ACA - 3302	ACA - 3242	ACA - 3242
40	165	ACA - 3362	ACA - 3302	ACA - 3302	ACA - 3242
60	250	ACA - 4362	ACA - 3362	ACA - 3302	ACA - 3302
75	350	ACA - 6362	ACA - 4362	ACA - 3362	ACA - 3302
100	470	ACA - 6362	ACA - 6362	ACA - 3362	ACA - 3362
125	590	ACA - 6422	ACA - 6362	ACA - 4362	ACA - 3362
150	710	ACA - 6422	ACA - 6362	ACA - 6362	ACA - 4362
200	945	ACA - 6482	ACA - 6422	ACA - 6362	ACA - 6362
250	1160	ACA - 6482	ACA - 6422	ACA - 6362	ACA - 6362
300	1450	ACA - 6542	ACA - 6482	ACA - 6422	ACA - 6362
350	1630	ACA - 6542	ACA - 6482	ACA - 6422	ACA - 6362
400	1830	ACA - 6602	ACA - 6482	ACA - 6422	ACA - 6422
500	2150	ACA - 6602	ACA - 6542	ACA - 6482	ACA - 6422

***Approach Temperature**

the desired outlet temperature of the compressed gas minus the inlet ambient air temperature of the external air flowing over the coil.

T_2 - Outlet gas temperature

T_a - Ambient temperature

Example of a model:

ACA - 3242 - 3 - __ -____ - ____

Model
ACA

Size

Number of Passes
1P = 1 pass
2P = 2 pass

Drive Type
N = no motor
1 = single phase
3 = three phase
1EXP = single phase
3EXP = three phase
5 = 575 Volt

Connections
Blank = NPT
A = ANSI 150#RF Flange

Tubing
Blank = Copper
U = 90/10 Cu Ni
C = Carbon Steel
SS = Stainless Steel

Coating
Blank = Enamel (standard)
G = Galvanize (cabinet)
T = Heresite (core)
X = Epoxy (core & cabinet)
STS = Stainless Steel

Using the performance graphs (see page 230)

The Flow vs. Fs graph is calculated based upon SCFM units.

To convert volumetric Actual Cubic Feet per Minute (ACFM) into Standard Cubic Feet per Minute (SCFM) see page 213 application 3.

To select a model, locate the flow rate in SCFM located at the bottom of the graph. Proceed upward on the graph until the SCFM flow rate intersects with the calculated Fs. The curve closest, on or above the intersection point is the proper selection.

Using the one pass graph or two-pass graph depends upon pressure differential, flow, and performance requirements. The actual surface area for one or Two Pass units is the same. However, the airflow velocity in the tubes increases with the number of passes giving slightly higher pressure differentials and better cooling performance.

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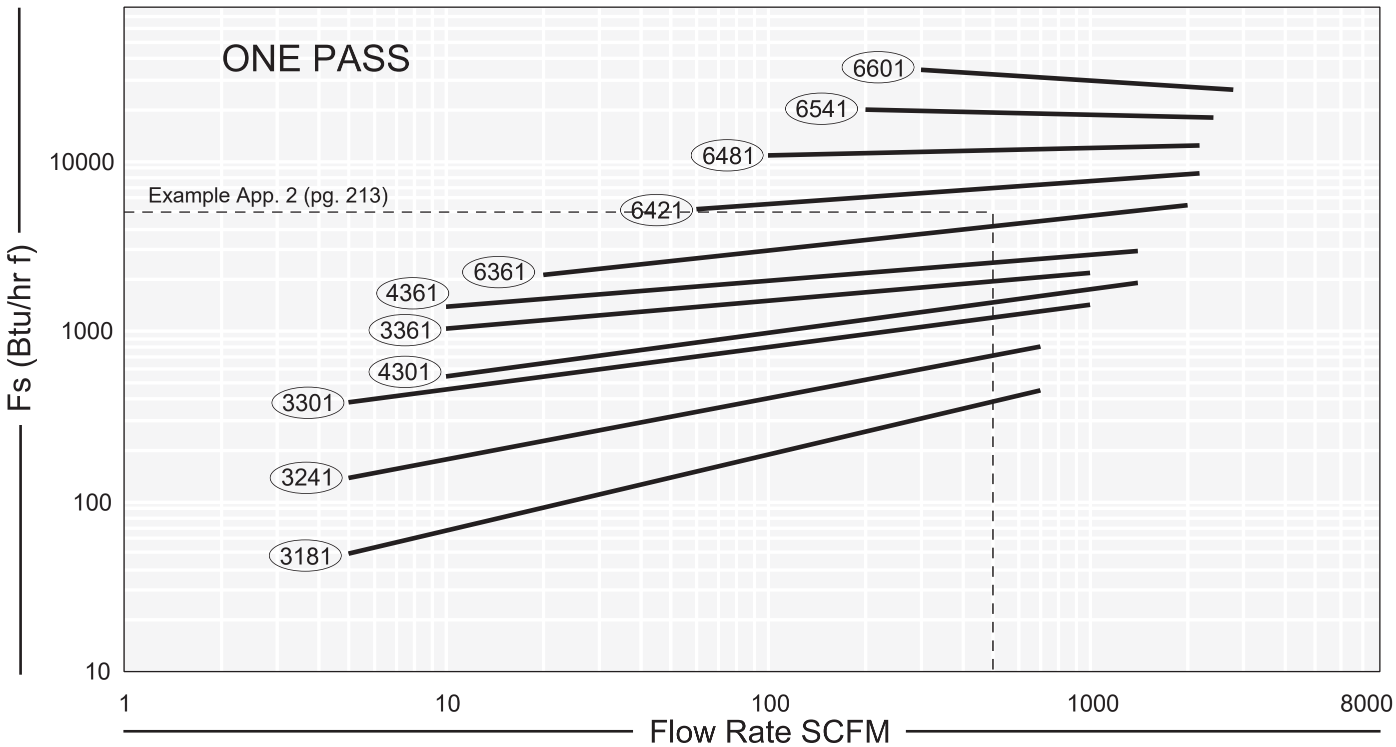

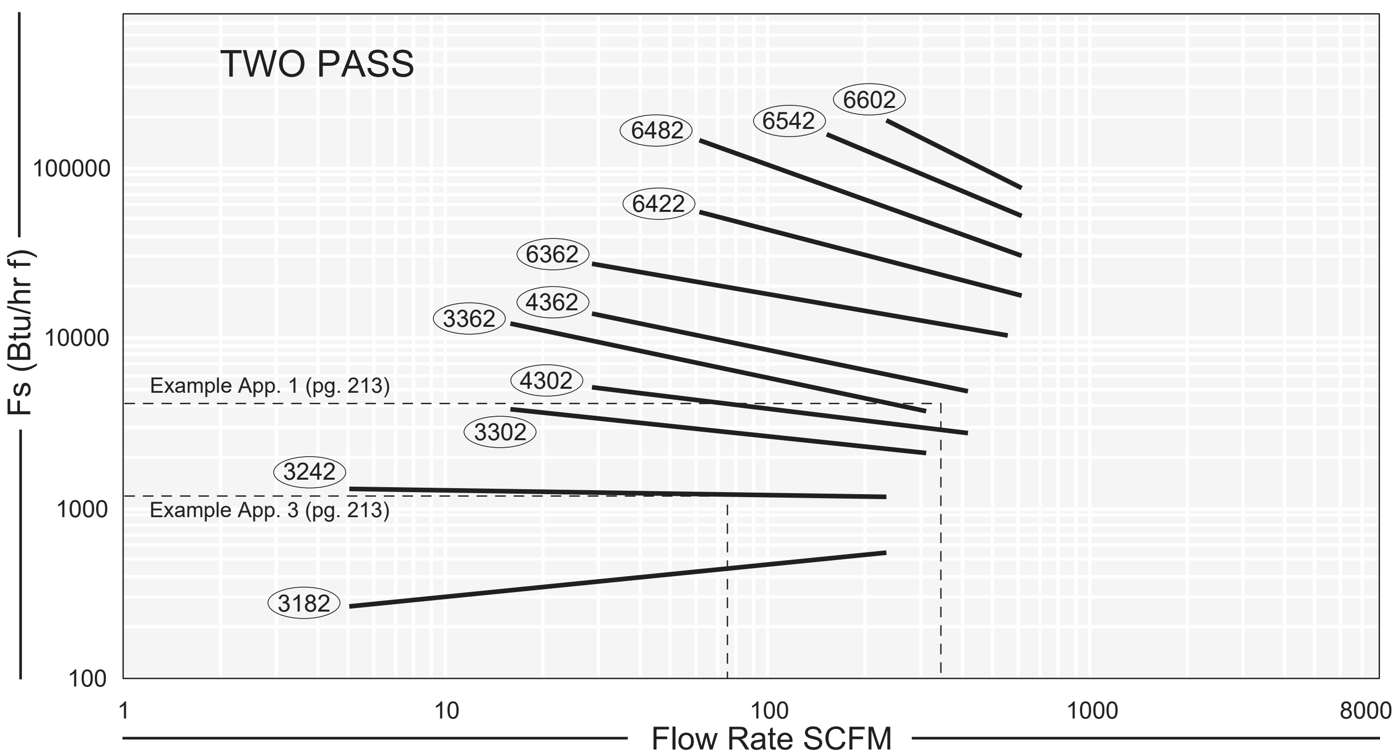

Example

Application #3 (p.5)

$$Fs = \frac{\text{Heat Load (Btu/hr)}}{\text{Process exiting temperature } (T_2) \text{ from cooler} - \text{Ambient air entering the cooler } (T_a)}$$

SCFM = 76
ĐPSI required = 5" H2O
Model selection = ACA-6421-3
Fs = 1,288 Nozzle check (p.4) = 3.10 or 3"NPT

note: AIHTI reserves the right to make reasonable design changes without notice.

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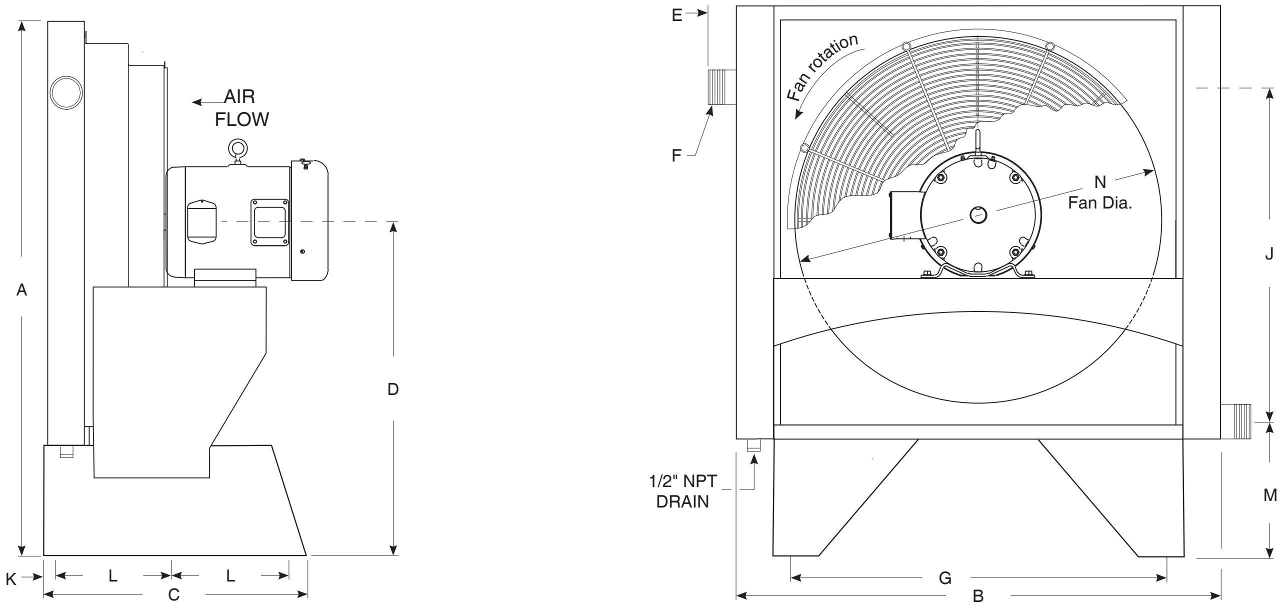
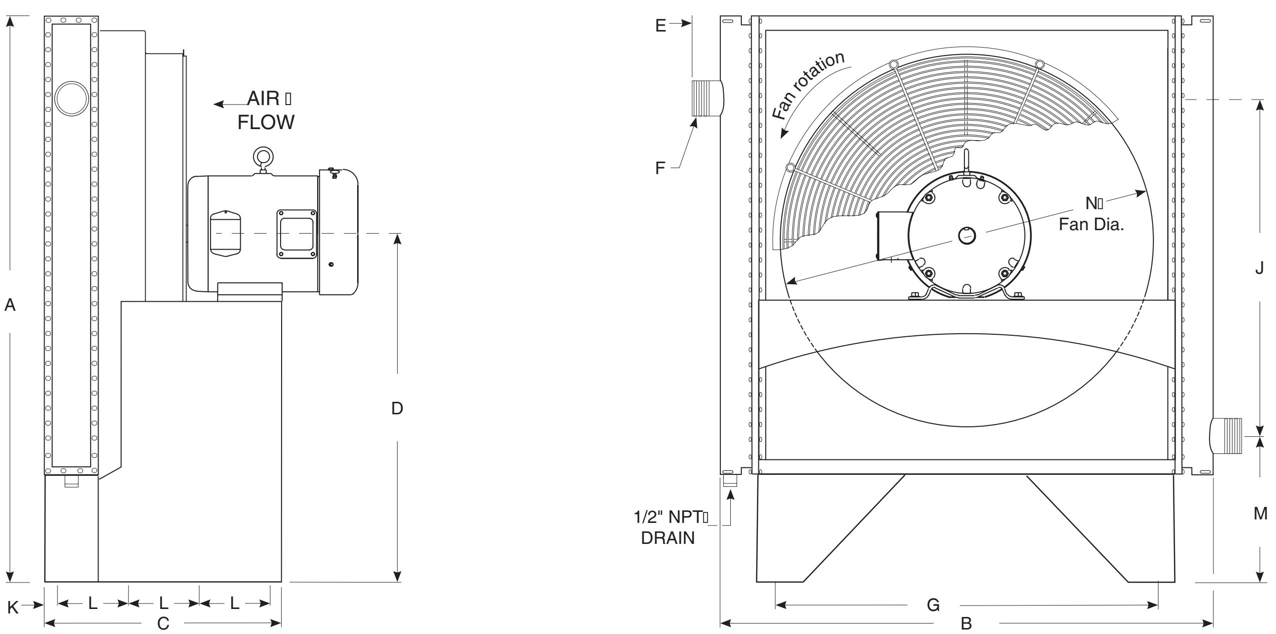
ACA Series *dimensions*



ACA - 3181 through ACA - 4361



ACA - 6301 through ACA - 6601

DIMENSIONS (inches)												
Model	A	B	C	D	E	F NPT	G	J	K	L	M	N
ACA - 3181	30.6	23.0	19.8	20.25	2.5	1.5	16.3	12.98	1.5	8.38	11.93	14.0
ACA - 3241	36.6	29.0	19.8	23.25	2.5	1.5	22.3	17.48	1.5	8.38	11.93	22.0
ACA - 3301	42.6	35.0	19.8	26.25	2.5	2.0	28.3	21.75	1.5	8.38	12.15	28.0
ACA - 4301	42.6	36.0	19.8	26.25	2.5	2.5	28.3	21.55	1.5	8.38	12.35	28.0
ACA - 6301	42.6	38.8	19.8	26.25	2.5	3.0	28.3	21.07	1.5	8.38	12.98	28.0
ACA - 3361	48.6	41.0	19.8	29.25	2.5	2.0	34.3	26.25	1.5	8.38	12.15	32.0
ACA - 4361	48.6	42.0	19.8	29.25	2.5	2.5	34.4	26.05	1.5	8.38	12.35	32.0
ACA - 6361	48.5	43.9	19.8	29.25	2.5	3.0	34.3	26.0	1.5	8.38	12.7	32.0
ACA - 6421	54.5	50.8	27.36	32.25	2.5	4.0	40.3	29.4	2.0	6.75	13.3	36.0
ACA - 6481	60.6	56.8	27.36	35.25	2.5	4.0	46.3	34.1	2.0	6.75	13.3	42.0
ACA - 6541	66.6	62.8	28.83	38.25	2.5	4.0	52.3	38.6	2.0	6.75	13.3	48.0
ACA - 6601	72.4	67.9	30.6	41.25	2.5	4.0	58.3	43.05	2.0	6.75	13.3	48.0

note: AIHTI reserves the right to make reasonable design changes without notice.

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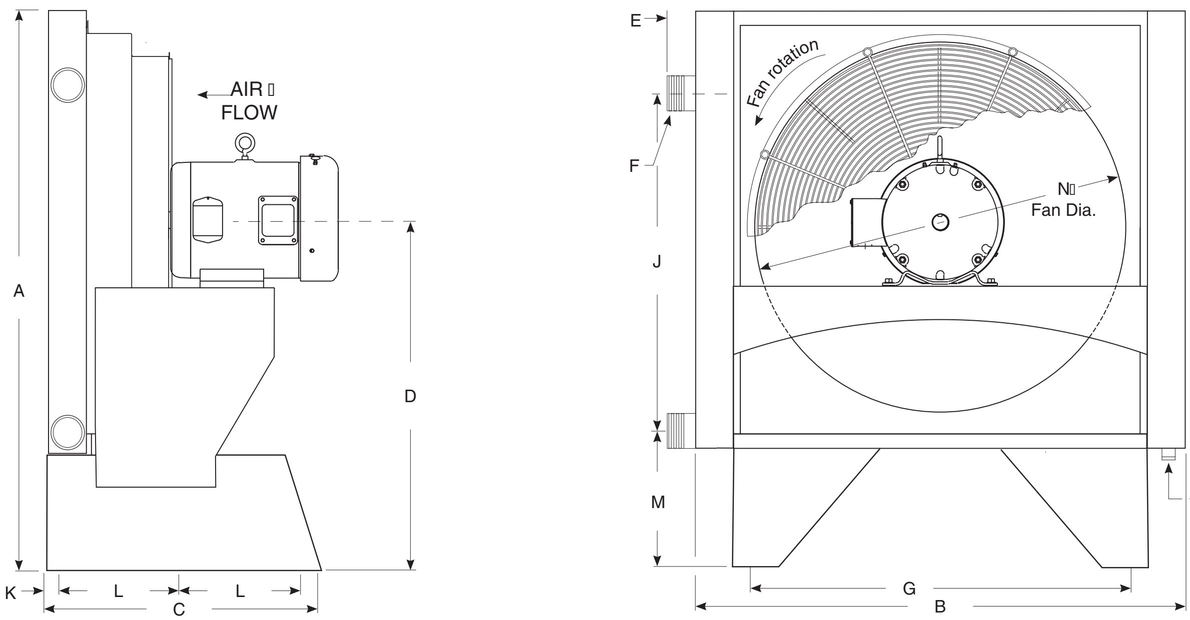
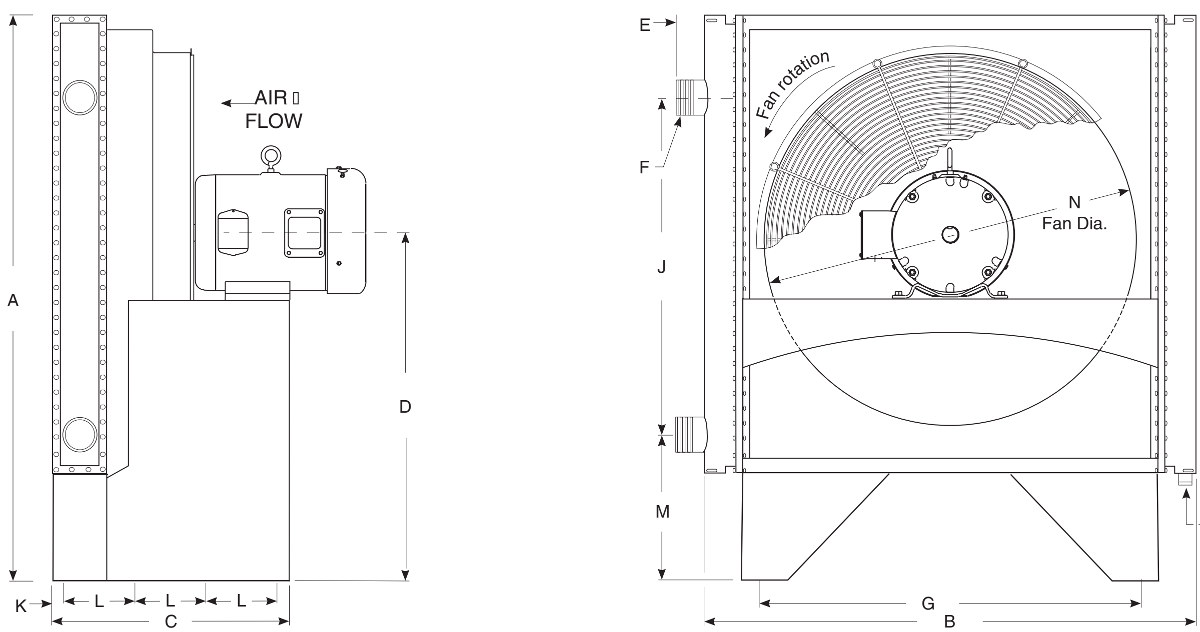


ACA - 3182 through ACA - 4362



ACA - 6302 through ACA - 6602

DIMENSIONS (inches)												
Model	A	B	C	D	E	F NPT	G	J	K	L	M	N
ACA - 3182	30.6	23.0	19.8	20.25	2.5	1.5	16.3	12.98	1.5	8.38	11.93	14.0
ACA - 3242	36.6	29.0	19.8	23.25	2.5	1.5	22.3	17.48	1.5	8.38	11.93	22.0
ACA - 3302	42.6	35.0	19.8	26.25	2.5	2.0	28.3	21.75	1.5	8.38	12.15	28.0
ACA - 4302	42.6	36.0	19.8	26.25	2.5	2.5	28.3	21.55	1.5	8.38	12.35	28.0
ACA - 6302	42.6	38.8	19.8	26.25	2.5	3.0	28.3	21.07	1.5	8.38	12.98	28.0
ACA - 3362	48.6	41.0	19.8	29.25	2.5	2.0	34.3	26.25	1.5	8.38	12.15	32.0
ACA - 4362	48.6	42.0	19.8	29.25	2.5	2.5	34.4	26.05	1.5	8.38	12.35	32.0
ACA - 6362	48.5	43.9	19.8	29.25	2.5	3.0	34.3	26.0	1.5	8.38	12.7	32.0
ACA - 6422	54.5	50.8	27.36	32.25	2.5	4.0	40.3	29.4	2.0	6.75	13.3	36.0
ACA - 6482	60.6	56.8	27.36	35.25	2.5	4.0	46.3	34.1	2.0	6.75	13.3	42.0
ACA - 6542	66.6	62.8	28.83	38.25	2.5	4.0	52.3	38.6	2.0	6.75	13.3	48.0
ACA - 6602	72.4	67.9	30.6	41.25	2.5	4.0	58.3	43.05	2.0	6.75	13.3	48.0

note: AIHTI reserves the right to make reasonable design changes without notice.

ELECTRIC MOTOR DATA

Model	Horse Power	Phase	Hz	Volts	RPM	NEMA Frame	Enclosure Type	Full Load Amperes	Service Factor	Thermal Overload
ACA-3181/2	.25	1	60	115/230	1800	48	TEFC	2.6/1.3	1.15	NO
ACA-3181/2	.25	3	60	230/460	1800	48	TEFC	1.4/.07	1.15	NO
ACA-3181/2	.33	3	60	575	1800	56	TEFC	0.6	1.15	NO
ACA-3241/2	.25	1	60	115/230	1200	56	TEFC	5.2/2.6	1.15	NO
ACA-3241/2	.25	3	60	230/460	1200	56	TEFC	1.4/0.7	1.15	NO
ACA-3241/2	.50	3	60	575	1200	56	TEFC	2.0/1.0	1.15	NO
ACA-3301/2	.50	1	60	115/230	1200	56	TEFC	7.8/3.9	1.15	NO
ACA-3301/2	.50	3	60	230/460	1200	56	TEFC	2.4/1.2	1.15	NO
ACA-3301/2	.50	3	60	575	1200	56	TEFC	1.0	1.15	NO
ACA-4301/2	.50	1	60	115/230	1200	56	TEFC	7.8/3.9	1.15	NO
ACA-4301/2	.50	3	60	230/460	1200	56	TEFC	2.4/1.2	1.15	NO
ACA-4301/2	.50	3	60	575	1200	56	TEFC	1.0	1.15	NO
ACA-6301/2	1.0	3	60	230/460	1200	56	TEFC	3.6/1.8	1.15	NO
ACA-6301/2	1.0	3	60	575	1200	56	TEFC	1.5	1.15	NO
ACA-3361/2	1.0	3	60	230/460	1200	56	TEFC	3.6/1.8	1.15	NO
ACA-3361/2	1.0	3	60	575	1200	56	TEFC	1.5	1.15	NO
ACA-4361/2	1.0	3	60	230/460	1200	56	TEFC	3.6/1.8	1.15	NO
ACA-4361/2	1.0	3	60	575	1200	56	TEFC	1.5	1.15	NO
ACA-6361/2	3.0	3	60	230/460	1800	182T	TEFC	8.4/4.2	1.15	NO
ACA-6361/2	3.0	3	60	575	1800	182T	TEFC	3.05	1.15	NO
ACA-6421/2	5.0	3	60	230/460	1200	213T	TEFC	13.66/6.83	1.15	NO
ACA-6421/2	5.0	3	60	575	1200	213T	TEFC	5.39	1.15	NO
ACA-6481/2	5.0	3	60	230/460	1200	213T	TEFC	13.66/6.83	1.15	NO
ACA-6481/2	5.0	3	60	575	1200	213T	TEFC	5.39	1.15	NO
ACA-6541/2	7.5	3	60	230/460	1200	254T	TEFC	19.96/9.98	1.15	NO
ACA-6541/2	7.5	3	60	575	1200	254T	TEFC	7.99	1.15	NO
ACA-6601/2	10.0	3	60	230/460	1200	256T	TEFC	27.6/13.8	1.15	NO
ACA-6601/2	10.0	3	60	575	1200	256T	TEFC	10.6	1.15	NO

NOTE: All of the ACA Series are available in 50hz upon request as a special

ELECTRIC MOTOR NOTES:

1) All motors are NEMA, high efficiency
2) Motor electrical ratings are an approximate guide and may vary between motor manufacturers. Consult ratings on motor data plate prior to installation and operation.
3) Explosion proof, high temperature, severe duty, chemical, IEC, Canadian Standards Association, and Underwriters Laboratory recognized motors are available upon request.
4) American Industrial reserves the right to enact changes to motor brand, type and ratings regarding horsepower, RPM,FLA,and service factor for standard products without notice. All specific requirements will be honored without change.
5) Fan rotation is clockwise when facing the motor shaft.
6) The above motors contain factory lubricated shielded ball bearings (no additional lubrication is required).
7) **Abbreviation Index**
   TEFC...........................Totally Enclosed, Fan Cooled
   EXP.............................Explosion Proof

NOTE: Basic electric drive units are supplied with one of the corresponding above listed motors.

note: AIHTI reserves the right to make reasonable design changes without notice.

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CLASS I,DIV.1, GROUP D or CLASS II,DIV.2, GROUP F & G EXPLOSION PROOF MOTOR DATA

Model	Horse Power	Phase	Hz	Volts	RPM	NEMA Frame	Enclosure Type	Full Load Amperes	Service Factor	Thermal Overload
ACA-3181/2-1	.25	1	60	115/230	1800	48	EXP	5.0/2.5	1.0	YES
ACA-3181/2-3	.25	3	60	230/460	1800	48	EXP	0.7/1.4	1.0	YES
ACA-3241/2-1	.33	1	60	115/230	1200	56	EXP	6.8/3.4	1.0	YES
ACA-3241/2-3	.33	3	60	230/460	1200	56	EXP	0.8/1.6	1.0	YES
ACA-3301/2-1	.75	1	60	115/230	1200	56	EXP	10.8/5.4	1.0	YES
ACA-3301/2-3	.75	3	60	230/460	1200	56	EXP	2.8/1.4	1.0	YES
ACA-4301/2-1	.75	1	60	115/230	1200	56	EXP	10.8/5.4	1.0	YES
ACA-4301/2-3	.75	3	60	230/460	1200	56	EXP	2.8/1.4	1.0	YES
ACA-6301/2-3	1.0	3	60	230/460	1200	56	EXP	3.8/1.9	1.0	YES
ACA-3361/2-3	1.0	3	60	230/460	1200	56	EXP	3.8/1.9	1.0	YES
ACA-4361/2-3	1.0	3	60	230/460	1200	56	EXP	3.8/1.9	1.0	YES
ACA-6361/2-3	3.0	3	60	230/460	1800	182T	EXP	7.82/3.91	1.0	YES
ACA-6421/2-3	5.0	3	60	230/460	1200	215T	EXP	13.66/6.83	1.0	YES
ACA-6481/2-3	5.0	3	60	230/460	1200	215T	EXP	13.66/6.83	1.0	YES
ACA-6541/2-3	7.5	3	60	230/460	1200	254T	EXP	19.46/9.73	1.0	YES
ACA-6601/2-3	10.0	3	60	230/460	1200	256T	EXP	26.6/13.3	1.0	YES

NOTE: All of our ACA Series are available in 50hz upon request as a special

COMMON DATA

Model	Air Flow		Sound Level dB(A) @ 7ft	Weight		Serviceable Core
	CFM	m^3/s		w/ motor	w/o motor	
ACA-3181/2	1550	0.731	72	131	111	NO
ACA-3241/2	2900	1.36	76	154	134	NO
ACA-3301/2	4450	2.10	76	184	160	NO
ACA-4301/2	4450	2.10	76	211	187	NO
ACA-6301/2	4450	2.10	76	343	305	YES
ACA-3361/2	6350	2.99	79	243	205	NO
ACA-4361/2	6350	2.99	79	289	251	NO
ACA-6361/2	10500	4.95	91	402	342	YES
ACA-6421/2	14300	6.75	87	636	443	YES
ACA-6481/2	18700	8.82	88	753	560	YES
ACA-6541/2	23350	11.02	91	938	691	YES
ACA-6601/2	29300	13.83	91	1104	835	YES

NOTES:

TEFC = Totally Enclosed, Fan Cooled

To estimate the sound level at distances other than 7 feet (2.1 meters) from the cooler, add 6 db for each halving of distance, or substract 6 db for each doubling of the distance.

Example:
The Sound Level of the ACA-3181/2 is 72 dB at 7ft. At 3.5ft (7ft x 0.5 = 3.5ft) the sound level is 66 dB (72dB - 6dB = 66dB). At 14ft (7ft x 2 = 14ft) the sound level is 78dB (72dB + 6dB = 78dB).

Pressure Drop Graphs (see page 237)

Each graph represents a specific pressure drop at differing flow rates and inlet pressures. The four graphs for each model series size represents the more popular milestone pressure differentials commonly applied.

To use the graphs for selection purposes follw the steps below.

1) Locate the operating pressure at the bottom of the desired pressure drop chart.
2) Locate the flow rate in SCFM at the left end of the chart.
3) Follow the "Pressure" line vertically and the "Flow" line horizontally until they cross, note the location.
4) The curve on, or closest above will be exact or less pressure drop than requested and suitable for the application.
5) There may be several units shown above the intersection point, all of which will produce less than the desired pressure drop at the required flow.

Example: Application 3 Low Pressure Blower

Flow = 76 SCFM • Operating pressure = 2 PSIG • Initial selection from graph page 215 = ACA-3302
Desired pressure drop = 5" H2O or less. (USE the "Pressure Drop 5" H20" curves page 237)
From the pressure drop graph, page 237. Acceptable choice - ACA-3302 is on the line, ACA-3242 is well below the line. The ACA-3302 meets the pressure drop requirement, but exceeds the capacity requirement. However, even though the ACA-3242 exceeds 5" of water pressure drop, other considerations should be made prior to selection such as unit physical size, cost, availability, and port size.

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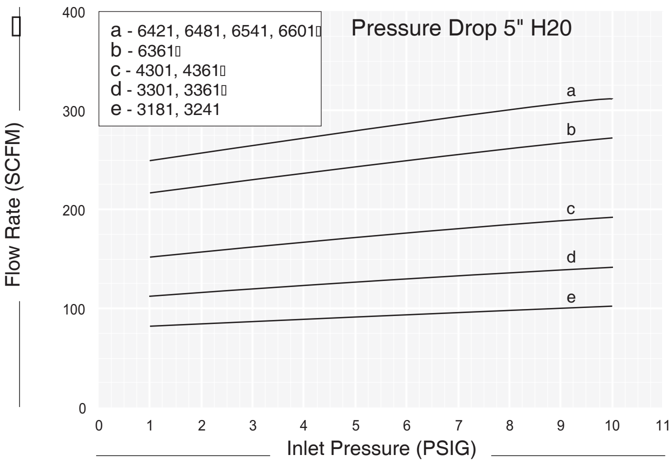
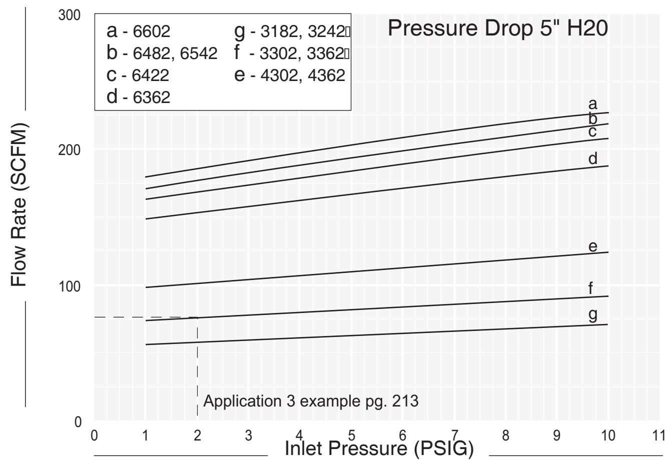
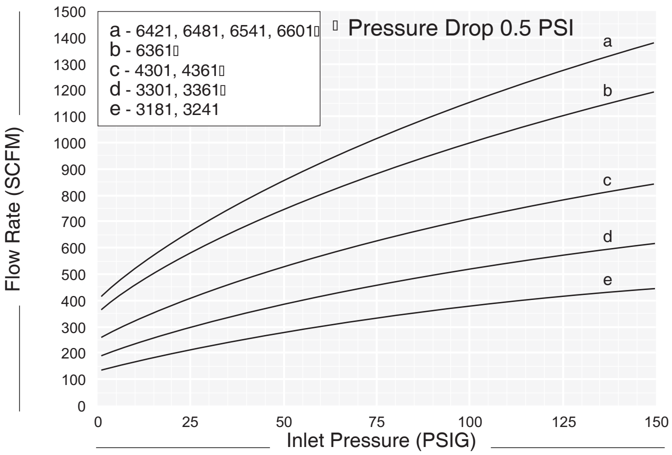
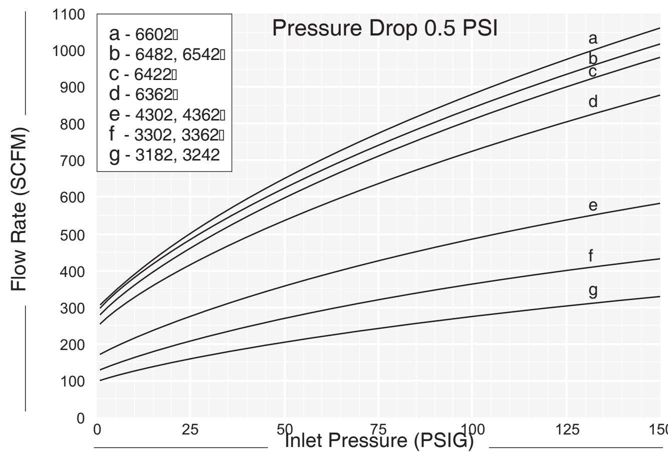
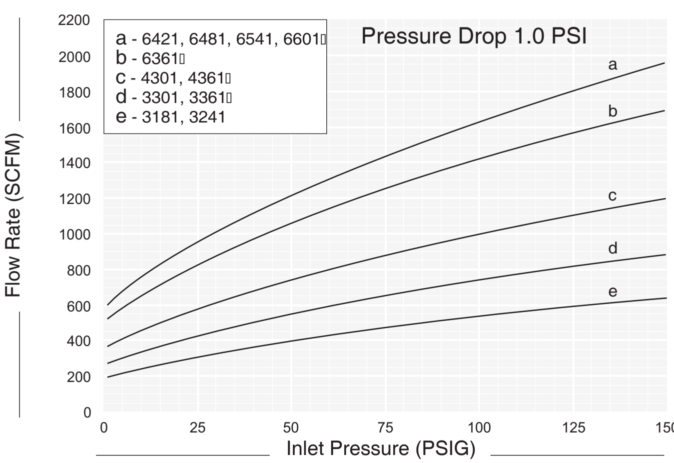
ACA Series *pressure drop graphs*

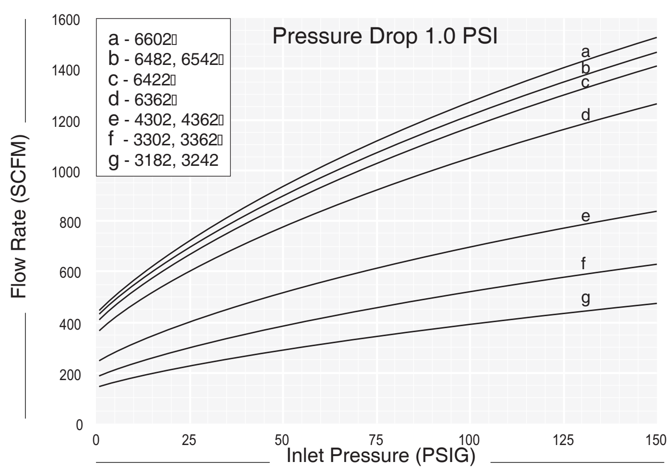


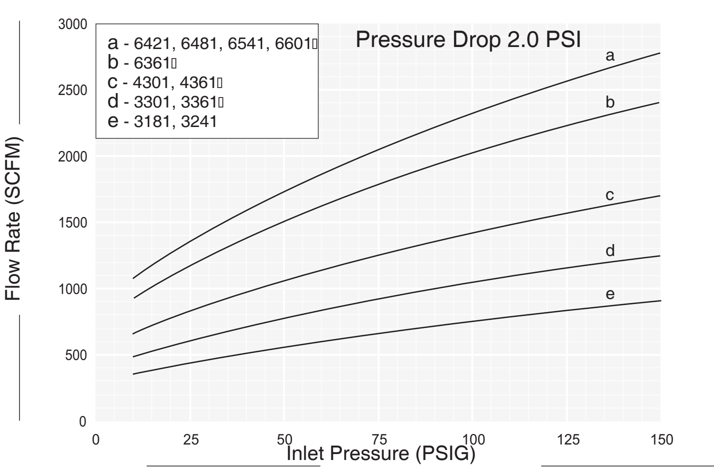


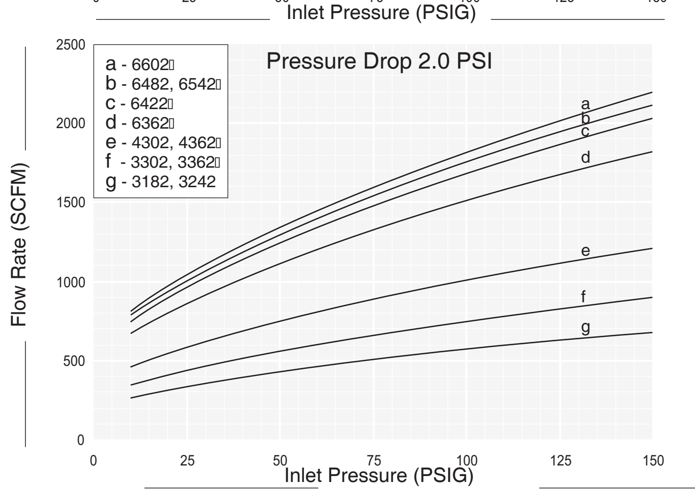












note: AIHTI reserves the right to make reasonable design changes without notice.

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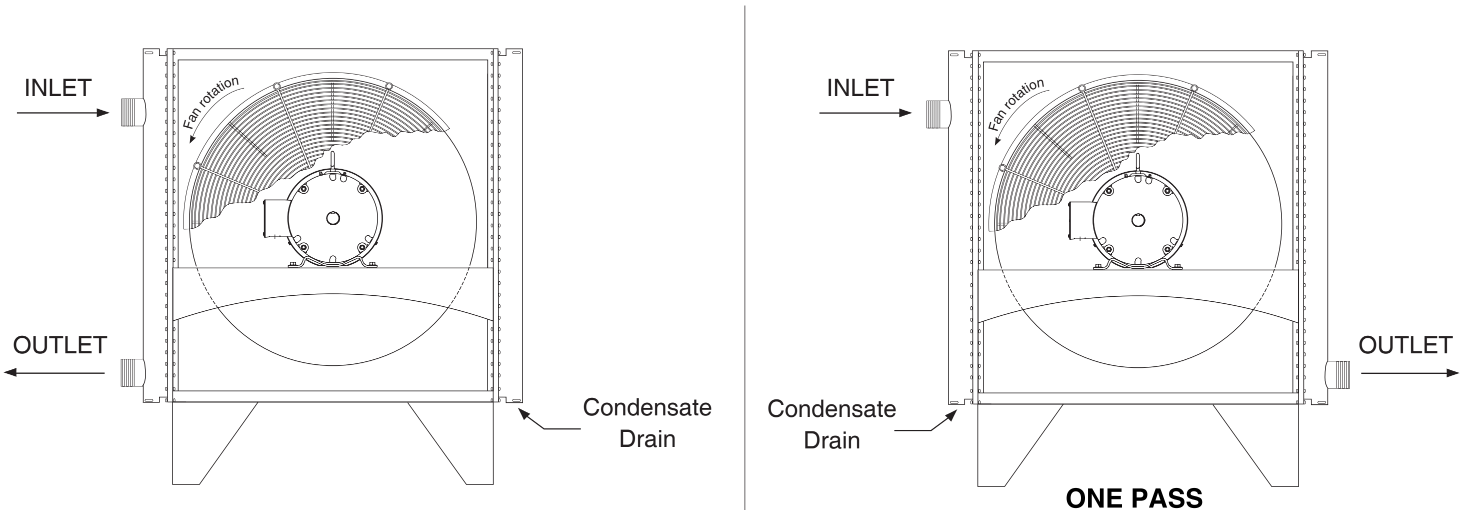
PIPING HOOK UP



Receiving:

a) Inspect unit for any shipping damage before uncrating. Indicate all damages to the trucking firms' delivery person and mark it on the receiving bill before accepting the freight. Make sure that the core and fan are not damaged. Rotate the fan blade to make sure that it moves freely. The published weight information located in this brochure is approximate. True shipment weights are determined at the time of shipping and may vary. Approximate weight information published herein is for engineering approximation purposes and should not be used for exact shipping weight. *Since the warranty is based upon the unit date code located on the model identification tag, removal or manipulation of the identification tag will void the manufacturers warranty.*

b) When handling the ACA heat exchanger, special care should be taken to avoid damage to the core and fan. All units are shipped with wood skids for easy forklift handling

c) Standard Enamel Coating: American Industrial provides its standard products with a normal base coat of oil base air cure enamel paint. The enamel paint is applied as a temporary protective and esthetic coating prior to shipment. While the standard enamel coating is durable, American Industrial does not warrantee it as a long-term finish coating. It is strongly suggested that a more durable final coating be applied after installation or prior to long-term storage in a corrosive environment to cover any accidental scratches, enhance esthetics, and further prevent corrosion. It is the responsibility of the customer to provide regular maintenance against chips, scratches, etc... and regular touch up maintenance must be provided for long-term benefits and corrosion prevention.

Installation:

a) American Industrial recommends that the equipment supplied should be installed by qualified personal who have solid understanding of system design, pressure and temperature ratings, and piping assembly. Verify the service conditions of the system prior to applying any ACA series cooler. If the system pressure or temperature does not fall within the parameters on ACA rating tag located on the heat exchanger, contact our factory prior to installation or operation.

b) In order for the heat exchanger to properly function, installation should be made with minimum airflow obstruction distance of not less than twenty (20) inches on both fan intake and exiting side of the heat exchanger.

c) Process piping should be as indicated above with the process flow entering into the upper port and exiting out the lower port (see illustration). This configuration will allow for condensate moisture to drain completely from the equipment. It is recommended that an air separator or automatic drip leg be applied to the outlet side of the heat exchanger to trap any moisture that develops.

d) Flow line sizes should be sized to handle the appropriate flow to meet the system pressure drop requirements. If the nozzle size of the heat exchanger is smaller than the process line size an increased pressure differential at the heat exchanger may occur.

e) ACA series coolers are produced with both brazed ACA-3181 through ACA-4362, and serviceable core® ACA-6301 through ACA-6602 style coils. A brazed construction coil does not allow internal tube access. A serviceable core® will allow full accessibility to the internal tubes for cleaning and maintenance. ACA series coolers are rated for 150 PSIG working pressure, and a 400^{o}f working temperature.

f) Special Coatings: American Industrial offers as customer options, Air-Dry Epoxy, and Heresite (Air-Dry Phenolic) coatings at additional cost. American Industrial offers special coatings upon request, however American Industrial does not warrantee coatings to be a permanent solution for any equipment against corrosion. It is the responsibility of the customer to provide regular maintenance against chips, scratches, etc... and regular touch up maintenance must be provided for long-term benefits and corrosion prevention.

355 American Industrial Drive LaCrosse, VA 23950 tel: 434-757-1800 fax: 434-757-1810 email: sales@aihti.com

g) Electric motors should be connected only to supply source of the same characteristics as indicated on the electric motor information plate. Prior to starting, verify that the motor and fan spin freely without obstruction. Check carefully that the fan turns in the correct rotation direction normally counter clockwise from the motor side (fan direction arrow). Failure to operate the fan in the proper direction could reduce performance or cause serious damage to the heat exchanger or other components. Fan blades should be rechecked for tightness after the first 100 hours of operation.

Maintenance

Regular maintenance intervals based upon the surrounding and operational conditions should be maintained to verify equipment performance and to prevent premature component failure. Since some of the components such as, motors, fans, load adapters, etc... are not manufactured by American Industrial maintenance requirements provided by the manufacture must be followed.

a) Inspect the entire heat exchanger and motor/fan assembly for loosened bolts, loose connections, broken components, rust spots, corrosion, fin/coil clogging, or external leakage. Make immediate repairs to all affected areas prior to restarting and operating the heat exchanger or its components.

b) Heat exchangers operating in oily or dusty environments will often need to have the coil cooling fins cleaned. Oily or clogged fins should be cleaned by carefully brushing the fins and tubes with water or a non-aggressive degreasing agent mixture (Note: Cleaning agents that are not compatible with copper, brass, aluminum, steel or stainless steel should not be used). A compressed air or a water stream can be used to dislodge dirt and clean the coil further. Any external dirt or oil on the electric motor and fan assembly should be removed. Caution: Be sure to disconnect the electric motor from its power source prior to doing any maintenance.

c) In most cases it is not necessary to internally flush the coil. In circumstances where the coil has become plugged or has a substantial buildup of material, flushing the coil with water or a solvent may be done. Flushing solvents should be non-aggressive suitable for the materials of construction. Serviceable Core® models can be disassembled and inspected or cleaned if required.

d) Most low horsepower electric motors do not require any additional lubrication. However, larger motors must be lubricated with good quality grease as specified by the manufacture at least once every 6-9 months or as directed by the manufacture. T.E.F.C. air ventilation slots should be inspected and cleaned regularly to prevent clogging and starving the motor of cooling air. To maintain the electric motor properly see the manufactures requirements and specifications.

e) Fan blades should be cleaned and inspected for tightness during the regular maintenance schedule when handling a fan blade care must be given to avoid bending or striking any of the blades. Fan blades are factory balanced and will not operate properly if damaged or unbalanced. Damaged fan blades can cause excessive vibration and severe damage to the heat exchanger or drive motor.

Replace any damaged fan with an American industrial suggested replacement.

f) ACA heat exchanger cabinets are constructed using 7ga. through 18ga. steel that may be bent back into position if damaged. Parts that are not repairable can be purchased through American Industrial.

g) Coil fins that become flattened can be combed back into position. This process may require removal of the coil from the cabinet.

h) It is not advisable to attempt repairs to brazed joints of a brazed construction coil unless it will be done by an expert in silver solder brazing. Brazed coils are heated uniformly during the original manufacturing process to prevent weak zones from occurring. Uncontrolled reheating of the coil may result in weakening of the tube joints surrounding the repair area. In many instances brazed units that are repaired will not hold up as well to the rigors of the system as will a new coil. American Industrial will not warranty or be responsible for any repairs done by unauthorized sources. Manipulation in any way other than normal application will void the manufactures warranty.

i) Units containing a Serviceable Core® have bolted manifold covers that can be removed for cleaning or repair purposes.

Servicing Sequence

American Industrial has gone to great lengths to provide components that are repairable. If the ACA unit requires internal cleaning or attention the following steps will explain what must be done to access the internal tubes. Be sure to order gasket kits or repair parts prior to removal and disassembly to minimize down time.

a) To clean the internal tubes first remove all connection pipes from the unit.

b) Be sure the unit is drained of all water etc...

c) Place the ACA unit in an area that it can be accessed from all sides.

d) Remove the manifold cover bolts and hardware and place them into a secure place.

e) The manifold covers are tightly compressed and may need some prying to separate them from the gasket, physically remove the cover assemblies from both sides.

f) The tubes are now accessible for cleaning. We suggest a mild water-soluble degreaser be used with a brush. Tubing I.D. is .325 a plastic bristle brush on a rod will work best for cleaning the tubes. Steel brushes should be avoided since the steel is harder than the copper tubing and may heavily score the tubes if used.

g) If there are any leaking tubes you may plug them be forcing a soft metal plug into the hole and tapping it tight. You may in some cases weld the leaking tube shut however, care should be taken since excessive heat may cause surrounding tube joints to loosen and leak.

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PCX 405
ROTARY CLAW VACUUM PUMPS

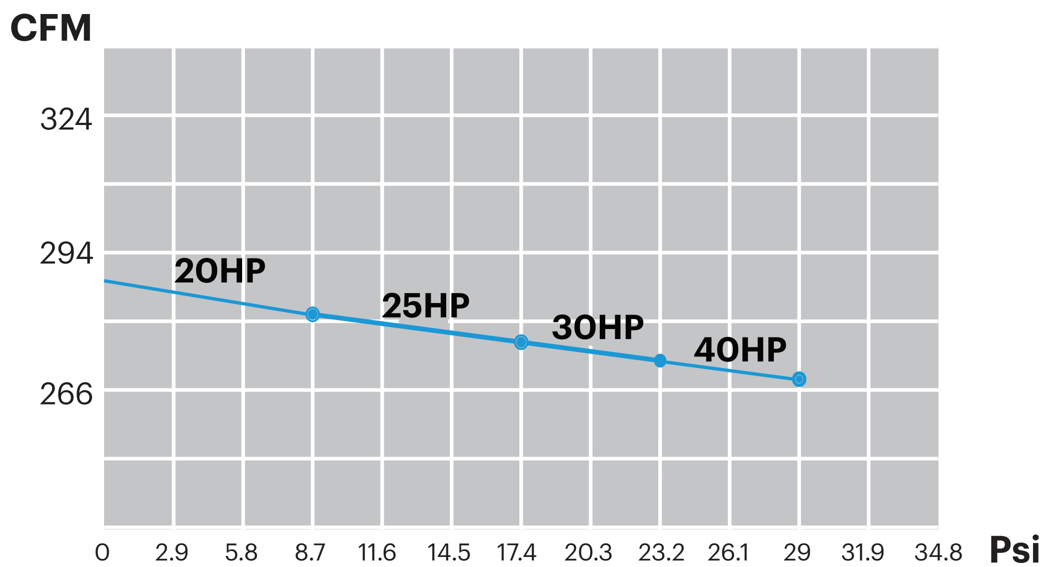
FEATURES

- Non-contact design
- Dry (oil-free) pumping chamber
- Air-cooled & direct driven
- Simple, Modular Construction
- Suitable for Variable Speed Applications

The Airtech PCX positive displacement rotary claw design is air cooled, dry-running and non-contacting. These features, along with quality construction results in a pressure pump that is extremely high in reliability and a long service life. The non-contact design eliminates internal wear
and maintenance. No water levels to check due to air-cooled operation and no sealing or lubricating oil is needed in the pumping chamber.

The claw shaped rotors inside the pump housing rotate in opposite directions, compressing the air and discharging through a silencer to the atmosphere. The two rotors are synchronized by gears that are oil lubricated to facilitate a long gear life.

PERFORMANCE CURVE

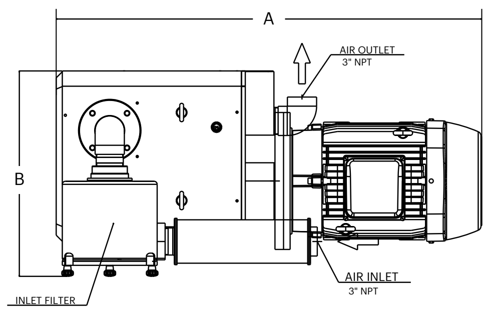


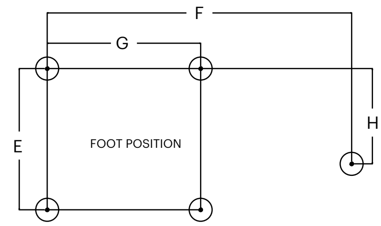
AIRTECH VACUUM

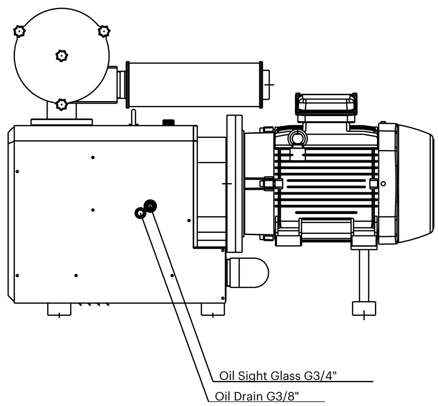
PCX 405
ROTARY CLAW VACUUM PUMPS

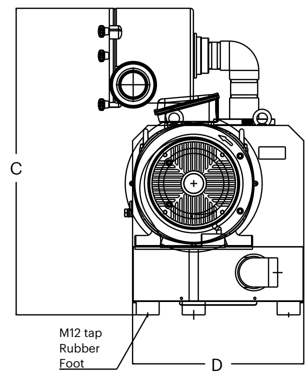
Specifications are subject to change without notice. Please contact factory for specification updates.

DIMENSIONS (INCHES)









	A*	B	C	D	E	F	G	H
PCX 405 (20 HP)	50.6	26.5	39.5	22.0	18.1		19.8	
PCX 405 (25 HP)	50.6	26.5	39.5	22.0	18.1	37.0	19.8	12.2
PCX 405 (30 HP)	54.3	26.5	39.5	22.0	18.1	39.8	19.8	12.2
PCX 405 (40 HP)	54.7	26.5	39.5	22.0	18.1	39.2	19.8	12.2

PERFORMANCE DATA

Model	**PCX 405**
Capacity [CFM]	283
Ultimate pressure (psig)	8.7/17.4/23.2/29
Motor Rating (HP)	20/25/30/40
Speed (RPM)	3450
Voltage	208-230/460
Oil capacity (qt.)	1.9
Average noise level (dB[A])	83
Inlet/outlet connections	3”
Weight (lbs)*	783/818/871

*Depends on motor manufacturer

AIRTECH, INC.
RUTHERFORD, NJ 07070
WWW.AIRTECHUSA.COM
TEL: (888) 222-9940
FAX: (201) 569-1696

Appendix C
AS/SVE System Influent/Effluent Sampling
Laboratory Analytical Results

Wednesday, November 04, 2020

Attn: James Wilkinson
EnviroTrac
5 Old Dock Rd
Yaphank, NY 11980

Project ID: ENSAFE WESTBURY
SDG ID: GCH06745
Sample ID#s: CH06745 - CH06746

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
UT Lab Registration #CT00007
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Sample Id Cross Reference

November 04, 2020

SDG I.D.: GCH06745

Project ID: ENSAFE WESTBURY

Client Id	Lab Id	Matrix
SVE INFLUENT	CH06745	AIR
SVE EFFLUENT	CH06746	AIR

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

November 04, 2020

FOR: Attn: James Wilkinson
EnviroTrac
5 Old Dock Rd
Yaphank, NY 11980

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	JW	10/29/20	9:11
Location Code:	ENVIROTR	Received by:	B	10/30/20	14:23
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	758				

Laboratory Data

SDG ID: GCH06745
Phoenix ID: CH06745

Project ID: ENSAFE WESTBURY
Client ID: SVE INFLUENT

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	11/02/20	KCA	1	1
1,1,1-Trichloroethane	0.509	*0.183*	2.78	*1.00*	11/02/20	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	11/02/20	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*	ND	*1.00*	11/02/20	KCA	1	
1,1-Dichloroethane	ND	*0.247*	ND	*1.00*	11/02/20	KCA	1	
1,1-Dichloroethene	ND	*0.051*	ND	*0.20*	11/02/20	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*	ND	*1.00*	11/02/20	KCA	1	
1,2,4-Trimethylbenzene	ND	*0.204*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dichloroethane	ND	*0.247*	ND	*1.00*	11/02/20	KCA	1	
1,2-dichloropropane	ND	*0.217*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*	ND	*1.00*	11/02/20	KCA	1	
1,3,5-Trimethylbenzene	ND	*0.204*	ND	*1.00*	11/02/20	KCA	1	
1,3-Butadiene	ND	*0.452*	ND	*1.00*	11/02/20	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*	ND	*1.00*	11/02/20	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*	ND	*1.00*	11/02/20	KCA	1	
1,4-Dioxane	ND	*0.278*	ND	*1.00*	11/02/20	KCA	1	
2-Hexanone(MBK)	ND	*0.244*	ND	*1.00*	11/02/20	KCA	1	1
4-Ethyltoluene	ND	*0.204*	ND	*1.00*	11/02/20	KCA	1	1
4-Isopropyltoluene	ND	*0.182*	ND	*1.00*	11/02/20	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*	ND	*1.00*	11/02/20	KCA	1	
Acetone	4.91	*0.421*	11.7	*1.00*	11/02/20	KCA	1	
Acrylonitrile	ND	*0.461*	ND	*1.00*	11/02/20	KCA	1	
Benzene	ND	*0.313*	ND	*1.00*	11/02/20	KCA	1	
Benzyl chloride	ND	*0.193*	ND	*1.00*	11/02/20	KCA	1	

Project ID: ENSAFE WESTBURY
Client ID: SVE INFLUENT

Phoenix I.D.: CH06745

Parameter	ppbv Result		ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND		*0.149*	ND	*1.00*	11/02/20	KCA	1	
Bromoform	ND		*0.097*	ND	*1.00*	11/02/20	KCA	1	
Bromomethane	ND		*0.258*	ND	*1.00*	11/02/20	KCA	1	
Carbon Disulfide	ND		*0.321*	ND	*1.00*	11/02/20	KCA	1	
Carbon Tetrachloride	0.067		*0.032*	0.42	*0.20*	11/02/20	KCA	1	
Chlorobenzene	ND		*0.217*	ND	*1.00*	11/02/20	KCA	1	
Chloroethane	ND		*0.379*	ND	*1.00*	11/02/20	KCA	1	
Chloroform	ND		*0.205*	ND	*1.00*	11/02/20	KCA	1	
Chloromethane	ND		*0.485*	ND	*1.00*	11/02/20	KCA	1	
Cis-1,2-Dichloroethene	7.87		*0.051*	31.2	*0.20*	11/02/20	KCA	1	
cis-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	11/02/20	KCA	1	
Cyclohexane	ND		*0.291*	ND	*1.00*	11/02/20	KCA	1	
Dibromochloromethane	ND		*0.118*	ND	*1.00*	11/02/20	KCA	1	
Dichlorodifluoromethane	0.326		*0.202*	1.61	*1.00*	11/02/20	KCA	1	
Ethanol	493	E	*0.531*	928	*1.00*	11/02/20	KCA	1	1
Ethyl acetate	ND		*0.278*	ND	*1.00*	11/02/20	KCA	1	1
Ethylbenzene	ND		*0.230*	ND	*1.00*	11/02/20	KCA	1	
Heptane	ND		*0.244*	ND	*1.00*	11/02/20	KCA	1	
Hexachlorobutadiene	ND		*0.094*	ND	*1.00*	11/02/20	KCA	1	
Hexane	ND		*0.284*	ND	*1.00*	11/02/20	KCA	1	
Isopropylalcohol	9.04		*0.407*	22.2	*1.00*	11/02/20	KCA	1	
Isopropylbenzene	ND		*0.204*	ND	*1.00*	11/02/20	KCA	1	
m,p-Xylene	ND		*0.230*	ND	*1.00*	11/02/20	KCA	1	
Methyl Ethyl Ketone	2.07		*0.339*	6.10	*1.00*	11/02/20	KCA	1	
Methyl tert-butyl ether(MTBE)	ND		*0.278*	ND	*1.00*	11/02/20	KCA	1	
Methylene Chloride	ND		*0.864*	ND	*3.00*	11/02/20	KCA	1	
n-Butylbenzene	ND		*0.182*	ND	*1.00*	11/02/20	KCA	1	1
o-Xylene	ND		*0.230*	ND	*1.00*	11/02/20	KCA	1	
Propylene	ND		*0.581*	ND	*1.00*	11/02/20	KCA	1	1
sec-Butylbenzene	ND		*0.182*	ND	*1.00*	11/02/20	KCA	1	1
Styrene	ND		*0.235*	ND	*1.00*	11/02/20	KCA	1	
Tetrachloroethene	308		*0.369*	2090	*2.50*	11/02/20	KCA	10	
Tetrahydrofuran	0.966		*0.339*	2.85	*1.00*	11/02/20	KCA	1	1
Toluene	1.20		*0.266*	4.52	*1.00*	11/02/20	KCA	1	
Trans-1,2-Dichloroethene	ND		*0.252*	ND	*1.00*	11/02/20	KCA	1	
trans-1,3-Dichloropropene	ND		*0.221*	ND	*1.00*	11/02/20	KCA	1	
Trichloroethene	41.5		*0.372*	223	*2.00*	11/02/20	KCA	10	
Trichlorofluoromethane	0.264		*0.178*	1.48	*1.00*	11/02/20	KCA	1	
Trichlorotrifluoroethane	ND		*0.131*	ND	*1.00*	11/02/20	KCA	1	
Vinyl Chloride	ND		*0.078*	ND	*0.20*	11/02/20	KCA	1	
QA/QC Surrogates/Internals									
% Bromofluorobenzene	102		*%*	102	*%*	11/02/20	KCA	1	
% IS-1,4-Difluorobenzene	95		*%*	95	*%*	11/02/20	KCA	1	
% IS-Bromochloromethane	99		*%*	99	*%*	11/02/20	KCA	1	
% IS-Chlorobenzene-d5	100		*%*	100	*%*	11/02/20	KCA	1	
% Bromofluorobenzene (10x)	99		*%*	99	*%*	11/02/20	KCA	10	
% IS-1,4-Difluorobenzene (10x)	102		*%*	102	*%*	11/02/20	KCA	10	
% IS-Bromochloromethane (10x)	101		*%*	101	*%*	11/02/20	KCA	10	
% IS-Chlorobenzene-d5 (10x)	98		*%*	98	*%*	11/02/20	KCA	10	

Ver 1

Project ID: ENSAFE WESTBURY
Client ID: SVE INFLUENT

Phoenix I.D.: CH06745

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

E = Estimated value quantitated above calibration range for this compound.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
November 04, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

November 04, 2020

FOR: Attn: James Wilkinson
EnviroTrac
5 Old Dock Rd
Yaphank, NY 11980

Sample Information		Custody Information		Date	Time
Matrix:	AIR	Collected by:	JW	10/29/20	9:06
Location Code:	ENVIROTR	Received by:	B	10/30/20	14:23
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					
Canister Id:	735				

Laboratory Data

SDG ID: GCH06745
Phoenix ID: CH06746

Project ID: ENSAFE WESTBURY
Client ID: SVE EFFLUENT

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Volatiles (TO15)								
1,1,1,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	11/02/20	KCA	1	1
1,1,1-Trichloroethane	0.870	*0.183*	4.74	*1.00*	11/02/20	KCA	1	
1,1,2,2-Tetrachloroethane	ND	*0.146*	ND	*1.00*	11/02/20	KCA	1	
1,1,2-Trichloroethane	ND	*0.183*	ND	*1.00*	11/02/20	KCA	1	
1,1-Dichloroethane	ND	*0.247*	ND	*1.00*	11/02/20	KCA	1	
1,1-Dichloroethene	ND	*0.051*	ND	*0.20*	11/02/20	KCA	1	
1,2,4-Trichlorobenzene	ND	*0.135*	ND	*1.00*	11/02/20	KCA	1	
1,2,4-Trimethylbenzene	ND	*0.204*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dibromoethane(EDB)	ND	*0.130*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dichlorobenzene	ND	*0.166*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dichloroethane	ND	*0.247*	ND	*1.00*	11/02/20	KCA	1	
1,2-dichloropropane	ND	*0.217*	ND	*1.00*	11/02/20	KCA	1	
1,2-Dichlorotetrafluoroethane	ND	*0.143*	ND	*1.00*	11/02/20	KCA	1	
1,3,5-Trimethylbenzene	ND	*0.204*	ND	*1.00*	11/02/20	KCA	1	
1,3-Butadiene	ND	*0.452*	ND	*1.00*	11/02/20	KCA	1	
1,3-Dichlorobenzene	ND	*0.166*	ND	*1.00*	11/02/20	KCA	1	
1,4-Dichlorobenzene	ND	*0.166*	ND	*1.00*	11/02/20	KCA	1	
1,4-Dioxane	0.378	*0.278*	1.36	*1.00*	11/02/20	KCA	1	
2-Hexanone(MBK)	ND	*0.244*	ND	*1.00*	11/02/20	KCA	1	1
4-Ethyltoluene	ND	*0.204*	ND	*1.00*	11/02/20	KCA	1	1
4-Isopropyltoluene	ND	*0.182*	ND	*1.00*	11/02/20	KCA	1	1
4-Methyl-2-pentanone(MIBK)	ND	*0.244*	ND	*1.00*	11/02/20	KCA	1	
Acetone	2.44	*0.421*	5.79	*1.00*	11/02/20	KCA	1	
Acrylonitrile	ND	*0.461*	ND	*1.00*	11/02/20	KCA	1	
Benzene	ND	*0.313*	ND	*1.00*	11/02/20	KCA	1	
Benzyl chloride	ND	*0.193*	ND	*1.00*	11/02/20	KCA	1	

Ver 1

Project ID: ENSAFE WESTBURY
Client ID: SVE EFFLUENT

Phoenix I.D.: CH06746

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution	
Bromodichloromethane	ND	*0.149*	ND	*1.00*	11/02/20	KCA	1	
Bromoform	ND	*0.097*	ND	*1.00*	11/02/20	KCA	1	
Bromomethane	ND	*0.258*	ND	*1.00*	11/02/20	KCA	1	
Carbon Disulfide	ND	*0.321*	ND	*1.00*	11/02/20	KCA	1	
Carbon Tetrachloride	0.089	*0.032*	0.56	*0.20*	11/02/20	KCA	1	
Chlorobenzene	ND	*0.217*	ND	*1.00*	11/02/20	KCA	1	
Chloroethane	ND	*0.379*	ND	*1.00*	11/02/20	KCA	1	
Chloroform	0.597	*0.205*	2.91	*1.00*	11/02/20	KCA	1	
Chloromethane	ND	*0.485*	ND	*1.00*	11/02/20	KCA	1	
Cis-1,2-Dichloroethene	137	*0.252*	543	*1.00*	10/30/20	KCA	5	
cis-1,3-Dichloropropene	ND	*0.221*	ND	*1.00*	11/02/20	KCA	1	
Cyclohexane	ND	*0.291*	ND	*1.00*	11/02/20	KCA	1	
Dibromochloromethane	ND	*0.118*	ND	*1.00*	11/02/20	KCA	1	
Dichlorodifluoromethane	0.361	*0.202*	1.78	*1.00*	11/02/20	KCA	1	
Ethanol	120	*2.66*	226	*5.01*	10/30/20	KCA	5	1
Ethyl acetate	ND	*0.278*	ND	*1.00*	11/02/20	KCA	1	1
Ethylbenzene	ND	*0.230*	ND	*1.00*	11/02/20	KCA	1	
Heptane	ND	*0.244*	ND	*1.00*	11/02/20	KCA	1	
Hexachlorobutadiene	ND	*0.094*	ND	*1.00*	11/02/20	KCA	1	
Hexane	ND	*0.284*	ND	*1.00*	11/02/20	KCA	1	
Isopropylalcohol	3.12	*0.407*	7.66	*1.00*	11/02/20	KCA	1	
Isopropylbenzene	ND	*0.204*	ND	*1.00*	11/02/20	KCA	1	
m,p-Xylene	ND	*0.230*	ND	*1.00*	11/02/20	KCA	1	
Methyl Ethyl Ketone	0.368	*0.339*	1.08	*1.00*	11/02/20	KCA	1	
Methyl tert-butyl ether(MTBE)	ND	*0.278*	ND	*1.00*	11/02/20	KCA	1	
Methylene Chloride	ND	*0.864*	ND	*3.00*	11/02/20	KCA	1	
n-Butylbenzene	ND	*0.182*	ND	*1.00*	11/02/20	KCA	1	1
o-Xylene	ND	*0.230*	ND	*1.00*	11/02/20	KCA	1	
Propylene	ND	*0.581*	ND	*1.00*	11/02/20	KCA	1	1
sec-Butylbenzene	ND	*0.182*	ND	*1.00*	11/02/20	KCA	1	1
Styrene	ND	*0.235*	ND	*1.00*	11/02/20	KCA	1	
Tetrachloroethene	161	*0.184*	1090	*1.25*	10/30/20	KCA	5	
Tetrahydrofuran	0.532	*0.339*	1.57	*1.00*	11/02/20	KCA	1	1
Toluene	0.657	*0.266*	2.47	*1.00*	11/02/20	KCA	1	
Trans-1,2-Dichloroethene	1.48	*0.252*	5.86	*1.00*	11/02/20	KCA	1	
trans-1,3-Dichloropropene	ND	*0.221*	ND	*1.00*	11/02/20	KCA	1	
Trichloroethene	21.9	*0.037*	118	*0.20*	11/02/20	KCA	1	
Trichlorofluoromethane	0.341	*0.178*	1.91	*1.00*	11/02/20	KCA	1	
Trichlorotrifluoroethane	0.350	*0.131*	2.68	*1.00*	11/02/20	KCA	1	
Vinyl Chloride	ND	*0.078*	ND	*0.20*	11/02/20	KCA	1	
QA/QC Surrogates/Internals								
% Bromofluorobenzene	100	*%*	100	*%*	11/02/20	KCA	1	
% IS-1,4-Difluorobenzene	99	*%*	99	*%*	11/02/20	KCA	1	
% IS-Bromochloromethane	97	*%*	97	*%*	11/02/20	KCA	1	
% IS-Chlorobenzene-d5	102	*%*	102	*%*	11/02/20	KCA	1	
% Bromofluorobenzene (5x)	101	*%*	101	*%*	10/30/20	KCA	5	
% IS-1,4-Difluorobenzene (5x)	94	*%*	94	*%*	10/30/20	KCA	5	
% IS-Bromochloromethane (5x)	91	*%*	91	*%*	10/30/20	KCA	5	
% IS-Chlorobenzene-d5 (5x)	92	*%*	92	*%*	10/30/20	KCA	5	

Ver 1

Project ID: ENSAFE WESTBURY
Client ID: SVE EFFLUENT

Phoenix I.D.: CH06746

Parameter	ppbv Result	ppbv RL	ug/m3 Result	ug/m3 RL	Date/Time	By	Dilution

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The canister was received under no vacuum, therefore sample results may not be representative.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
November 04, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Canister Sampling Information

November 04, 2020

FOR: Attn: James Wilkinson
EnviroTrac
5 Old Dock Rd
Yaphank, NY 11980

Location Code: ENVIROTR

SDG I.D.: GCH06745

Project ID: ENSAFE WESTBURY

						Laboratory					Field			
Client Id	Lab Id	Canister Id	Canister Type	Reg. Id	Chk Out Date	Out Hg	In Hg	Out Flow	In Flow	Flow RPD	Start Hg	End Hg	Sampling Start Date	Sampling End Date
SVE INFLUENT	CH06745	758	1.4L		10/21/20	-30	-4		\B SAM				10/29/20 09:10	10/29/20 09:11
SVE EFFLUENT	CH06746	735	1.4L		10/21/20	-30	0		\B SAM				10/29/20 09:05	10/29/20 09:06

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

November 04, 2020

QA/QC Data

SDG I.D.: GCH06745

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits
QA/QC Batch 551789 (ppbv), QC Sample No: CH06651 (CH06746 (5X))												
Volatiles												
Cis-1,2-Dichloroethene	ND	0.200	ND	0.79	97	ND	ND	ND	ND	NC	70 - 130	25
Ethanol	ND	0.750	ND	1.41	137	26.7	24.7	14.2	13.1	8.1	70 - 130	25 l
Tetrachloroethene	ND	0.100	ND	0.68	109	0.77	ND	0.114	ND	NC	70 - 130	25
% Bromofluorobenzene	99	%	99	%	101	99	99	99	99	NC	70 - 130	25
% IS-1,4-Difluorobenzene	105	%	105	%	95	99	97	99	97	NC	60 - 140	25
% IS-Bromochloromethane	104	%	104	%	94	99	98	99	98	NC	60 - 140	25
% IS-Chlorobenzene-d5	104	%	104	%	97	99	98	99	98	NC	60 - 140	25
QA/QC Batch 551934 (ppbv), QC Sample No: CH07346 (CH06745 (1X, 10X) , CH06746)												
Volatiles												
1,1,1,2-Tetrachloroethane	ND	0.150	ND	1.03	101	ND	ND	ND	ND	NC	70 - 130	25
1,1,1-Trichloroethane	ND	0.180	ND	0.98	100	ND	ND	ND	ND	NC	70 - 130	25
1,1,2,2-Tetrachloroethane	ND	0.150	ND	1.03	108	ND	ND	ND	ND	NC	70 - 130	25
1,1,2-Trichloroethane	ND	0.180	ND	0.98	103	ND	ND	ND	ND	NC	70 - 130	25
1,1-Dichloroethane	ND	0.250	ND	1.01	103	ND	ND	ND	ND	NC	70 - 130	25
1,1-Dichloroethene	ND	0.050	ND	0.20	100	ND	ND	ND	ND	NC	70 - 130	25
1,2,4-Trichlorobenzene	ND	0.130	ND	0.96	98	ND	ND	ND	ND	NC	70 - 130	25
1,2,4-Trimethylbenzene	ND	0.200	ND	0.98	109	ND	ND	ND	ND	NC	70 - 130	25
1,2-Dibromoethane(EDB)	ND	0.130	ND	1.00	106	ND	ND	ND	ND	NC	70 - 130	25
1,2-Dichlorobenzene	ND	0.170	ND	1.02	108	ND	ND	ND	ND	NC	70 - 130	25
1,2-Dichloroethane	ND	0.250	ND	1.01	104	ND	ND	ND	ND	NC	70 - 130	25
1,2-dichloropropane	ND	0.220	ND	1.02	103	ND	ND	ND	ND	NC	70 - 130	25
1,2-Dichlorotetrafluoroethane	ND	0.140	ND	0.98	82	ND	ND	ND	ND	NC	70 - 130	25
1,3,5-Trimethylbenzene	ND	0.200	ND	0.98	106	ND	ND	ND	ND	NC	70 - 130	25
1,3-Butadiene	ND	0.450	ND	0.99	102	ND	ND	ND	ND	NC	70 - 130	25
1,3-Dichlorobenzene	ND	0.170	ND	1.02	107	ND	ND	ND	ND	NC	70 - 130	25
1,4-Dichlorobenzene	ND	0.170	ND	1.02	105	ND	ND	ND	ND	NC	70 - 130	25
1,4-Dioxane	ND	0.280	ND	1.01	109	ND	ND	ND	ND	NC	70 - 130	25
2-Hexanone(MBK)	ND	0.240	ND	0.98	110	ND	ND	ND	ND	NC	70 - 130	25
4-Ethyltoluene	ND	0.200	ND	0.98	107	ND	ND	ND	ND	NC	70 - 130	25
4-Isopropyltoluene	ND	0.180	ND	0.99	100	ND	ND	ND	ND	NC	70 - 130	25
4-Methyl-2-pentanone(MIBK)	ND	0.240	ND	0.98	109	ND	ND	ND	ND	NC	70 - 130	25
Acetone	ND	0.420	ND	1.00	83	23.5	29.4	9.9	12.4	22.4	70 - 130	25
Acrylonitrile	ND	0.460	ND	1.00	96	ND	ND	ND	ND	NC	70 - 130	25
Benzene	ND	0.310	ND	0.99	101	ND	ND	ND	ND	NC	70 - 130	25
Benzyl chloride	ND	0.190	ND	0.98	127	ND	ND	ND	ND	NC	70 - 130	25
Bromodichloromethane	ND	0.150	ND	1.00	106	ND	ND	ND	ND	NC	70 - 130	25
Bromoform	ND	0.097	ND	1.00	111	ND	ND	ND	ND	NC	70 - 130	25
Bromomethane	ND	0.260	ND	1.01	100	ND	ND	ND	ND	NC	70 - 130	25
Carbon Disulfide	ND	0.320	ND	1.00	99	ND	ND	ND	ND	NC	70 - 130	25
Carbon Tetrachloride	ND	0.032	ND	0.20	101	0.40	0.43	0.064	0.069	NC	70 - 130	25
Chlorobenzene	ND	0.220	ND	1.01	104	ND	ND	ND	ND	NC	70 - 130	25

QA/QC Data

SDG I.D.: GCH06745

Parameter	Blk ppbv	Blk RL ppbv	Blk ug/m3	Blk RL ug/m3	LCS %	Sample Result ug/m3	Sample Dup ug/m3	Sample Result ppbv	Sample Dup ppbv	DUP RPD	% Rec Limits	% RPD Limits	
Chloroethane	ND	0.380	ND	1.00	100	ND	ND	ND	ND	NC	70 - 130	25	
Chloroform	ND	0.200	ND	0.98	104	ND	ND	ND	ND	NC	70 - 130	25	
Chloromethane	ND	0.480	ND	0.99	104	ND	ND	ND	ND	NC	70 - 130	25	
Cis-1,2-Dichloroethene	ND	0.050	ND	0.20	106	ND	ND	ND	ND	NC	70 - 130	25	
cis-1,3-Dichloropropene	ND	0.220	ND	1.00	109	ND	ND	ND	ND	NC	70 - 130	25	
Cyclohexane	ND	0.290	ND	1.00	114	ND	ND	ND	ND	NC	70 - 130	25	
Dibromochloromethane	ND	0.120	ND	1.02	110	ND	ND	ND	ND	NC	70 - 130	25	
Dichlorodifluoromethane	ND	0.200	ND	0.99	88	1.73	1.54	0.350	0.312	NC	70 - 130	25	
Ethanol	ND	0.530	ND	1.00	137	778 E	819	413 E	435	5.2	70 - 130	25	l
Ethyl acetate	ND	0.280	ND	1.01	92	ND	ND	ND	ND	NC	70 - 130	25	
Ethylbenzene	ND	0.230	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	25	
Heptane	ND	0.240	ND	0.98	103	1.05	1.01	0.256	0.247	NC	70 - 130	25	
Hexachlorobutadiene	ND	0.094	ND	1.00	91	ND	ND	ND	ND	NC	70 - 130	25	
Hexane	ND	0.280	ND	0.99	117	ND	ND	ND	ND	NC	70 - 130	25	
Isopropylalcohol	ND	0.410	ND	1.01	104	40.0	45.0	16.3	18.3	11.6	70 - 130	25	
Isopropylbenzene	ND	0.200	ND	0.98	104	ND	ND	ND	ND	NC	70 - 130	25	
m,p-Xylene	ND	0.230	ND	1.00	109	ND	ND	ND	ND	NC	70 - 130	25	
Methyl Ethyl Ketone	ND	0.340	ND	1.00	100	5.72	5.75	1.94	1.95	0.5	70 - 130	25	
Methyl tert-butyl ether(MTBE)	ND	0.280	ND	1.01	106	ND	ND	ND	ND	NC	70 - 130	25	
Methylene Chloride	ND	0.860	ND	2.99	97	ND	ND	ND	ND	NC	70 - 130	25	
n-Butylbenzene	ND	0.180	ND	0.99	103	ND	ND	ND	ND	NC	70 - 130	25	
o-Xylene	ND	0.230	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	25	
Propylene	ND	0.580	ND	1.00	100	ND	ND	ND	ND	NC	70 - 130	25	
sec-Butylbenzene	ND	0.180	ND	0.99	105	ND	ND	ND	ND	NC	70 - 130	25	
Styrene	ND	0.230	ND	0.98	109	ND	ND	ND	ND	NC	70 - 130	25	
Tetrachloroethene	ND	0.037	ND	0.25	107	ND	ND	ND	ND	NC	70 - 130	25	
Tetrahydrofuran	ND	0.340	ND	1.00	100	ND	1.07	ND	0.362	NC	70 - 130	25	
Toluene	ND	0.270	ND	1.02	107	28.7	28.8	7.61	7.65	0.5	70 - 130	25	
Trans-1,2-Dichloroethene	ND	0.250	ND	0.99	103	ND	ND	ND	ND	NC	70 - 130	25	
trans-1,3-Dichloropropene	ND	0.220	ND	1.00	107	ND	ND	ND	ND	NC	70 - 130	25	
Trichloroethene	ND	0.037	ND	0.20	105	ND	ND	ND	ND	NC	70 - 130	25	
Trichlorofluoromethane	ND	0.180	ND	1.01	98	1.58	1.70	0.282	0.303	NC	70 - 130	25	
Trichlorotrifluoroethane	ND	0.130	ND	1.00	98	ND	ND	ND	ND	NC	70 - 130	25	
Vinyl Chloride	ND	0.078	ND	0.20	103	ND	ND	ND	ND	NC	70 - 130	25	
% Bromofluorobenzene	98	%	98	%	100	100	99	100	99	NC	70 - 130	25	
% IS-1,4-Difluorobenzene	109	%	109	%	103	106	105	106	105	NC	60 - 140	25	
% IS-Bromochloromethane	107	%	107	%	101	105	104	105	104	NC	60 - 140	25	
% IS-Chlorobenzene-d5	108	%	108	%	102	105	105	105	105	NC	60 - 140	25	

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
November 04, 2020

Wednesday, November 04, 2020

Criteria: None

State: NY

Sample Criteria Exceedances Report

GCH06745 - ENVIROTR

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Comments

November 04, 2020 SDG I.D.: GCH06745

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.

PHOENIX Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone: 860.645.1102 • Fax 860.645.0823

CHAIN OF CUSTODY RECORD
AIR ANALYSES

800-827-5426
email: greg@phoenixlabs.com

P.O. #

Data Delivery:
☐ Fax #:
☑ Email: jamesw@envirotrac.com
☐ Phone #:

Report to: James Wilkinson
Customer: EnviroTrac
Address: 5 Old Dock Road
Yaphank, NY 11980

Project Name: EnSafe - Westbury
Invoice to:
Sampled by: JIM WILKINSON

Data Format: (Circle) Equis (Excel) Other: pdf
Requested Deliverable: RCP ASP CAT B MCP NJ Deliverables
Quote Number:

Phoenix ID #	Client Sample ID	Canister ID #	Canister Size (L)	Outgoing Canister Pressure (" Hg)	Incoming Canister Pressure ("Hg)	Flow Regulator ID #	Flow Controller Setting (mL/min)	Sampling Start Time	Sampling End Time	Sample Start Date	Canister Pressure at Start (" Hg)	Canister Pressure at End ("Hg)	MATRIX: Ambient/Indoor Air	MATRIX: Soil Gas	MATRIX: Grab (G) Composite (C)	ANALYSES: TO-15	ANALYSES: APH
		THIS SECTION FOR LAB USE ONLY															
06745	SVE Influent	758	1.4	-30	-4.0	NA	NA	9:10	9:11	10/29						✓	
06746	SVE Effluent	735	↓	↓	0	↓	↓	9:05	9:06	↓						✓	
	1.4 Grab + gauge																

Relinquished by:	Accepted by:	Date:	Time:
James Wilkinson (signature)	(signature)	10-30-20	9:30
(signature)	(signature)	10-30-20	1423

I attest that all media released by Phoenix Environmental Laboratories, Inc. have been received in good working condition and agree to the terms and conditions as listed on the back of this document:

Signature: ______ Date: ______

State Where Samples Collected: NY

SPECIAL INSTRUCTIONS, QC REQUIREMENTS, REGULATORY INFORMATION:

Turnaround Time:
☐ 1 Day
☐ 2 Day
☐ 3 Day
☐ 4 Day
☐ 5 Day

Requested Criteria: (Please Circle)

CT: TAC I/C, TAC RES, SVVC I/C, SVVC RES, GWV I/C, GWV CES

MA: **Indoor Air:** Residential, Ind/Commercial; **Soil Gas:** Residential, Ind/Commercial

NJ: **Indoor Air:** Residential, Ind/Commercial; **Soil Gas:** Residential, Ind/Commercial

NY: Vapor Intrusion

PA: **Indoor Air** Residential, Non-residential

VT: **Indoor Air** Residential, Industrial; **Sub-slab** Residential, Industrial

PEL-115 Rev. 9/2019