DT CONSULTING SERVICES, INC.
1291 Old Post Road
Ulster Park, New York 12487
dtconsulting@hvc.rr.com
(845)658-3484

April 28, 2019

Westchester Preferred Properties, Inc.
C/O James G. Dibbini & Associates, P.C.
570 Yonkers Avenue
Yonkers, New York 10704

RE: Report of Sub-slab Depressurization System Installation
432 Riverdale Avenue
Yonkers, New York 10705

Dear Mr. Dibbini:

DT Consulting Services, Inc. (DTCS) has prepared this report summarizing the activities associated with installation of a sub-slab depressurization system (SSDS) at the property located at 432 Riverdale Avenue in Yonkers, New York (herein Subject Site). The SSDS installation activities were conducted between November 2018 and March 2019. The SSDS was commissioned on March 25, 2019, and has operated continuously since that time.

Sincerely,

Deborah J Thompson

Deborah J Thompson
Senior Geologist/Project Manager
DT Consulting Services, Inc.

Daniel Bellucci

Daniel Bellucci, P.E.
Environmental Engineer
Core Down Drilling

Table of Contents

Appendices

1.0 Introduction

A Phase II Environmental Site Assessment (ESA) conducted by "Others" in May 2018 included collection of one sub-slab soil vapor sample, two indoor air samples and one ambient air sample. Pertinent findings identified in the Phase II ESA include the following:

- One (1) sub-slab soil vapor sample, two (2) indoor air samples, and one (1) ambient air sample was collected for laboratory analysis. Sub-slab and indoor air vapor analytical results identified tetrachloroethylene (PCE) and dichloroethylene (DCE) at concentrations exceeding their respective NYSDOH Matrix guidelines requiring mitigation. In addition, trichloroethylene (TCE) and methylene chloride was also identified in the indoor air samples collected requiring mitigation regardless of sub-slab concentrations.

- Based on the results of the Phase II ESA, it appears that the former dry cleaner at 434 Riverdale Avenue has impacted the Subject Property. PCE and DCE were detected in sub-slab vapor and indoor air samples greatly exceeding their respective NYSDOH Matrix criteria that would require mitigation. In addition, TCE and methylene chloride was also identified in the indoor air samples collected requiring mitigation regardless of sub-slab concentrations. Finally, PCE and TCE were detected at concentrations exceeding their respective exposure thresholds in the indoor air sample collected from IA-1. A vapor mitigation specialist should be retained to determine the effectiveness and design of a sub-slab depressurization criteria (SSDS) at the Subject Property.

Sub-slab communication testing was conducted in May 2018 by "Others" to determine if SSDS technology would serve as an effective mitigation measure to minimize potential for vapor intrusion of chlorinated volatile organic compounds (cVOCs) to indoor air.

- Sub-slab air communication testing was utilized to design the most efficient system configuration. The test procedure included drilling full scale suction cavities and test holes in the basement slab to measure vacuum influence and design an appropriate SSDS configuration. Sub-slab soils were observed to be generally loose in most locations, with the exception of the location of an aboveground oil tank where dense soils were observed. A high suction fan with 2 extraction points was recommended in the location of the existing oil tank and a low suction high flow fan was recommended with 7-10 extraction points we recommended for the remaining portions of the building basement. The proposed installation includes routing 3-6" PVC piping from the existing extraction points to the roof of the building where the high suction HS5000 and low suction high flow RP-265 or RP-380 fans will be mounted.

2.0 Subject Site and Area Description

The Subject Site is located at 432 Riverdale Avenue in Westchester County, Yonkers. The existing building is occupied by residential apartments in the basement and second, third and fourth floors of the building. The first floor is occupied by commercial tenants including a hair salon and liquor store. The Subject Site is located in a commercial and residential area of Yonkers at an elevation of approximately 75 feet above mean seal level (MSL). The local topography slopes to the west and groundwater flow in the area is anticipated to flow the west towards the Hudson River.

The Subject Site is abutted to the north by Yonkers Wholesale Beer Distribution located at 424 Riverdale Avenue. The Subject Site is abutted to the south by Riverdale Dry Cleaner located at 434 Riverdale Avenue. The Subject Site is abutted tot the east by a residential apartment building located to the east at 97 Saint Andrew's Place. The intersection of Riverdale Avenue and Belvedere Drive abuts the Subject Site to the west.

2.1 Release Description

There are no reported onsite sources of chlorinated volatile organic compounds (cVOCs) at the Subject Site. The source of cVOCs detected in sub-slab soil vapor and indoor air is likely the adjacent dry cleaner located to the south and in the presumed crossgradient direction. Soil and groundwater sampling data are not available for the Subject Site or adjacent dry cleaner site. The purposes of the SSDS is specifically to address the potential for vapor intrusion of cVOCs to indoor air at the Subject Site. The SSDS is not designed to remediate potential cVOC impacts to soil, groundwater or soil vapor. The SSDS is a vapor intrusion mitigation tool designed to minimize potential migration of cVOCs present beneath the slab into indoor air.

3.0 Pre-Installation Diagnostics

3.1 Extraction Well Installation (November 21, 2018)

On November 21, 2018, Core Down Drilling (CDD) – installation subcontractor and DTCS technicians initiated SSDS diagnostic testing at the Subject Site. CDD/DTCS attempted to utilize the suction cavities installed by "Others" in May 2018, however, existing and former suction cavities were not identified in the basement. Therefore, CDD installed two (2) extraction wells within the storage area/ boiler room area. The location of the extraction wells, designated EX-1 and EX-2, are depicted on *Figure 2 – SSDS Well and Vacuum Monitoring Point Location Map.*

The extraction wells were installed by core drilling 3-inch holes through the building slab in the portion of the basement identified as the "Boiler/ Storage Room." The slab in this portion of the basement is two tiered, with the western portion of the slab elevated approximately 1-foot above the eastern portion of the slab. Accordingly, extraction wells were installed in each slab area. Soils were removed from each cored hole to approximately 12-inches below the slab to create a sub-slab cavity for the SSDS to draw vacuum from. The soils beneath the slab consisted of moist fine sand and silt with trace clay.

A 3-inch schedule 40 PVC coupling was sealed to the slab using non- cVOC caulk. Each extraction point was connected to 3-inch schedule 40 PVC stubbed approximately 2-feet above the slab.

3.2 Vacuum Monitoring Point Installation (November 21, 2018)

A total of five (5) Cox Colvin® vacuum monitoring points were installed in the basement area (See Figure 2). The purpose of the vacuum monitoring points is to allow for collection of the sub-slab vacuum readings created by the SSDS. The brass points were installed in 5/8-inch holes cored through the slab to access the sub-slab soils/ aggregate. The brass points were equipped with silicon sleeves which create an air tight seal when manually advanced into the cored hole. The vacuum monitoring points were equipped with stainless steel threaded flush-mount covers set in a 1.5-inch core through a portion of the slab.

3.3 Diagnostic Testing (November 21, 2018)

An HS5000 radon type fan was selected based on prior diagnostic testing conducted by "Others" and based on DTCS's observation of tight silty fine sand and clay immediately beneath the slab. The high suction fan is appropriate for the low porosity soils beneath the slab.

The HS5000 radon fan was connected EX-1 and EX-2 and a test was run on each extraction well to determine the expected radius of influent. During each test the fan exhaust was connected to 2-inch piping directed outside the building. The SSDS was run and vacuum readings were collected from the surrounding vacuum monitoring points during each test. Vacuum readings in the monitoring points varied greatly during the testing, and positive readings were observed in several locations, including VP-1, VP-3 and VP-5 during each test. Negative sub-slab vacuum was created at VP-2 and VP-4 during testing. The vacuum monitoring point data is summarized in the table below:

Extraction Pump Well	Time	VP-1	VP-2	VP-3	VP-4	VP-5
EX-1	11:38	+0.000	-0.434	+1.500	-0.004	+3.000
EX-2	11:50	+2.060	-0.020	+3.000	0.000	+3.000

Vacuum readings collected in inches of water column

After the testing was complete, standing water was observed in the base of the extraction wells. The water appeared to be perched rain water or possible shallow groundwater (DTCS has not been provided with onsite groundwater data). In DTCS's experience, the presence of perched water or groundwater within the vacuum field created by the SSDS can cause operating and performance issues with the system. The positive pressure readings observed are a result of the sub-slab water which causes vacuum fluctuations when a sub-slab vacuum is applied.

3.4 Sump Pump Installation

Based on the presence of shallow water (either perched or shallow groundwater) beneath the slab, DTCS recommended the property owner install water control measures to remove the water from beneath the slab. In February 2018, a sump pump was installed by the property owner in an existing sump pit located next to the boiler in the building basement. The sump pump was connected to an exterior drain.

3.5 System Installation (February 28 and March 13, 2019)

On February 28 and March 13, 2019, CDD/DTCS installed conveyance piping connecting the two extraction wells. A 3-inch gate valve was installed on each extraction well to allow for vacuum and flow control at each location. Piping was run to the basement ceiling and secured with pipe hangars where needed. The 3-inch schedule 40 PVC pipe from each well was connected using a T fitting and plumed to two (2) in-series 55-gallon carbon treatment vessels (See Drum Specifications in Appendix D). Prior to entering the first drum in series, the influent piping was reduced to 2-inch PVC connected to the drum with a Fernco® fitting. Sample ports were installed prior to and after the carbon treatment drums to allow for collection of pre and post treatment samples and system diagnostic readings.

The effluent of the second in-series drum was plumbed into the 3-inch HS5000 fan intake using schedule 40 PVC and a Fernco® fitting. A Checkpoint IIA® audible alarm and Dwyer® Magnehelic (0-50 inches water column) were installed using brass barbed fittings after the second carbon drum but before the SSDS fan. The audible alarm was plugged into a dedicated 120 eV outlet and was tested to ensure the

alarm would sound if system vacuum dropped below 0.25 inches of water column. The Magnehelic allows for real time vacuum readings to ensure system functionality. The HS5000 fan was plugged into a dedicated 120eV outlet mounted to the foundation wall.

The system effluent was directed outside the basement via 2-inch schedule 40 PVC piping to a rear alleyway and exhausted above the ground surface away from windows. A condensate bypass tube was placed on the exhaust pipe and connected to a 2-inch Y fitting at the fan intake. The purpose of the condensate bypass is direct condensate away from the internal fan housing (See *Figure 3 -Process Flow Diagram*).

The SSDS was turned on allowed to run for approximately. 10-miniutes. However, after 10-minutes, the SSDS fan turned off. While operating, the vacuum in the extraction well closest to the SSDS was approximately 39-inches of water column. The maximum recommended operating vacuum for the HS5000 fan is 38-inches of water column (See Fan Specification Sheet included in Appendix D). Therefore, DTCS concluded the SSDS was creating too much vacuum and long-term operation of the fan could cause it to cycle off periodically and may cause premature fan failure. The likely cause of the high vacuum is related to sub-slab moisture, including perched water present in the sump pit, and the nature of the low porosity silty clay soils observed at the Subject Site.

3.6 System Installation (March 25, 2019)

Based on the March 13, 2019 testing, DTCS determined that an additional extraction well and air intake were required to operate the SSDS within the operating ranges for the HS5000 fan. Accordingly, a third extraction well, designated EX-3, was installed in the hallway outside of the boiler room/ storage area. (See *Figure 2- SSDS Well and Vacuum Monitoring Point Location Map).* The extraction well was connected to the existing piping train for EX-1 and EX-2. Additionally, a 2-inch pipe was connected to the SSDS pipe train after the second inline carbon drum but before the HS5000 fan. A 2-inch ball valve was fitted on the pipe and foam was glued to the inside of the pipe for noise suppression. The purpose of the pipe is to allow makeup air intake for the SSDS to decrease operating vacuum and allow for control of the vacuum crated by the SSDS. Sample ports were installed before the first inline drum and after the second inline carbon drum but before the HS5000 fan. Sampling and drum locations are depicted in *Figure 3- Process Flow Diagram.*

Following installation of the additional extraction well and makeup airline, the SSDS was turned on. The ball valve on the makeup airline was adjusted until the Magnehelic vacuum reading was approximately 38-inches of water column. While the SSDS fan was operating, a gurgling noise indicating the presence of sub-slab water was noted near EX-3. To avoid the introduction of water into the SSDS piping train, the gate valve controlling EX-3 was closed and the makeup air ball valve was adjusted to set the fan vacuum back to 38-inches of water column. A gurgling noise was then noted once EX-3 was closed in the location of EX-2. CDD/DTCS staff adjusted the gate valve for EX-2 such that it was approximately 50% open and the gurgling noise could no longer be heard. The gate valve for EX-1 remained fully open.

CDD/DTCS notes that on March 25, 2019, water was flowing through the interior of the basement above the slab, and may have been related to wastewater discharge from the southern adjacent commercial space. The water flowed from the exterior wall and towards the interior floor drain in the middle of the building.

3.7 System Diagnostic Testing (March 25, 2019)

Once the system was balanced and the appropriate vacuum (38-inches of water column) was achieved, field measurements including system flow, temperature and vacuum were collected before and after the carbon treatment drums. The system diagnostic data is summarized in Table 1 included in Appendix B.

As summarized in Table 1, higher flow readings were observed prior to the carbon treatment drums as compared to the flow after the drums. Both system vacuum and temperature were similar before and after the carbon drums. The flow and vacuum readings recorded using the field instrument (TSI Velocicalc Anemometer) were within the recommended ranges for the HS5000 fan.

Vacuum readings were collected using a micro manometer from each of the five vacuum monitoring points. The sub-slab vacuum readings are summarized in Table 2 included in Appendix B. The vacuum was recorded in each of the five locations at readings ranging from -0.300 to -3.000 inches of water column.

3.8 System Effluent Laboratory Testing (March 25, 2019)

Influent and effluent laboratory samples were collected from before and after the carbon treatment drums and laboratory provided batch clean summa canisters. The samples were submitted for laboratory analysis of VOCs by the EPA Toxic Organics (TO) Method 15.

The laboratory pre and post treatment sample data is summarized in Table 3 included in Appendix B. Concentrations of chloroform, chloromethane, PCE, TCE, trans-1,2-DCE, 1,1-DCE, cis,1-2-DCE and vinyl chloride were all detected in the influent samples. Of note, PCE, cis-1,2-DCE and TCE were detected at concentrations of 90,000, 10,000 and 2,500 µg/m^3, respectively. As shown on Table 3, these contaminants were reduced significantly in the post-treatment effluent sample with percent reduction ranging from 99.7% to 100% reduction. Of three primary CVOCs detected in the influent sample, only TCE was detected above laboratory detection limits in the effluent sample at a concentration of 6.5 µg/m^3. The influent and effluent concentrations are compared to indoor air screening values. However, it should be noted the effluent exhaust discharges to ambient air and not into indoor air.

Concentrations of several petroleum compounds, including benzene, toluene, o-xylenes and m,p-xylenes were detected in influent and effluent samples. These compounds are likely associated with the vaulted above ground fuel oil storage tank located in the basement storage area. Of note, benzene was detected in the effluent sample above EPA Residential and Commercial/ Industrial Target Indoor Air concentration.

Concentrations of several VOCs associated with the PVC primer and glue used to secure the PVC piping train were detected in the influent and effluent samples. These compounds include acetone, 2-butanone (MEK), isopropanol, styrene and tetrahydrofuran. These compounds are expected to decrease with time to low/ non-detectable levels and will contribute a significant VOC mass to the carbon.

3.9 Mass Removal Calculations

Mass removal rates were calculated for the three primary contaminants including PCE, TCE and cis-1,2-DCE as noted in Table 4. Average flow, temperature and vacuum readings were incorporated into the calculation and corrected for pressure and temperature using the ideal gas law. The influent

concentrations of PCE, TCE and cis-1,2-DCE in parts per million (ppm) were used to calculate the mass removed for each VOC. The removal calculations were carried out from the system startup at 13:00 on March 25, 2019 through 12:00 pm on April 7, 2019. The total mass removed from the system during this time is estimated at 2.70 pounds of cVOC mass, and the mass removal per day is approximately 0.201 pounds of cVOC mass per day.

Air emissions associated with PCE and TCE are regulated by the New York State Department of Environmental Conservation (NYSDEC). Per 6 CRR-NY 201-9, Table 1[4], emissions rates greater than 1,000 pounds per year of PCE or TCE are considered a "Significant Discharge." Based on the conservative emissions estimate of 0.201 pounds per day, the system is anticipated to generate a maximum of 73.4 pounds per year of PCE, TCE and cis-1,2-DCE emissions. The emissions rate is below the 1,000-pound/ year threshold that NYSDEC considers a "Significant Discharge." Additionally, the majority of the extracted vapors will be absorbed in the carbon vessels prior to atmospheric discharge. Therefore, it does not appear that the system requires an air permit to operate.

3.10 Carbon Breakthrough Calculations

The carbon drum manufacturer, General Carbon, prepared an estimated breakthrough calculation using the pre-treatment sample data. The breakthrough calculations assumed a maximum flow rate of 31 cubic feet per minute (as measured in the field). Additionally, the compounds associated with the pipe glue and primer (acetone, 2-butanone (MEK), isopropanol, styrene and tetrahydrofuran) were not included in the mass removal calculations as these compounds will attenuate after several hours of operation and as the glue and primer cures.

Based on the influent concentrations and flow, the carbon demand for the SSDS is approximately 0.2 pounds per hour, or 4.8 pounds per day. Each carbon vessel holds 150 pounds of carbon, for a combined carbon mass of 300 pounds. Assuming that 90% of the VOCs are absorbed in the first in-series drum (4.32 pounds), breakthrough will occur in the first drum after approximately 35 days. Based on the breakthrough calculations, carbon changeout may be required in May 2019. DTCS notes that the influent sample was collected immediately after the system was started and influent concentrations are expected to steadily decline until steady state is reached. Additional testing should be conducted in May 2019 to determine influent concentrations.

4.0 Findings and Conclusions

An SSDS has been installed at the Subject Site to help mitigate potential vapor intrusion concerns associated with an adjacent dry cleaner. Testing and installation activities conducted between November 2018 and March 2019 include installation of three extraction wells, five vacuum monitoring points, two 55-gallon carbon vessels, a high suction fan, audible alarm, dedicated electrical outlet, a magnehelic vacuum gauge, and influent and effluent conveyance piping. Efforts to control the presence of water beneath the building slab were undertaken by the property owner and included installation of a sump pump in an existing sump pit. Vacuum testing conducted following system startup on March 25, 2019 indicates the system is creating sub-slab vacuum in each of the vacuum monitoring points. Pre and post treatment sampling shows significant VOC reduction in the carbon vessels and low VOC concentrations in the exterior effluent discharge are not considered an exposure concern. The system is removing cVOC mass from beneath the slab. DTCS notes that the water beneath the slab appears to have been removed sufficiently to allow the system to run as intended. However, DTCS notes that if

future conditions change and the sump pump is not effective in removing sub-slab water, the SSDS may shutdown and potential damage to the system may occur.

Recommendations

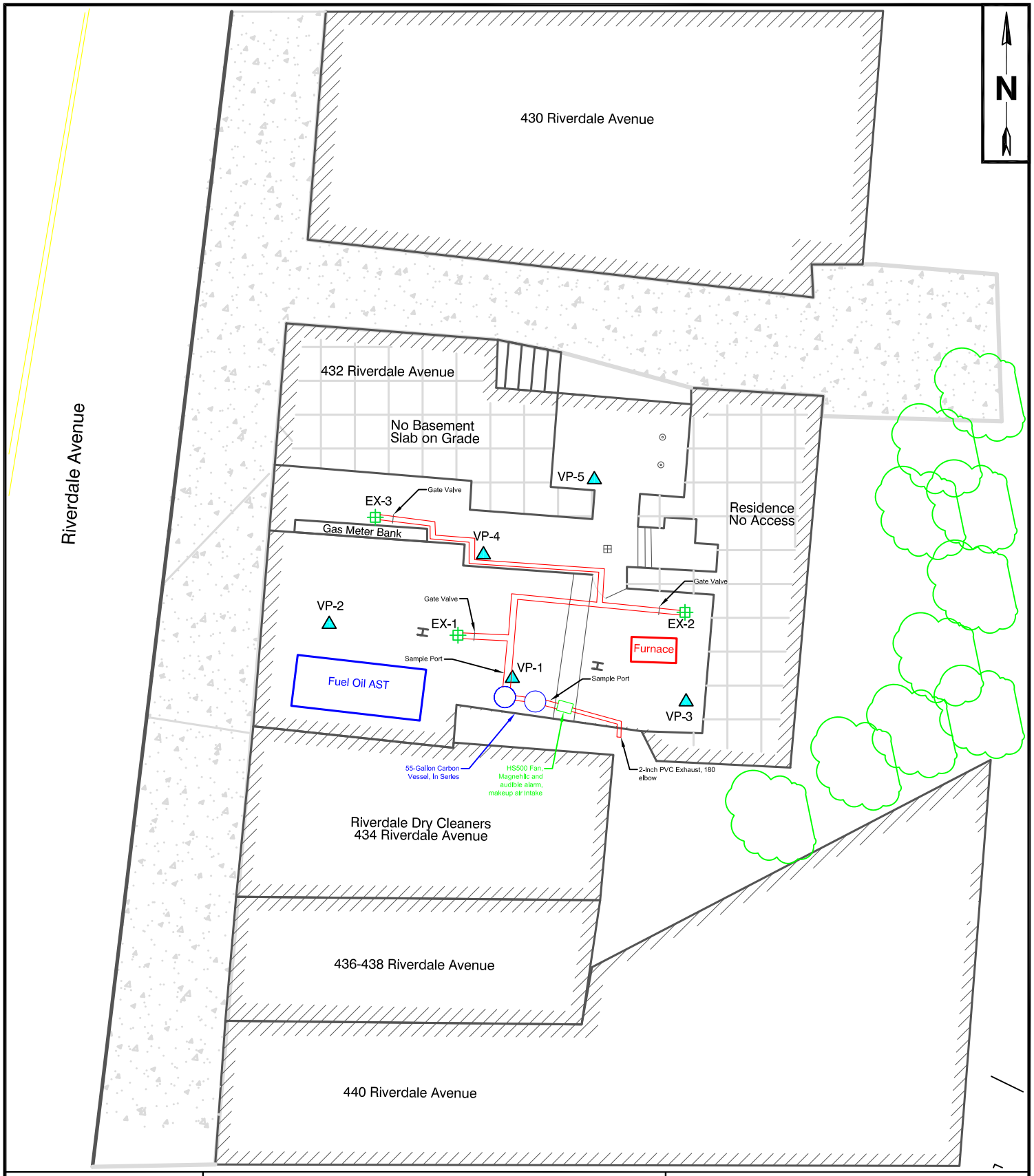
- The SSDS should be run continuously and onsite maintenance personnel should regularly check the system to ensure the SSDS is running. If the audible alarm has been triggered or measurable vacuum is not shown on the magnehelic gauge, then DTCS should be contacted.
- Based on the breakthrough calculations, carbon changeout may be required in May 2019. DTCS notes that the influent sample was collected immediately after the system was started and influent concentrations are expected to steadily decline until steady state is reached. Additional testing should be conducted in May 2019 to determine influent concentrations and to evaluate carbon breakthrough.
- DTCS recommends quarterly Operation and Maintenance (O&M) visits to ensure the system is operating as intended and collect pre and post treatment samples. DTCS is currently scheduled for one (1) annual O&M, which can be used as the first quarterly O&M visit to be conducted in May 2019.

Appendix A

Figures

DT Consulting Services, Inc.
1291 Old Post Road
Ulster Park, NY 12487

Figure 1 - Site Location Plan
432 Riverdale Avenue
Yonkers, New York



EXPLANATION BLOCK

- Sub Slab Depressurization Well
- Vapor Monitoring Point
- Vegetation
- Floor Drain
- Structural Column
- Structural I Beam
- SSDS PVC Piping

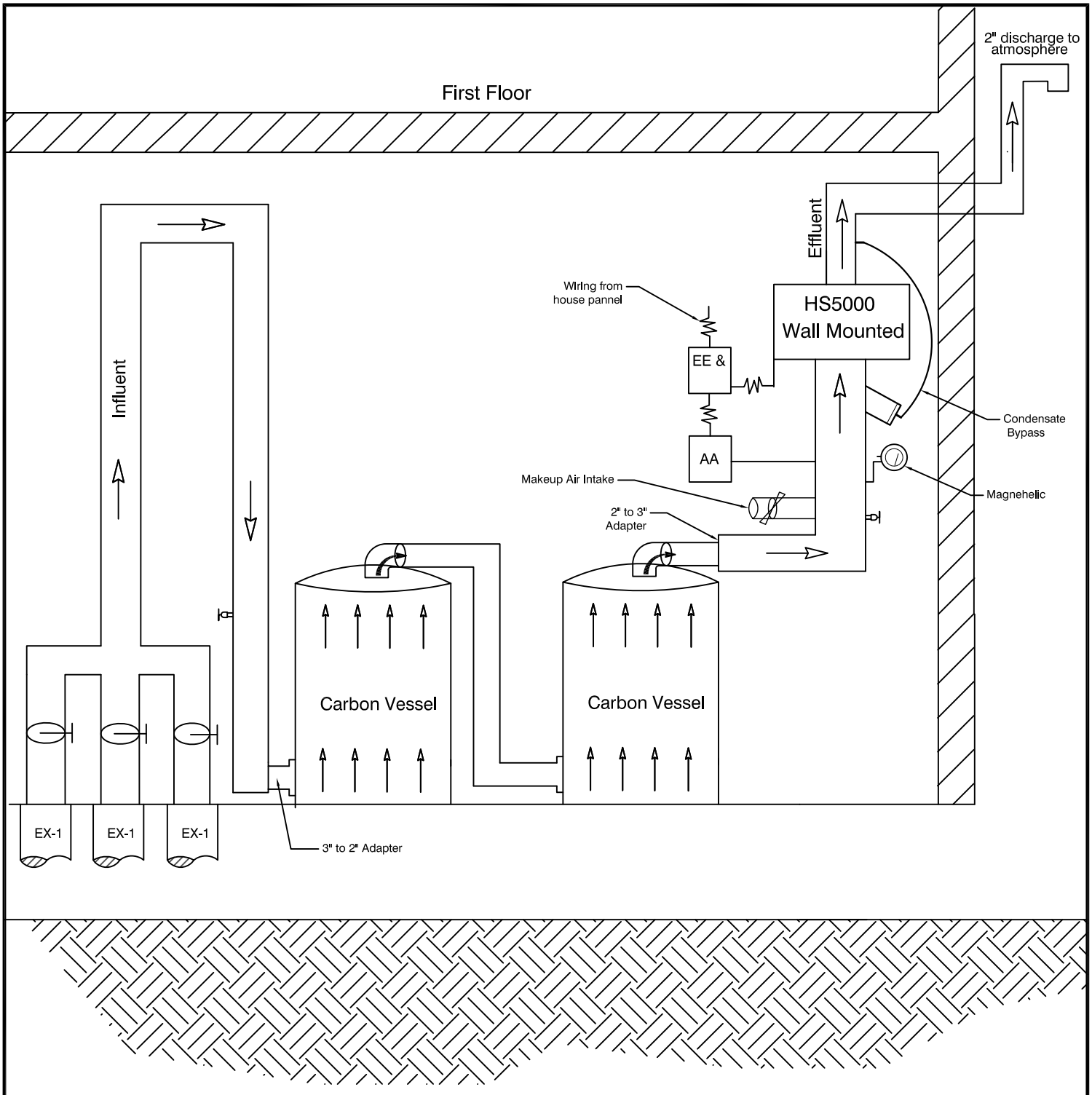
0 6 12

APPROXIMATE SCALE (FEET)

SSD WELL AND VAPOR MONITORING POINT LOCATION MAP

432 Riverdale Avenue
Yonkers, NY

PE/PG		Figure
DAB		2
Project Manager: DAB	Drafter: DAB	Date: 04/06/2019



NOT TO SCALE

EXPLANATION BLOCK

- SAMPLE PORT
- HS-5000 CENTRIFUGAL FAN
- GATE VALVE
- BALL VALVE

EE - DEDICATED OUTLET
AA - AUDIBLE ALARM

PROCESS FLOW DIAGRAM

432 Riverdale Avenue
Yonkers, NY

PE/PG	Project Number		Figure
DB			3
Project Manager	Drafter	Date	
DB	DB	04/06/2019	

Appendix B

Data Tables

TABLE 1
Sysstem Data
432 Riverdale Avenue
Yonkers, NY

Date	Time	Flow Rate (CFM)		Vacuum (in-H_2O)		Temp (°F)	
		Pre-Treaetment	Post Treatement	Pre-Treaetment	Post Treatement	Pre-Treaetment	Post Treateme nt
3/25/2019	10:35	40.0	14.2	38.0	38.0	87.3	86.6

Notes:
in-H_2O = Inches of water
CFM = cubic feet per minute

TABLE 2
Vacuum Monitoring Point Data
432 Riverdale Avenue
Yonkers, NY

Date	Time	Vacuum Monitoring Points (in-H_2O)				
		VP-1	VP-2	VP-3	VP-4	VP-5
3/25/2019	13:30	-3.000	-1.500	-3.000	-0.300	-0.700

Notes:
in-H_2O = Inches of water

Vacuum monitoring point measurements taken with Infiltec DMI Micro Manometer with a detection limit of 0.001 inches of water

TABLE 3
INFLUENT AND EFFLUENT SAMPLE DATA

432 Riverdale Avenue
Yonkers, NY

Parameter	EPA Target Indoor Air Concentrations Residential	EPA Target Indoor Air Concentrations Industrial/ Commercial	SAMPLING LOCATION		
			Pre-Treatment	Post -Treatment	Percent Reduction
Date Sampled			**3/25/2019**	**3/25/2019**	
VOCs (TO-15) - ug/m3					
Acetone	32000	140000	***27000****	*1300**	*95.2*
Benzene	0.36	1.6	**6.5**	***6.1***	6.2
2-Butanone	5200	22000	***54000***	*1600*	*97.0*
Isopropanol	210	880	*73*	*65*	*11.0*
Styrene	1000	4400	*ND*	*29*	*N/A*
Tetrahydrofuran	2100	8800	***69,000***	***3700***	*94.6*
Toluene	5200	22000	18	ND	100.0
o xylenes	100	440	ND	5.9	N/A
m,p xylenes	100	440	ND	12	N/A
Chloroform	0.12	0.53	250	ND	100.0
Chloromethane	94	390	16	ND	100.0
trans- 1,2-dichloroethylene	~	~	120	ND	100.0
1,1-Dichloroethylene	210	880	27	ND	100.0
cis-1,2-Dichloroethylene	~	~	10,000	2.7	100.0
Tetrachloroethylene	11	47	**90,000**	ND	100.0
Trichloroethylene	0.48	3	**2,500**	**6.5**	99.7
Vinyl Chloride	0.17	3	5.9	ND	100.0

NOTES:

1. EPA OSWER Final Guidance For Assessing and Mitigating the Vapor Intrusion Pathway From Subsurface Sources to Indoor Air, June 2015

2. $\mu g/m^3$ - micrograms per cubic meter
3. VOCs - Volatile Organic Compounds by EPA TO-15
4. Blue values are assocaited with petroleum release
5. *Italics* values are associated with PVC pipe glue and primer*
6. **BOLD** vlaues exceed one or more EPA indoor air standard

TABLE 4-
MASS REMOVAL CALCULATIONS -LABORATORY ANALYTICAL DATA
432 Riverdale Avenue
Yonkers, NY

Sample Location	Sample Starting Period	System Startup Date and Time	Time Elapsed (minutes)	Average Flow Rate (CFM)	Temp. (°F)	Temp. (R)	In-Hg	Atm. (Relative)	Atm. (Corrected)	V=nRT/p	lb mole	Volume of Removed Soil Vapor (CF)	PCE (ppmv)	TCE (ppmv)	cis-1,2-DCE (ppmv)	PCE Mass Removed (lbs)	TCE Mass Removed (lbs)	cis-1,2-DCE Mass Removed (lbs)	Total Mass Removed (lbs)
Influent	03/25/2018 13:00:00 PM	03/25/2018 13:00:00 PM	19380	24.0	76.5	536.5	2.792	0.093	0.907	432.1	0.00231	465120	13.300	0.4650	2.5000	2.37E+00	6.58E-02	2.61E-01	2.70E+00
Total			19,380									465,120				**2.37E+00**	**6.58E-02**	**2.61E-01**	**2.70E+00**
												Mass Removal Rate (lbs/day)							**2.01E-01**

Notes:

V=nRT/p *Where: V = volume of the gas; P = pressure of the gas; n = 1 lb-mole; R = Ideal Gas Constant (0.7302); T = Absolute Temperature (°F+460)*

Mass Removed = [(1 / Volume of gas) x (time elapsed) x (Flow) x (Concentration CVOC) x (molecular weight CVOC)] / $1x10^6$

Molecular weights (g/mole): PCE 165.83, TCE 131.39, cis-1,2-DCE 96.94

CFM = cubic foot per minute

ppmv = parts per million by volume

lbs = pounds

1-in-Hg = 0.033421 atm

Mass removal calculations carried out until 12:00 pm on April 7, 2019

Appendix C

Laboratory Analytical Report

Technical Report

prepared for:

Core Down Drilling, LLC
18 Birch Hill Rd.
Pawling NY, 12564
Attention: Andrew Bellucci

Report Date: 04/02/2019
Client Project ID: Yonkers
York Project (SDG) No.: 19C1058

Report Date: 04/02/2019
Client Project ID: Yonkers
York Project (SDG) No.: 19C1058

Core Down Drilling, LLC
18 Birch Hill Rd.
Pawling NY, 12564
Attention: Andrew Bellucci

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on March 27, 2019 with a temperature of C. The project was identified as your project: **Yonkers**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
19C1058-01	Post Treatment	Soil Vapor	03/25/2019	03/27/2019
19C1058-02	Pre Treatment	Soil Vapor	03/25/2019	03/27/2019

General Notes for York Project (SDG) No.: 19C1058

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: 

Date: 04/02/2019

Benjamin Gulizia
Laboratory Director

Sample Information

Client Sample ID: **Post Treatment** **York Sample ID:** **19C1058-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: TO-VAC

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	* 1,1,1,2-Tetrachloroethane	ND		ug/m³	9.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:			
71-55-6	1,1,1-Trichloroethane	ND		ug/m³	7.4	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/m³	9.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/m³	10	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-00-5	1,1,2-Trichloroethane	ND		ug/m³	7.4	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-34-3	1,1-Dichloroethane	ND		ug/m³	5.5	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-35-4	1,1-Dichloroethylene	ND		ug/m³	1.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
120-82-1	1,2,4-Trichlorobenzene	ND		ug/m³	10	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-63-6	1,2,4-Trimethylbenzene	ND		ug/m³	6.7	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
106-93-4	1,2-Dibromoethane	ND		ug/m³	10	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-50-1	1,2-Dichlorobenzene	ND		ug/m³	8.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
107-06-2	1,2-Dichloroethane	ND		ug/m³	5.5	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
78-87-5	1,2-Dichloropropane	ND		ug/m³	6.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
76-14-2	1,2-Dichlorotetrafluoroethane	ND		ug/m³	9.5	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-67-8	1,3,5-Trimethylbenzene	ND		ug/m³	6.7	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
106-99-0	1,3-Butadiene	ND		ug/m³	9.0	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
541-73-1	1,3-Dichlorobenzene	ND		ug/m³	8.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
142-28-9	* 1,3-Dichloropropane	ND		ug/m³	6.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:			
106-46-7	1,4-Dichlorobenzene	ND		ug/m³	8.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
123-91-1	1,4-Dioxane	ND		ug/m³	9.8	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
78-93-3	**2-Butanone**	**1600**		ug/m³	4.0	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: **Post Treatment** **York Sample ID:** **19C1058-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: TO-VAC

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
591-78-6	* 2-Hexanone	ND		ug/m³	11	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:			
107-05-1	3-Chloropropene	ND		ug/m³	21	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-10-1	4-Methyl-2-pentanone	ND		ug/m³	5.5	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-64-1	**Acetone**	**1300**		ug/m³	6.4	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
107-13-1	Acrylonitrile	ND		ug/m³	2.9	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
71-43-2	**Benzene**	**6.1**		ug/m³	4.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
100-44-7	Benzyl chloride	ND		ug/m³	7.0	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-27-4	Bromodichloromethane	ND		ug/m³	9.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-25-2	Bromoform	ND		ug/m³	14	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
74-83-9	Bromomethane	ND		ug/m³	5.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-15-0	Carbon disulfide	ND		ug/m³	4.2	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
56-23-5	Carbon tetrachloride	ND		ug/m³	2.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-90-7	Chlorobenzene	ND		ug/m³	6.2	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-00-3	Chloroethane	ND		ug/m³	3.6	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-66-3	Chloroform	ND		ug/m³	6.6	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
74-87-3	Chloromethane	ND		ug/m³	2.8	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
156-59-2	**cis-1,2-Dichloroethylene**	**2.7**		ug/m³	1.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/m³	6.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
110-82-7	Cyclohexane	ND		ug/m³	4.7	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
124-48-1	Dibromochloromethane	ND		ug/m³	12	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-71-8	Dichlorodifluoromethane	ND		ug/m³	6.7	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
141-78-6	* Ethyl acetate	ND		ug/m³	9.8	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:			

Sample Information

Client Sample ID: **Post Treatment** **York Sample ID:** **19C1058-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: TO-VAC

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
100-41-4	Ethyl Benzene	ND		ug/m³	5.9	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
87-68-3	Hexachlorobutadiene	ND		ug/m³	14	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-63-0	**Isopropanol**	**65**		ug/m³	6.7	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
80-62-6	Methyl Methacrylate	ND		ug/m³	5.5	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/m³	4.9	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-09-2	Methylene chloride	ND		ug/m³	9.4	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
142-82-5	n-Heptane	ND		ug/m³	5.5	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
110-54-3	n-Hexane	ND		ug/m³	4.8	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-47-6	**o-Xylene**	**5.9**		ug/m³	5.9	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
179601-23-1	**p- & m- Xylenes**	**12**		ug/m³	12	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
622-96-8	* p-Ethyltoluene	ND		ug/m³	6.7	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:			
115-07-1	* Propylene	ND		ug/m³	2.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:			
100-42-5	**Styrene**	**29**		ug/m³	5.8	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
127-18-4	Tetrachloroethylene	ND		ug/m³	2.3	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
109-99-9	*** Tetrahydrofuran**	**3700**		ug/m³	40	67.7	EPA TO-15	03/28/2019 09:00	03/28/2019 16:23	AS
							Certifications:			
108-88-3	Toluene	ND		ug/m³	5.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/m³	5.4	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/m³	6.1	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-01-6	**Trichloroethylene**	**6.5**		ug/m³	1.8	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-69-4	Trichlorofluoromethane (Freon 11)	ND		ug/m³	7.6	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-05-4	Vinyl acetate	ND		ug/m³	4.8	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
593-60-2	Vinyl bromide	ND		ug/m³	5.9	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: **Post Treatment** **York Sample ID:** **19C1058-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: **TO-VAC**

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
75-01-4	Vinyl Chloride	ND		ug/m³	0.87	13.54	EPA TO-15	03/27/2019 09:00	03/28/2019 09:09	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		

	Surrogate Recoveries	Result	Acceptance Range
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*88.9 %*	*70-130*

Sample Information

Client Sample ID: **Pre Treatment** **York Sample ID:** **19C1058-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: **TO-VAC**

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	* 1,1,1,2-Tetrachloroethane	ND		ug/m³	9.3	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:			
71-55-6	1,1,1-Trichloroethane	ND		ug/m³	7.4	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/m³	9.3	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/m³	10	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-00-5	1,1,2-Trichloroethane	ND		ug/m³	7.4	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-34-3	1,1-Dichloroethane	ND		ug/m³	5.5	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-35-4	**1,1-Dichloroethylene**	**27**		ug/m³	1.3	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
120-82-1	1,2,4-Trichlorobenzene	ND		ug/m³	10	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-63-6	1,2,4-Trimethylbenzene	ND		ug/m³	6.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
106-93-4	1,2-Dibromoethane	ND		ug/m³	10	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-50-1	1,2-Dichlorobenzene	ND		ug/m³	8.1	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
107-06-2	1,2-Dichloroethane	ND		ug/m³	5.5	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: **Pre Treatment** **York Sample ID:** **19C1058-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: TO-VAC

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
78-87-5	1,2-Dichloropropane	ND		ug/m³	6.2	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
76-14-2	1,2-Dichlorotetrafluoroethane	ND		ug/m³	9.4	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
108-67-8	1,3,5-Trimethylbenzene	ND		ug/m³	6.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
106-99-0	1,3-Butadiene	ND		ug/m³	9.0	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
541-73-1	1,3-Dichlorobenzene	ND		ug/m³	8.1	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
142-28-9	* 1,3-Dichloropropane	ND		ug/m³	6.2	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:			
106-46-7	1,4-Dichlorobenzene	ND		ug/m³	8.1	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
123-91-1	1,4-Dioxane	ND		ug/m³	9.7	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
78-93-3	**2-Butanone**	**54000**		ug/m³	490	1649.8	EPA TO-15	03/28/2019 09:00	03/30/2019 02:16	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
591-78-6	* 2-Hexanone	ND		ug/m³	11	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:			
107-05-1	3-Chloropropene	ND		ug/m³	21	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
108-10-1	4-Methyl-2-pentanone	ND		ug/m³	5.5	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
67-64-1	**Acetone**	**27000**		ug/m³	780	1649.8	EPA TO-15	03/28/2019 09:00	03/30/2019 02:16	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
107-13-1	Acrylonitrile	ND		ug/m³	2.9	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
71-43-2	**Benzene**	**6.5**		ug/m³	4.3	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
100-44-7	Benzyl chloride	ND		ug/m³	7.0	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
75-27-4	Bromodichloromethane	ND		ug/m³	9.0	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
75-25-2	Bromoform	ND		ug/m³	14	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
74-83-9	Bromomethane	ND		ug/m³	5.2	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
75-15-0	Carbon disulfide	ND		ug/m³	4.2	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
56-23-5	Carbon tetrachloride	ND		ug/m³	2.1	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			
108-90-7	Chlorobenzene	ND		ug/m³	6.2	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications: NELAC-NY12058,NJDEP-Queens			

Sample Information

Client Sample ID: **Pre Treatment** **York Sample ID:** **19C1058-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: TO-VAC

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
75-00-3	Chloroethane	ND		ug/m³	3.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-66-3	**Chloroform**	**250**		ug/m³	6.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
74-87-3	**Chloromethane**	**16**		ug/m³	2.8	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
156-59-2	**cis-1,2-Dichloroethylene**	**10000**		ug/m³	11	107.92	EPA TO-15	03/28/2019 09:00	03/28/2019 17:23	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/m³	6.1	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
110-82-7	Cyclohexane	ND		ug/m³	4.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
124-48-1	Dibromochloromethane	ND		ug/m³	11	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-71-8	Dichlorodifluoromethane	ND		ug/m³	6.7	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
141-78-6	* Ethyl acetate	ND		ug/m³	9.7	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:			
100-41-4	Ethyl Benzene	ND		ug/m³	5.9	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
87-68-3	Hexachlorobutadiene	ND		ug/m³	14	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-63-0	**Isopropanol**	**73**		ug/m³	6.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
80-62-6	Methyl Methacrylate	ND		ug/m³	5.5	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/m³	4.9	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-09-2	Methylene chloride	ND		ug/m³	9.4	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
142-82-5	n-Heptane	ND		ug/m³	5.5	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
110-54-3	n-Hexane	ND		ug/m³	4.8	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-47-6	o-Xylene	ND		ug/m³	5.9	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
179601-23-1	p- & m- Xylenes	ND		ug/m³	12	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
622-96-8	* p-Ethyltoluene	ND		ug/m³	6.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:			
115-07-1	* Propylene	ND		ug/m³	2.3	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:			
100-42-5	Styrene	ND		ug/m³	5.7	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: **Pre Treatment** **York Sample ID:** **19C1058-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
19C1058	Yonkers	Soil Vapor	March 25, 2019 1:00 pm	03/27/2019

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes: **TO-VAC**

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
127-18-4	**Tetrachloroethylene**	**90000**		ug/m³	280	1649.8	EPA TO-15	03/28/2019 09:00	03/30/2019 02:16	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
109-99-9	*** Tetrahydrofuran**	**69000**		ug/m³	970	1649.8	EPA TO-15	03/28/2019 09:00	03/30/2019 02:16	AS
							Certifications:			
108-88-3	**Toluene**	**18**		ug/m³	5.1	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
156-60-5	**trans-1,2-Dichloroethylene**	**120**		ug/m³	5.3	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/m³	6.1	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-01-6	**Trichloroethylene**	**2500**		ug/m³	1.8	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-69-4	Trichlorofluoromethane (Freon 11)	ND		ug/m³	7.6	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-05-4	Vinyl acetate	ND		ug/m³	4.7	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
593-60-2	Vinyl bromide	ND		ug/m³	5.9	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-01-4	**Vinyl Chloride**	**5.9**		ug/m³	0.86	13.49	EPA TO-15	03/28/2019 09:00	03/28/2019 14:22	AS
							Certifications:	NELAC-NY12058,NJDEP-Queens		

	Surrogate Recoveries	Result	Acceptance Range
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*106 %*	*70-130*

Sample and Data Qualifiers Relating to This Work Order

TO-VAC	The final vacuum in the canister was less than -2 inches Hg vacuum. The time integrated sampling may be affected and not reflect proper sampling over the time period. The data user should take note.
QR-01	Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

York Analytical Laboratories, Inc.
120 Research Drive, Stratford, CT 06615
132-02 89th Ave Queens, NY 11418
clientservices@yorklab.com
www.yorklab.com

Field Chain-of-Custody Record - AIR

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document. This document serves as your written authorization for YORK to proceed with the analyses requested below. Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 190058

YOUR Information	Report To:	Invoice To:
Company: Core Down Drilling	Company:	Company:
Address: 18 Birch Hill Rd Pawling, NY 12564	Address:	Address:
Phone.:	Phone.:	Phone.:
Contact:	Contact:	Contact:
E-mail:	E-mail:	E-mail:

YOUR Project Number:

YOUR Project Name: Yonkers

YOUR PO#:

Turn-Around Time

RUSH - Next Day	
RUSH - Two Day	
RUSH - Three Day	
RUSH - Four Day	
Standard (5-7 Day)	X

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Samples Collected by: (print your name above and sign below) Anna Jelinek

Air Matrix Codes

AI - Indoor Ambient Air
AO - Outdoor Amb. Air
AE - Vapor Extraction Well/ Process Gas/Effluent
AS - Soil Vapor/Sub-Slab

Samples From

New York	X
New Jersey	
Connecticut	
Pennsylvania	
Other	

Report / EDD Type (circle selections)

Summary Report	CT RCP	Standard Excel EDD
QA Report	CT RCP DQA/DUE	EQuIS (Standard)
NY ASP A Package	NJDEP Reduced Deliv.	NYSDEC EQuIS
NY ASP B Package	NJDKQP	NJDEP SRP HazSite
Other:		

YORK Reg. Comp.

Compared to the following Regulation(s): (please fill in)

Certified Canisters: Batch ___ Individual ___

Please enter the following REQUIRED Field Data

Reporting Units: ug/m³ ___ ppbv ___ ppmv ___

Sample Identification	Date/Time Sampled	Air Matrix	Canister Vacuum Before Sampling (in Hg)	Canister Vacuum After Sampling (in Hg)	Canister ID	Flow Cont. ID	Analysis Requested
Post treatment	3/as 1.00 pm	AE	-30	-6	22076	Grab	TO-15
Pre treatment	3/as 1.00 pm	AE	-30	-6	15608	Grab	TO-15

Comments:

Detection Limits Required

≤ 1 ug/m³ ____ NYSDEC V1 Limits ____
Routine Survey ____ Other ____

Sampling Media

6 Liter Canister
Tedlar Bag

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
Anna Jelinek/COD	3/26		3-26-19 8:15		3-26-19 1508
Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time
J. Gale / York	3-26-19/1508	J. Gale / York	3-26-19/1800	K Bakayok	3/26/19 1900
Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Received in LAB by	Date/Time
K Bakayok	3/27/19 820am	Queens Sample Room	3/27/19 820am	York	3/27/19 9:22am

Appendix D

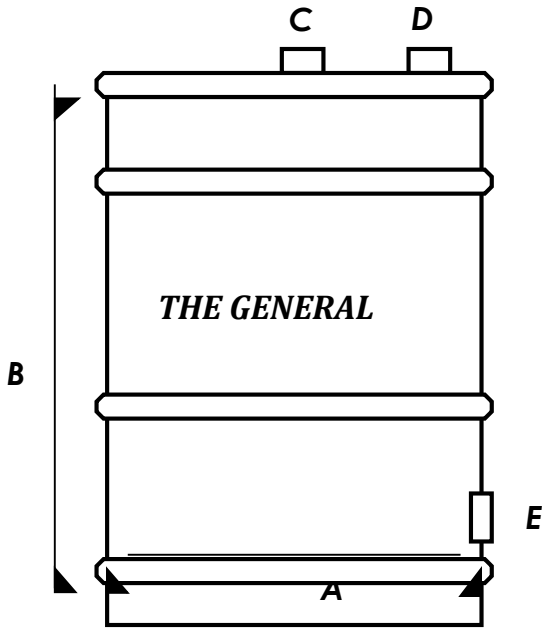
Equipment Specifications

GENERAL CARBON CORP.

THE GENERAL

air pollution control barrels

THE GENERAL AIR POLLUTION CONTROL BARRELS are ready to use, low cost, self-contained air purification adsorbers designed to treat airflows streams of up to 250 CFM. The units are available in four different sizes to better serve your treatment applications.



SPECIFICATIONS	30 GALLON	55 GALLON	85 GALLON	110 GALLON
A - Diameter, Outside	19 -1/2"	24"	28"	32"
B – Height, Outside	29"	35"	39"	43"
Inlet Fitting	E - 2" MPT	E - 2" MPT	C - 4" FPT	C - 4" FPT
Outlet Fitting	C - 2" MPT	C - 2" MPT	D - 4" FPT	D - 4" FPT
Drain Fitting	E - 2" FPT	E - 2" FPT	E - 1" FPT	E - 1" FPT
Carbon Weight, lbs.	90	150	300	400
Max. Recommended Flow Rate, CFM	100	100	180	250
Maximum Pressure, psig	7	10	7	7
Maximum Design Temp., Deg F	140	140	140	140
Flow Direction	Upflow	Upflow	Upflow	Upflow

Activated Carbon - The General vapor adsorbers are filled with virgin, high activity, activated carbon. Any of virgin coal, coconut shell, reactivated or impregnated carbons are available as well.

Removable Lid - 16 gauge lid with ring & bolt closure, poly-clad cellulose gasket.

Connections - Metal connections with standard pipe threads insure easy, durable and leak proof hookup to your system. Unions or quick connect fittings are advised to make drum exchange easy. Drains let you remove any accumulated condensate.

Flow Distributors - The 55 gallon barrel uses an air chamber to insure even distribution of the airflow through the carbon. Low-pressure drop slotted Schedule 40 PVC collectors are used in the 85 gallon and 110 gallon drums for proper flow distribution. Stainless Steel internals and drums are available for special applications.

Coatings - The General pollution control barrels are coated on the inside with heat cured phenolic epoxy. The outside coating is industrial enamel. A polyethylene liner is available for extra corrosion resistance for the 55 gallon and 85 gallon units.

Installation & Start Up - The General air pollution control barrel requires no special procedure for startup. Just connect the inlet and outlet to the treatment system and start it up. Multiple units are usually connected in series with testing advised between the units to determine when the first unit needs to be changed out.

Maintenance - Once connected, The General requires no maintenance other than the monitoring of the influent and effluent air streams and the operating pressure of the system. Monitoring the air stream into the last Air Pollution Control Barrel in series mode is a recommended safeguard against breakthrough in the final discharge. When the concentration of contaminants in the outflow equals the concentration in the inflow, The General has reached its removal capacity and should be removed from service. The working life of each adsorber is dependent upon the type of contaminant in the air as well as its concentration and the airflow rate. A pressure relief device is advised to prevent damage to the canister in the event of excessive pressure buildup.

Recharging The General - Once the carbon has reached its pollutant removal capacity, the unit should be removed and replaced with a fresh one. To purchase replacement carbon or to arrange for a carbon change out, please contact our office.

Disposal - Dispose of the spent carbon in accordance with Federal, State and Local regulations.

Caution!

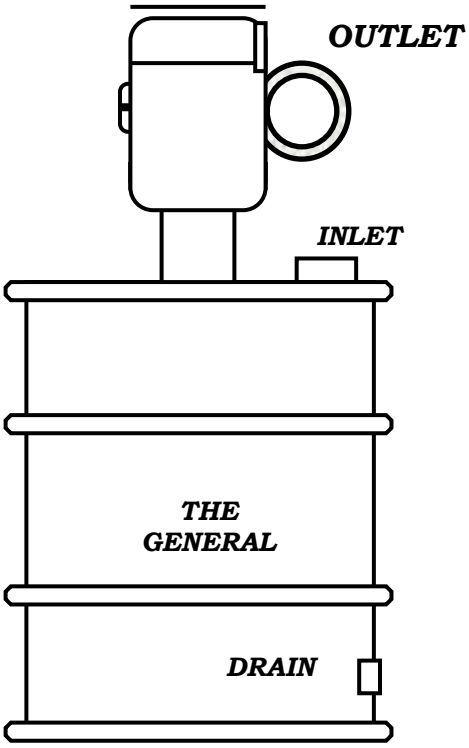
Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels. Confined space / low oxygen procedures should be put in place before any entry is made. Such procedures should comply with all applicable local, state and federal guidelines.

33 Paterson Street, Paterson, New Jersey 07501 Tel: 973 523 2223 Fax: 973 523 1494
www.generalcarbon.com sales@generalcarbon.com

GENERAL CARBON CORP.

F - SERIES

vapor adsorber and fan a simple air pollution solution



GENERAL CARBON CORP, has added a fan to their user friendly Air Pollution Control Barrels to provide a quick and easy solution for simple VOC and odor control applications. The high volume aluminum fan mounted on the top of the General provides efficient control of minor point source pollution problems.

The **F-SERIES** units are available in three sizes that cover a wide range of airflow requirements. The F-55 is our basic unit and will move 125 CFM of air at 4" WC static pressure. The motor is 115/230 VAC, 1 Ph, 60 Hz, TEFC and is weather proof. Wiring of the motor is not included to provide adaptability to site requirements. Loading the unit with impregnated carbon can improve the removal efficiency for Hydrogen Sulfide, Mercaptans, ammonia, formaldehyde, or other problem contaminants.

UNIT	DRUM SIZE	LBS. CARBON	FLOW RATE	INLET	OUTLET
F-55	55 Gallon	150	75-125 CFM	4" FPT	4"
F-85	85 Gallon	300	100-210 CFM	4" FPT	4"
F-110	110 Gallon	400	120-350 CFM	4" FPT	5"

AVAILABLE OPTIONS: Special Application Carbons, Polyethylene Drum Liners, Damper, OSHA Safety Guards, Custom Inlet/Outlet Sizes, Full Selection of NEMA Rated Motors, Corrosion Resistant FRP Fans, Remote Mounted Fans, and more...

33 Paterson Street Paterson, NJ 07501 Tel: 973-523-2223 Fax: 973-523-1494
www.generalcarbon.com sales@generalcarbon.com

RadonAway
The world's leading radon fan manufacturer

HS Series

Radon Mitigation Fan

HS fans offer a proven solution for tough radon mitigation jobs, providing up to 25 times the suction of inline tube fans to deal with sand, tight soil or clay sub-slab material.

Features

- Internal condensate bypass
- Brackets for vertical mounting indoors and outdoors
- Inlet: 3.0" PVC / Outlet: 2.0" PVC
- Weight: 18 lbs.
- Size: 15.5"W x 13.3"H x 8.2"D
- Warranty: 1 year (3-year option available)

MODEL	WATTS	SOUND RATING (dBA)			RECOM. MAX. OP. PRESSURE "WC	TYPICAL CFM* vs. STATIC PRESSURE WC					
		OPEN	1/2	CLOSED		0"	10"	15"	20"	25"	35"
HS2000 with cord	174-307	56.5	56.2	51.9	14	63	37	12	-	-	-
HS3000 with cord	120-250	47.9	48.0	46.2	21	39	30	25	19	-	-
HS5000 with cord	223-385	56.0	55.3	53.1	35	44	37	33	29	25	16
HS2000E with switch box	174-307	56.5	56.2	51.9	14	63	37	12	-	-	-
HS3000E with switch box	120-250	47.9	48.0	46.2	21	39	30	25	19	-	-
HS5000E with switch box	223-385	56.0	55.3	53.1	35	44	37	33	29	25	16

* Made in the USA with U.S. and imported parts.

* CFM measured through suction.

For Further Information, Contact Your Radon Professional:

Rev C 0517
P/N 02002

INSTALLATION & OPERATING INSTRUCTIONS
Instruction P/N IN015 Rev E
FOR *CHECKPOINT IIa*™ P/N 28001-2 & 28001-3
RADON SYSTEM ALARM

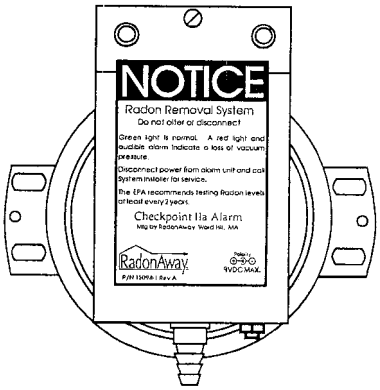
INSTALLATION INSTRUCTIONS
(WALL MOUNTING)

Select a suitable wall location near a vertical section of the suction pipe. The unit should be mounted about four or five feet above the floor and as close to the suction pipe as possible. Keep in mind that with the plug-in transformer provided, the unit must also be within six feet of a 120V receptacle. **NOTE: The Checkpoint IIa is calibrated for vertical mounting, horizontal mounting will affect switchpoint calibration.**

Drill two ¼" holes 4" apart horizontally where the unit is to be mounted.

Install the two ¼" wall anchors provided.

Hang the CHECKPOINT IIa from the two mouting holes located on the mounting bracket. Tighten the mounting screws so the unit fits snugly and securely against the wall.



Drill a 5/16" hole into the side of the vent pipe about 6" higher than the top of the unit.

Insert the vinyl tubing provided about 1" inside the suction pipe.

Cut a suitable length of vinyl tubing and attach it to the pressure switch connector on the CHECKPOINT IIa.

CALIBRATION AND OPERATION.

The CHECKPOINT IIa units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:
28001-2 -.25" WC Vacuum
28001-3 -.10" WC Vacuum

To Verify Operation:

With the exhaust fan off or the pressure tubing disconnected and the CHECKPOINT IIa plugged in, both the red indicator light and the audible alarm should be on.

Turn the fan system on or connect the pressure tubing to the fan piping. The red light and the audible alarm should go off. The green light should come on.

Now turn the fan off. The red light and audible alarm should come on in about two or three seconds and the green light should go out.

WARRANTY INFORMATION

Subject to applicable consumer protection legislation, RadonAway warrants that the CHECKPOINT IIa will be free from defective material and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway. All other warranties, expressed or written, are not valid. To make a claim under these limited warranties, you must return the defective item to RadonAway with a copy of the purchase receipt. RadonAway is not responsible for installation or removal cost associated with this warranty. In no case is RadonAway liable beyond the repair or replacement of the defective product FOB RadonAway.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO WARRANTY OF MERCHANTIBILITY. ALL OTHER WARRANTIES, EXPRESSED OR WRITTEN, ARE NOT VALID.

For service under these warranties, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. **No returns can be accepted without an RMA.** If factory return is required, the customer assumes all shipping costs to and from factory.

Manufactured by:
RadonAway
Ward Hill, MA
(978)-521-3703