Advanced Cleanup Technologies, Inc.
ENVIRONMENTAL CONSULTANTS

July 6, 2026

Wendi Zheng
Division of Environmental Remediation, Region 2
New York State Department of Environmental Conservation
47-40 21st Street, Long Island City, NY 11101

Re: Offsite Vapor Mitigation Interim Remedial Measure Workplan
Jay Dry Cleaners
840 East 233rd Street, Bronx
BCP Site #C203119

Dear Ms. Zheng,

Please accept the below as an Offsite Vapor Mitigation Interim Remedial Measure Workplan for Jay Dry Cleaners (BCP Site No. C203119).

1. Project Background

1.1 Remedial Investigation Conclusions

ACT has prepared the following summary and conclusions based upon the results of the remedial investigation completed at the Site:

1. The topography of the area has a moderate to steep slope from northwest to southeast. The vicinity of the site is approximately 167 feet above mean sea level. The ground surface in the vicinity of the property is covered with asphalt and concrete pavement, except in the rear of the property which is covered in soil.

2. The stratigraphy beneath the Site generally consists of asphalt and concrete pavement underlain by medium-grained sand with silt and gravels up to 8 feet bgs, followed by compacted fine to medium-grained sands with silt, pebbles, and gravels to 10 feet bgs. From 10 to 14 bgs, soil consisted of saturated, loosely packed medium-grained sand. Shallow bedrock refusals were met on the eastern section of the Site.

3. Groundwater is present only as a localized perched water table above the bedrock surface beneath the eastern portion of the site and property boundary of the adjacent property to the east. Depth to water was encountered during the RI between 1.55 feet and 8.16 feet below ground surface.

4. AOC-1 Historical onsite dry-cleaning operations in the basement of the onsite building: PCE, TCE, Vinyl Chloride, CIS12-DCE, were detected in soil vapor and indoor air that exceeded NYSDOH soil vapor intrusion matrices.
5. AOC-2 The interior floor drain located along the eastern portion of the onsite basement: PCE and its degradation products were found in soil exceeding PGWSCO and in groundwater exceeding TOGS in the alley directly east of the onsite building.
6. AOC-3 A sump pit and chemical storage in the exterior alley and eastern property boundary: No soil or groundwater contamination exceeding standards was found in the rear exterior alley.
7. AOC-4 An underground storage tank located in the exterior northwestern portion of the onsite property: No soil or groundwater contamination exceeding standards was found adjacent to the fuel oil underground storage tank.
8. AOC-5 The adjacent gasoline station to the west: No soil or groundwater contamination exceeding standards was found adjacent to the Gas-station along the western side of the property.
9. AOC-6 Off-site properties, including 866 East 233rd Street (East), 855 East 233rd Street (North), 857 East 232nd Street (South), 849 East 232nd Street (South), and 839 232nd Street (South): PCE, TCE,Vinyl Chloride,CIS12-DCE, and 11-DCE were detected in soil vapor and indoor air that exceeded NYSDOH soil vapor intrusion matrices in the property to the east. Low concentrations of PCE and TCE were detected in off-site soil vapor samples. PCE and its degradation products were found in soil exceeding PGWSCO and in groundwater exceeding TOGS in the property to the east.
10. Currently one potential complete exposure pathway exists from off-gassing of soil vapor to human receptors inside the onsite occupied building and the building to the east.

11.

1.2 Remedial Investigation Groundwater

Based upon inferred bedrock surface contours from data collected during soil boring installation, (Figure 1), a perched water table appears to be located beneath the eastern portion of the property and is flowing in an easterly direction. On October 1st, 2020, a soft, damp, loam-like layer of soil was encountered between 5.5 to 6 feet bgs in exterior soil boring SB-4 within the area of perched groundwater. On January 5th, 2021, perched groundwater was encountered at a depth of 8.16 feet bgs in exterior monitoring well MW-4, which is along the eastern property boundary. On October 2nd, 2020, a similar soft, damp, loam-like layer of soil was encountered between 3 and 4 feet below the building cellar in interior onsite soil boring SB-6. On January

5th, 2021, perched groundwater was encountered at a depth of 1.55 feet below the cellar grade in interior monitoring well MW-6. Bedrock was encountered in this zone at a maximum depth of 14 feet bgs. On June 16th, 2023, muddy silty sands with high PID readings were encountered 6 feet below the building cellar in interior soil boring SB-20. On June 27th, 2023, perched groundwater was encountered at a depth of 4.5 feet below the cellar grade in interior monitoring well MW-20. Bedrock was encountered in this zone at a maximum depth of 10 feet bgs. Minimal recharge was observed during low flow sampling of all onsite monitoring wells. Shallow runoff and leaky pipes may contribute to the presence of a perched water table in this portion of the site.

Soil borings SB-22 and SB-23 installed under the building at 864-866 E 233rd Street encountered groundwater at approximately 2 feet bgs. and depth to water was encountered during groundwater sampling at approximately 1.2 feet bgs. MW-26 and MW-28 installed along the sidewalk measured depths to groundwater of 9.16 and 8.61 feet bgs respectively.

The results from the remedial investigation demonstrate that the shallow perched groundwater layer is impacted by CVOC contamination, and that groundwater is migrating across the eastern (downgradient) property boundary in an easterly direction beneath the Site to the adjacent offsite basement. Concentrations of CVOC's are present in shallow groundwater including Vinyl chloride at 11,000 ug/L and cis-1,2-Dichloroethylene at 21,000 ug/L in MW-4 and cis-1,2-Dichloroethylene at 31,000 ug/L in MW-23. Concentrations of CVOCs were found above AWQS in groundwater beneath the Site, but at significantly lower concentrations in the deeper groundwater samples collected beneath the adjacent sidewalks. In MW-26 CVOC's were found at concentrations of PCE (290 µg/L), TCE (110 µg/L), Vinyl Chloride (14 µg/L), and CIS12-DCE (600 µg/L). Contours of CVOC concentrations in groundwater beneath the Site and the adjacent property to the east are shown in figures 6 through 9.

1.3 Interim Remedial Measures

On February 4, 2022, PW Grosser Consulting Engineer & Hydrogeologist, P.C. (PWGC) prepared an Interim Remedial Measure (IRM) Work Plan Letter to address soil vapor intrusion concerns at the neighboring commercial building (866 East 233rd Street) located adjacent to the east of the subject property (840 East 233rd Street).

PWGC proposed the following measures:

- Sealing of exposed soils within trenches and gouges with cement/grout.
- Installing permanent manhole covers above the sump pits
- Installation of a new stormwater system consisting of composite drains, subsurface piping, and sealed sumps was installed and provides a sealed cover system that minimizes exposure to contaminated soil and soil vapor beneath the site, while also providing a pathway for overland stormwater to exit the property.
- A Dri-Eaz HEPA 700 Air Scrubber with an activated carbon filter was installed in the basement of 864 and 866 East 233rd Street.
- Collection of indoor air samples and groundwater samples.

The interim remedial measures were completed by ACT in September of 2022 and the previously exposed contaminated soil and sub-slab groundwater were successfully sealed to prevent potential exposure. An as-built figure for the IRM is provided in figure 2.

In August 2023, the indoor air at 866 East 233rd Street was resampled, and concentrations of Chlorinated Volatile Organic Compounds (CVOCs) remained elevated. Concentrations of sub-slab soil vapor and indoor air are provided in figure 3.

On January 25, 2023, PWGC submitted an IRM Work Plan Addendum to address floodwater infiltration concerns at the adjacent property (866 East 233rd Street) located to the east of the subject property (840 East 233rd Street).

PWGC proposed the following measures:

- Installing a groundwater dewatering system designed to operate on a temporary basis during periods of high groundwater or flooding events.

On March 2nd and 3rd, 2023 two groundwater dewatering wells (DW-1 and DW-2) were installed in the basement of 866 East 233rd Street. The wells were sampled on March 9th, 2023. Several CVOCs were found above their respective AWQS in DW-2, and one Volatile Organic Compound (VOC) was found above its AWQS in DW-1.

2. Indoor Air Filtration at 864-874 East 233rd Street

To mitigate the remaining indoor air contamination and potential exposure, Air Filtration devices are proposed to be installed in the basements of 864-870 East 233rd Street. The property located at 862-868 East 233rd Street contains a 1-story commercial building with a basement. The property is currently occupied by commercial tenants Christian Church Divine Trinity (862 East 233rd St), True Faith Church USA (864 East 233rd St), Word of God Ministries (866 East 233rd St), and Allstate Insurance (686 East 233rd St). The property at 870-874 East 233rd Street contains a 2-story mixed used building with a commercial office on the first floor and 2 residential units on the second floor. The first-floor commercial tenant is currently CASA Family Partnership (870-874 East 233rd St).

An air filtration system is being installed in the basement because this area represents the most likely location for potential exposure to subsurface vapor intrusion. Since the basement is the lowest occupied level of the building and is in closest proximity to the subsurface source, it has the greatest potential for vapor accumulation. The air filtration system is being implemented as a proactive measure to reduce the concentration of any vapors that may enter the indoor environment and to help maintain indoor air quality. Installing the system at the point of potential entry provides an effective means of mitigating exposure risks while supporting the protection of building occupants. In consultation with Airpura, four (4) C700 DLX are proposed to mitigate the basement level of 864-874 East 233rd Street of approximately 4500 sq.ft. Three filters will be placed in the basement of 862-868 East 233rd St, and one in the basement of 870-874 East 233rd St. In the basement of 862-868 East 233rd St, the air filters will be placed in the northwestern corner, northeastern corner, and southern central portions of the basement close to the perimeter of the building. In the basement of 870-874 East 233rdStreet the air filter will be

placed in the northern central portion of the building. Each C700 DLX air purifier contains 25 lbs. of coconut shell granulated activated carbon and in total will produce up to 3.4 air exchanges per hour of filtration on full speed. The specifications for the Airpura, C700 DLX is attached in Appendix A. Following at least 2 weeks after the installation of the air purifiers, indoor air sample will be collected at IA-3 through IA-9 and sampled for 24-hours per the protocols outlined in the Supplemental Remedial Work Plan dated March 10, 2022, and approved by NYSDEC on April 4th, 2022 (Figure 4).

3. Report Logs

Field logs will be completed during the course of this investigation. A field log will be completed on a daily basis which will describe all field activities including:

- Project number, name, manager, and address;
- The date and time;
- The weather conditions;
- On-site personnel and associated affiliations;
- Description of field activities; and
- Pertinent sample collection information including sample identification numbers, description of samples, location of sampling points, number of samples taken, method of sample collection and any factors that may affect its quality, time of sample collection, name of collector, and field screening results.

4. Construction Health and Safety Plan

The CHASP is included in Appendix B. The Site Safety Coordinator will be Yisong Yang. Remedial work performed under this IRMWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, such as 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the Site location before any remedial work begins. A safety

meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a logbook or specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

5. Community Air Monitor Plan

All work will be performed in compliance with the site-specific CAMP attached as Appendix C. The CAMP is designed to provide a measure of protection for the public and will be implemented during all ground intrusive activities such as the installation of soil vapor points. In order to effectively measure potential exposures and background levels, CAMP monitoring will include both upwind and downwind monitoring of the ground-intrusive work. CAMP monitoring stations will be updated periodically and / or when wind direction changes.

CAMP data will be provided as a subsection of the daily field reports. If an exceedance occurs the NYSDEC and NYSDOH will be informed via email within 2 hours. This email should include a description of the exceedance, the cause of the exceedance, a description of corrective actions taken, and a summary of the effectiveness of corrective actions, if any were taken.

6. Quality Assurance/Quality Control

6.1 Quality Assurance/Quality Control Procedures

QA/QC procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for this investigation. Field QA/QC procedures will be used (1) to document that samples are representative of actual conditions at the Site and (2) identify possible cross-contamination from field activities or sample transit. Laboratory QA/QC procedures and analyses will be used to demonstrate whether analytical results have been biased either by interfering compounds in the sample matrix, or by laboratory techniques that may have introduced systematic or random errors to the analytical process. A summary of the field and laboratory QA/QC procedures is provided below.

6.2 Field QA/QC

Field QA/QC will include the following procedures:

- Calibration of field equipment, including PID, on a daily basis;
- Use of dedicated and/or disposable field sampling equipment;
- Proper sample handling and preservation;

- Proper sample chain of custody documentation; and
- Completion of report logs.

The above procedures will be executed as follows:

- Disposable sampling equipment, including acetate sleeves, latex gloves, and disposable bailers (or sample tubing), will be used to minimize cross-contamination between samples;
- For each of the parameters analyzed, a sufficient sample volume will be collected to adhere to the specific analytical protocol, and provide sufficient sample for reanalysis if necessary;
- Because plasticizers and other organic compounds inherent in plastic containers may contaminate samples requiring organic analysis, samples will be collected via Summa® canisters.
- Samples will be analyzed prior to the expiration of the respective holding time for each analytical parameter to ensure the integrity of the analytical results.

6.3 Sample Custody

Sample handling in the field will conform to appropriate sample custody procedures. Field custody procedures include proper sample identification, chain-of-custody forms, and packaging and shipping procedures. Sample labels will be attached to all sampling bottles before field activities begin to ensure proper sample identification. Each label will identify the Site and sample location. Styrofoam or bubble wrap will be used to absorb shock and prevent breakage of sample containers. Ice or ice packs will be placed in between the plastic bags for sample preservation purposes.

After each sample is collected and appropriately identified, the following information will be entered into the chain-of-custody form (Appendix D):

- Site name;
- Sampler(s)' name(s) and signature(s);
- Names and signatures of persons involved in the chain of possession of samples;
- Sample number;
- Number of containers;
- Sample location;
- Date and time of collection;
- Type of sample, sample matrix and analyses requested;
- Preservation used (if any); and
- Any pertinent field data collected

The sampler will sign and date the "Relinquished" blank space prior to removing one copy of the custody form and sealing the remaining copies of the form in a Ziploc plastic bag taped to the underside of the sample cooler lid. The sample cooler will be sealed with tape prior to delivery or shipment to the laboratory.

6.4 Laboratory QA/QC

An ELAP-certified laboratory will be used for all sample analyses. The laboratory will follow the following QA/QC protocols. All samples will be delivered to the laboratory within 24 hours of sample collection. Samples will be received by laboratory personnel, who will inspect

the sample cooler(s) to check the integrity of the custody seals. The cooler(s) will then be opened, the samples unpackaged, and the information on the chain-of-custody form examined. If the shipped samples match those described on the chain-of-custody form, the laboratory sample custodian will sign and date the form on the next "Received" blank and assume responsibility for the samples. If problems are noted with the sample shipment, the laboratory custodian will sign the form and record problems in the "Remarks" box. The custodian will then immediately notify the Project Manager so appropriate follow-up steps can be implemented on a timely basis.

A record of the information detailing the handling of a particular sample through each stage of analysis will be maintained by the laboratory. The record will include:

- Job reference, sample matrix, sample number, and date sampled;
- Date and time received by laboratory, holding conditions, and analytical parameters;
- Extraction date, time and extractor's initials (if applicable), analysis date, time, and analyst's initials; and
- QA batch number, date reviewed, and reviewer's initials.

NYSDEC ASP Category B Data Deliverables will be submitted for all of the samples representing the final delineation of the nature and extent of contamination for a remedial investigation. Data validation packages and Data Usability Summary Reports (DUSRs) will be provided in the RIR to support the remedial investigation. The DUSRs for this project will be prepared by Jeri Rossi.

I, Jason Stewart certify that I am currently a Professional Engineer as defined in 6 NYCRR Part 375 and that this Pilot Test Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Feel free to contact me if you have any questions or comments concerning the above.

Very truly yours,

Signature: Jason Stewart Date: July 6, 2026

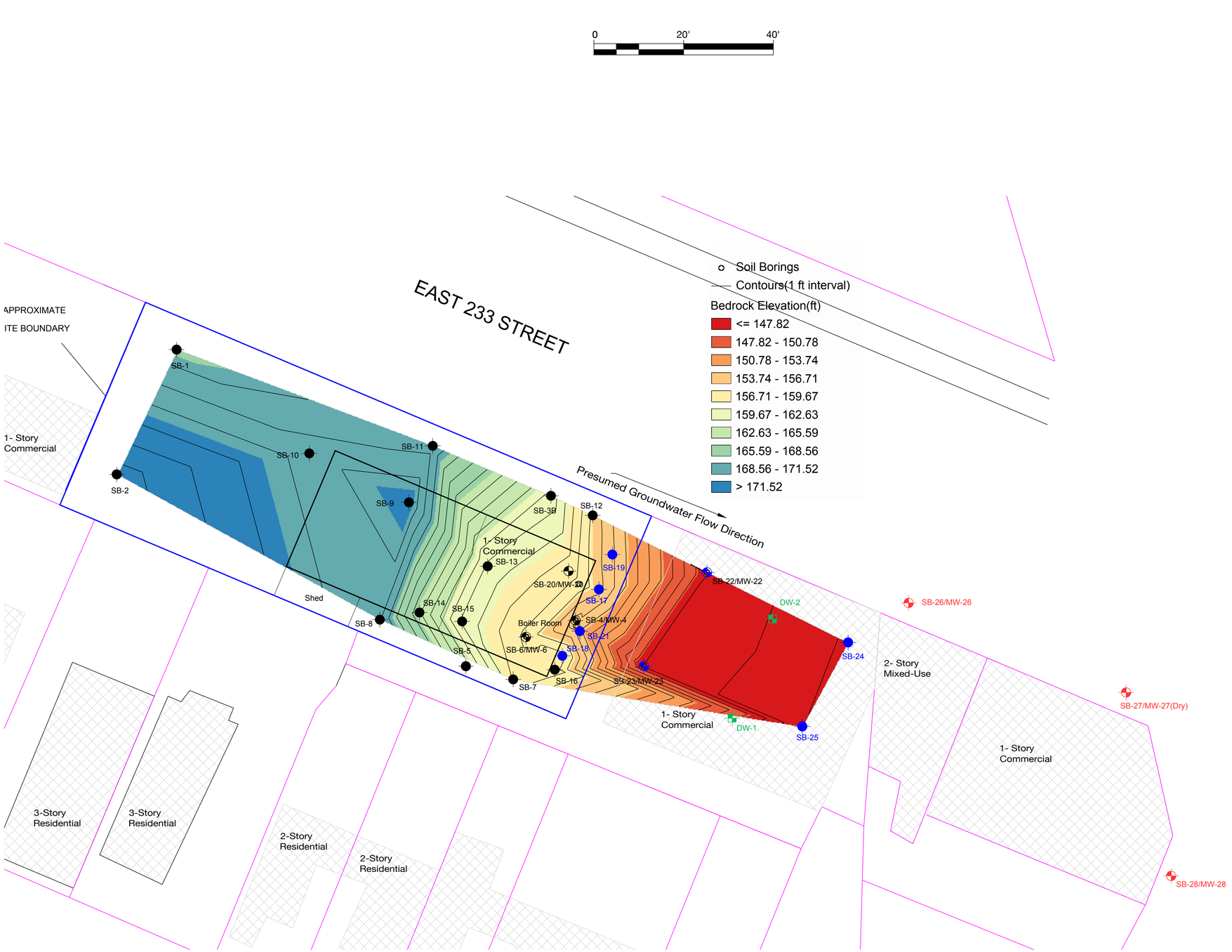
Jason Stewart, P.E.

Attachments:

Figure 1: Bedrock Surface Topography
Figure 2: As-Built Site Diagram
Figure 3: Soil Vapor Intrusion Spider Diagram
Figure 4: Indoor Air Mitigation Air Filters

Figure 1

Bedrock Surface Topography



Notes

Note: All elevations with respect to NAVD88 Geoid 12B

Legend	
	BCP Site Boundary
	Offsite Site Boundaries
	Soil Boring/Monitring Well
	Dewatering Well
	Soil Boring
	Remedial Investigation
	Supplemental RI
	IRM
	RAWP Scoping

Title

Bedrock Surface Topography

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants

200 Broadhollow Road-Suite 207
Melville, New York 11747

Project Name and Address

Jay Drycleaners Site
840 E 233rd St
Bronx, NY
10466

Project	Figure
BCP C203119	1
Date: 1/8/2025	
Scale: As Noted	

Figure 2

As-Built Site Diagram

Notes

Title
As-Built Site Diagram

No.	Revision/Issue	Date

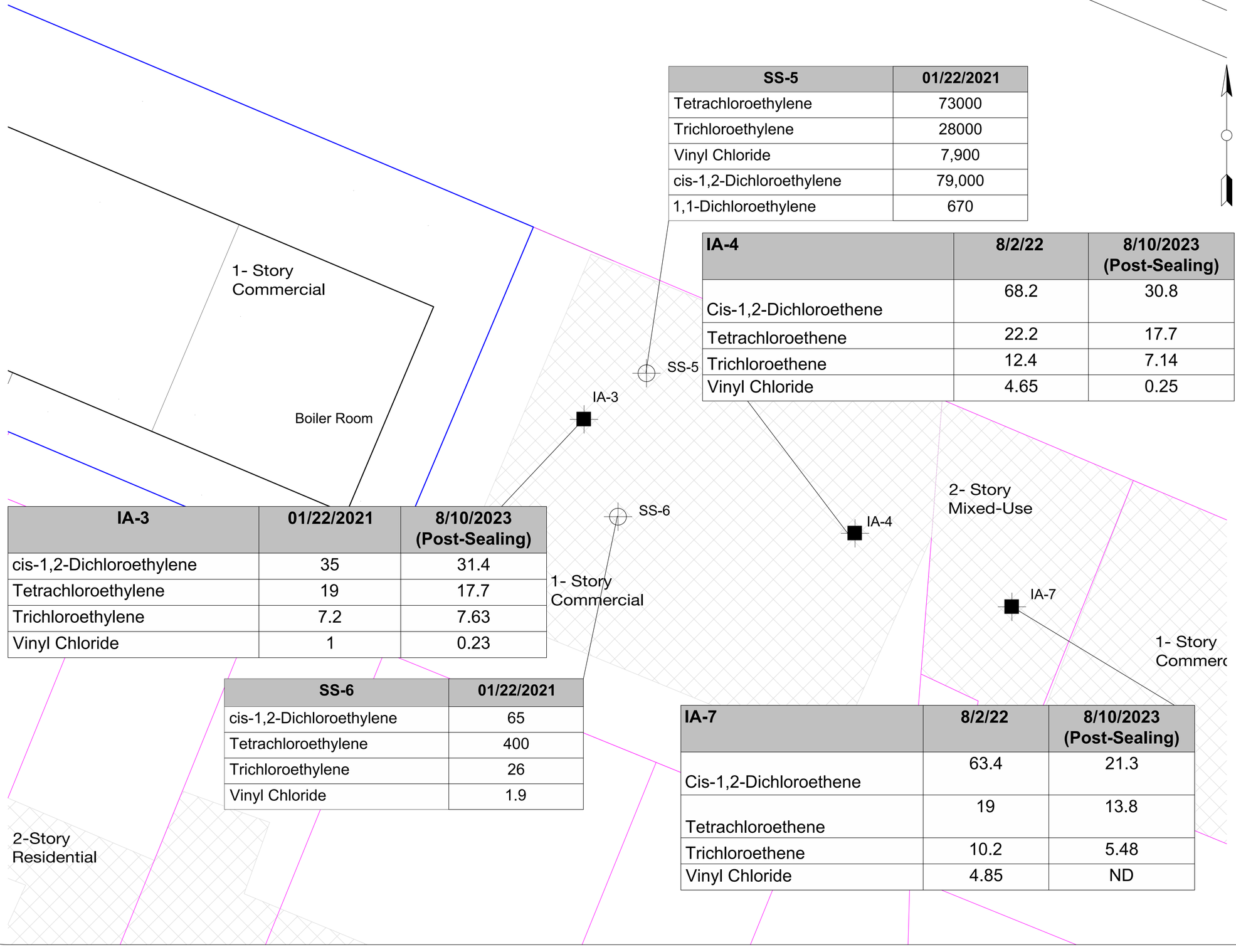
Advanced Cleanup Technologies
Environmental Consultants
228 Park Ave S PMB 34864
New York, New York 10003

Project Name and Address
Jay Dry Cleaners
840 E 233rd St
Bronx, NY
10466

Project: BCP Site C203119
Date: 8/21/2024
Scale: As Noted
Figure: 2

Figure 3

Soil Vapor Intrusion Spider Diagram



SS-5	01/22/2021
Tetrachloroethylene	73000
Trichloroethylene	28000
Vinyl Chloride	7,900
cis-1,2-Dichloroethylene	79,000
1,1-Dichloroethylene	670

IA-4	8/2/22	8/10/2023 (Post-Sealing)
Cis-1,2-Dichloroethene	68.2	30.8
Tetrachloroethene	22.2	17.7
Trichloroethene	12.4	7.14
Vinyl Chloride	4.65	0.25

IA-3	01/22/2021	8/10/2023 (Post-Sealing)
cis-1,2-Dichloroethylene	35	31.4
Tetrachloroethylene	19	17.7
Trichloroethylene	7.2	7.63
Vinyl Chloride	1	0.23

SS-6	01/22/2021
cis-1,2-Dichloroethylene	65
Tetrachloroethylene	400
Trichloroethylene	26
Vinyl Chloride	1.9

IA-7	8/2/22	8/10/2023 (Post-Sealing)
Cis-1,2-Dichloroethene	63.4	21.3
Tetrachloroethene	19	13.8
Trichloroethene	10.2	5.48
Vinyl Chloride	4.85	ND

Notes

Compound unit: ug/m^3

Legend

- BCP Site Boundary
- Offsite Site Boundaries
- Soil Boring/Monitring Well
- Discrete Water Sample
- Soil Boring
- Soil Vapor
- Outdoor Air
- Basement Indoor Air
- Floor 1 Indoor Air
- IRM
- IRM Addendum

Title

Soil Vapor Intrusion Spider Diagram

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants
200 Broadhollow Road-Suite 207
Melville, New York 11747

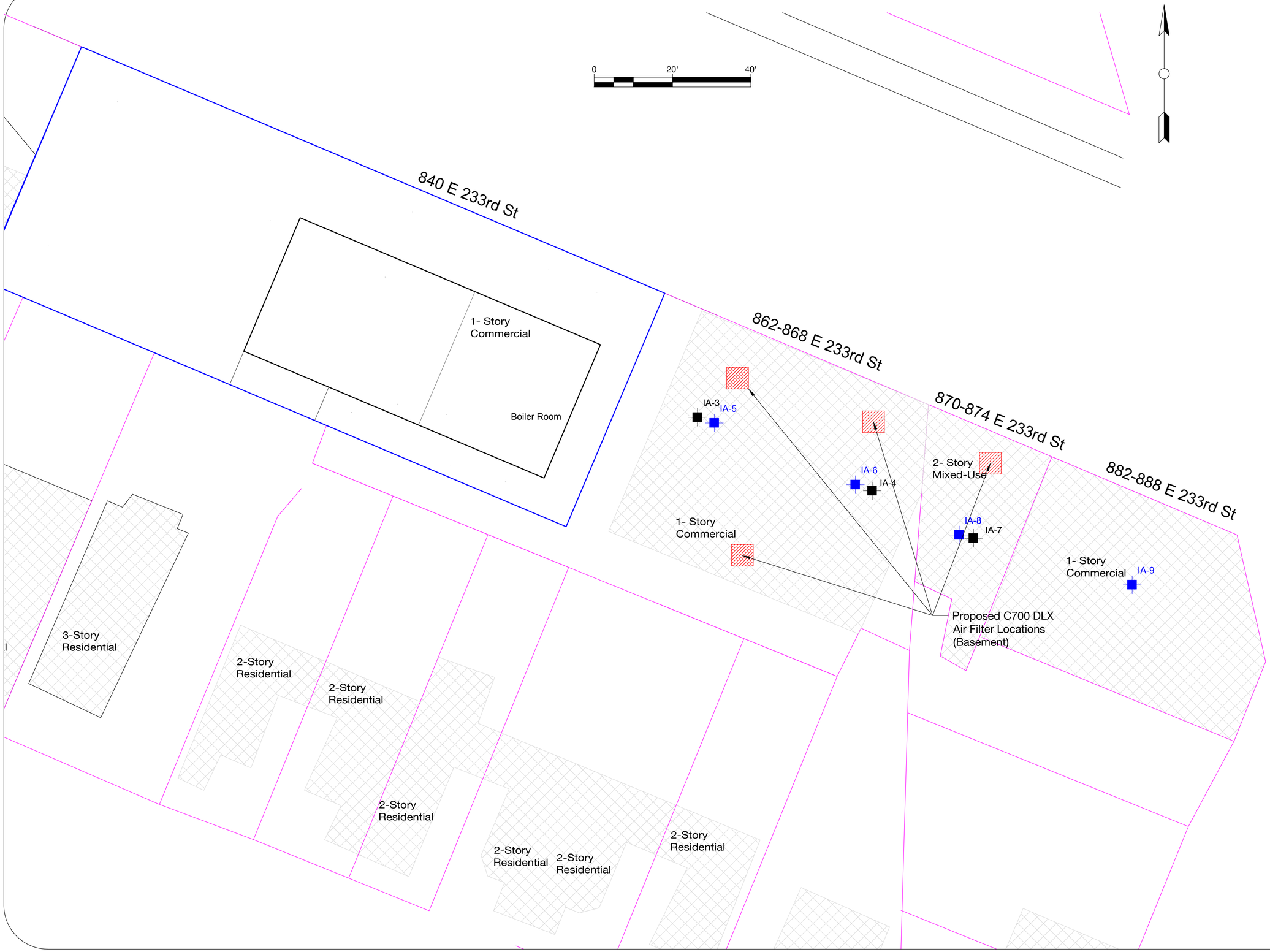
Project Name and Address

840 East 233rd Street
Bronx, NY 10466

Project	Figure
9628-BXNY	3
Date: 3/10/2025	
Scale: As Noted	

Figure 4

Indoor Air Mitigation Air Filters



Notes

Legend

	BCP Site Boundary
	Offsite Site Boundaries
	Basement Indoor Air Sample
	First Floor Indoor Air Sample
	Basement Indoor Air Filter

Title

Indoor Air Mitigation
Air Filters

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants
200 Broadhollow Road-Suite 207
Melville, New York 11747

Project Name and Address

Jay Drycleaners Site
840 E 233rd St
Bronx, NY
10466

Project	Figure
BCP C203119	4
Date: 4/10/2026	
Scale: As Noted	

Figure 5

Groundwater Exceedance Diagram

MW-20	05/16/2022
1,1-Dichloroethylene	5.6
1,2,4-Trimethylbenzene	6.9
cis-1,2-Dichloroethylene	4,400
Naphthalene	11
Tetrachloroethylene	340
Trichloroethylene	1,200
Vinyl Chloride	200

MW-4	01/05/2021
1,2,4-Trimethylbenzene	5.4
cis-1,2-Dichloroethylene	21000
Isopropylbenzene	16
n-Butylbenzene	8.8
p-Isopropyltoluene	5.6
sec-Butylbenzene	16
Tetrachloroethylene	2600
trans-1,2-Dichloroethylene	460
Trichloroethylene	780
Vinyl Chloride	11000
Phenanthrene	50.3
Manganese	9520
Sodium	42700
Perfluoroheptanoic acid (PFHpA)	117
Perfluorooctanesulfonic acid (PFOS)	812
Perfluorooctanoic acid (PFOA)	135
Perfluoropentanoic acid (PFPeA)	215
Total PCBs	0.219

MW-22	05/16/2022
1,1-Dichloroethylene	5.99
Benzene	1.04
Chloroethane	23.3
cis-1,2-Dichloroethylene	4,620
Tetrachloroethylene	294
trans-1,2-Dichloroethylene	24.5
Trichloroethylene	444
Vinyl Chloride	222

MW-6	01/05/2021
cis-1,2-Dichloroethylene	25
sec-Butylbenzene	8.4
Tetrachloroethylene	13
Vinyl Chloride	7.6
Manganese	2370
Sodium	27300
Perfluorooctanesulfonic acid (PFOS)	211
Perfluorooctanoic acid (PFOA)	50.2

DW-2	03/09/2023
1,1-Dichloroethylene	61.8
Benzene	1.32
Chloroethane	9.22
cis-1,2-Dichloroethylene	22,100
Tetrachloroethylene	198
trans-1,2-Dichloroethylene	144
Trichloroethylene	196
Vinyl Chloride	4,640

MW-26	11/16/2023
cis-1,2-Dichloroethene	600
Tetrachloroethene	290
Trichloroethene	110
Vinyl chloride	14

MW-28	11/16/2023
cis-1,2-Dichloroethene	ND
Tetrachloroethene	0.26
Trichloroethene	ND
Vinyl chloride	ND

MW-23	05/16/2022
1,1-Dichloroethylene	70.7
cis-1,2-Dichloroethylene	31,000
o-Xylene	5.31
Tetrachloroethylene	3,460
trans-1,2-Dichloroethylene	87
Trichloroethylene	3,360
Vinyl Chloride	1,710
Xylenes, Total	6.54

SP-1	04/25/2022
1,1,1-Trichloroethane	250
cis-1,2-Dichloroethylene	10,000
Methylene chloride	430
Tetrachloroethylene	830
trans-1,2-Dichloroethylene	46
Trichloroethylene	920
Vinyl Chloride	660

DW-1	03/09/2023
Tetrachloroethylene	5.95

1- Story Commercial

Boiler Room

SB-6/MW-6

SB-4/MW-4

SB-22/MW-22

SB-26/MW-26

SP-1

DW-2

SB-23/MW-23

DW-1

1- Story Commercial

2- Story Mixed-Use

SB-27/MW-27(Dry)

1- Story Commercial

SB-2

ory
dential

2-Story Residential

2-Story Residential

2-Story Residential

2-Story Residential

2-Story Residential

2-Story Residential

Notes

Yellow highlight value exceed the NYSDEC TOGS Standards and Guildance-GA

Compound unit: ug/L
PFAS Unit: ng/L

Legend

	BCP Site Boundary
	Offsite Site Boundaries
	Soil Boring/Monitring Well
	Discrete Water Sample
	Soil Boring
	Soil Vapor
	Outdoor Air
	Basement Indoor Air
	Floor 1 Indoor Air
	Remedial Investigation
	Supplemental RI
	IRM
	RAWP Scoping

Title

Groundwater Exceedance Diagram

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants

200 Broadhollow Road-Suite 207
Melville, New York 11747

Project Name and Address

840 East 233rd Street
Bronx, NY 10466

Project	Figure
9628-BXNY	5
Date: 10/14/2024	
Scale: As Noted	

Figure 6

Tetrachloroethylene GW Contour Diagram

0 20' 40'

bronx_contours
MW_PCE
0.0000 - 500.0000
500.0000 - 1000.0000
1000.0000 - 1500.0000
1500.0000 - 2000.0000
2000.0000 - 2500.0000
2500.0000 - 3000.0000
3000.0000 - 3500.0000
MW

1- Story
Commercial
MW-20(340)
MW-22(294)
B-22/MW-22
SB-26/MW-26
DW-2(198)
DW-2
MW-4(2,600)
SB-4/MW-4
Boiler Room
MW-6 (13)
SB-6/MW-6
SB-24
MW-23 (3,460)
SB-23/MW-23
2- Story
Mixed-Use
DW-1(6)
DW-1
SB-25
SB-27/MW-27(Dry)
1- Story
Commercial
2-Story
Residential
2-Story
Residential
SB-28/MW-28

Notes

Compound unit: ug/L
Monitoring Wells MW-26 - MW-28 were not included in contouring

Legend

	BCP Site Boundary
	Offsite Site Boundaries
	Soil Boring/Monitring Well
	Discrete Water Sample
	Soil Boring
	Soil Vapor
	Outdoor Air
	Basement Indoor Air
	Floor 1 Indoor Air
	Remedial Investigation
	Supplemental RI
	IRM
	RAWP Scoping

Title

Tetrachloroethylene
GW Contour Diagram

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants
200 Broadhollow Road-Suite 207
Melville, New York 11747

Project Name and Address

840 East 233rd Street
Bronx, NY 10466

Project: 9628-BXNY	Figure: 6
Date: 1/24/2024	
Scale: As Noted	

Figure 7

Trichloroethylene GW Contour Diagram

0 20' 40'

bronx_contours
MW
MW_TCE
0.0000 - 500.0000
500.0000 - 1000.0000
1000.0000 - 1500.0000
1500.0000 - 2000.0000
2000.0000 - 2500.0000
2500.0000 - 3000.0000
3000.0000 - 3500.0000

1- Story Commercial
MW-20(1200)
MW-22(444)
B-22/MW-22
MW-4(780)
SB-4/MW-4
Boiler Room
MW-6 (ND)
SB-6/MW-6
DW-2(196)
DW-2
SB-26/MW-26
SB-24
MW-23 (3,360)
SB-23/MW-23
ercial
2- Story Mixed-Use
DW-1(ND)
DW-1
SB-25
SB-27/MW-27(Dry)
1- Story Commercial
SB-28/MW-28
2-Story Residential
2-Story Residential

Notes

Compound unit: ug/L
Monitoring Wells MW-26 - MW-28 were not included in contouring

Legend

	BCP Site Boundary
	Offsite Site Boundaries
	Soil Boring/Monitring Well
	Discrete Water Sample
	Soil Boring
	Soil Vapor
	Outdoor Air
	Basement Indoor Air
	Floor 1 Indoor Air
	Remedial Investigation
	Supplemental RI
	IRM
	RAWP Scoping

Title

Trichloroethylene GW Contour Diagram

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants
200 Broadhollow Road-Suite 207
Melville, New York 11747

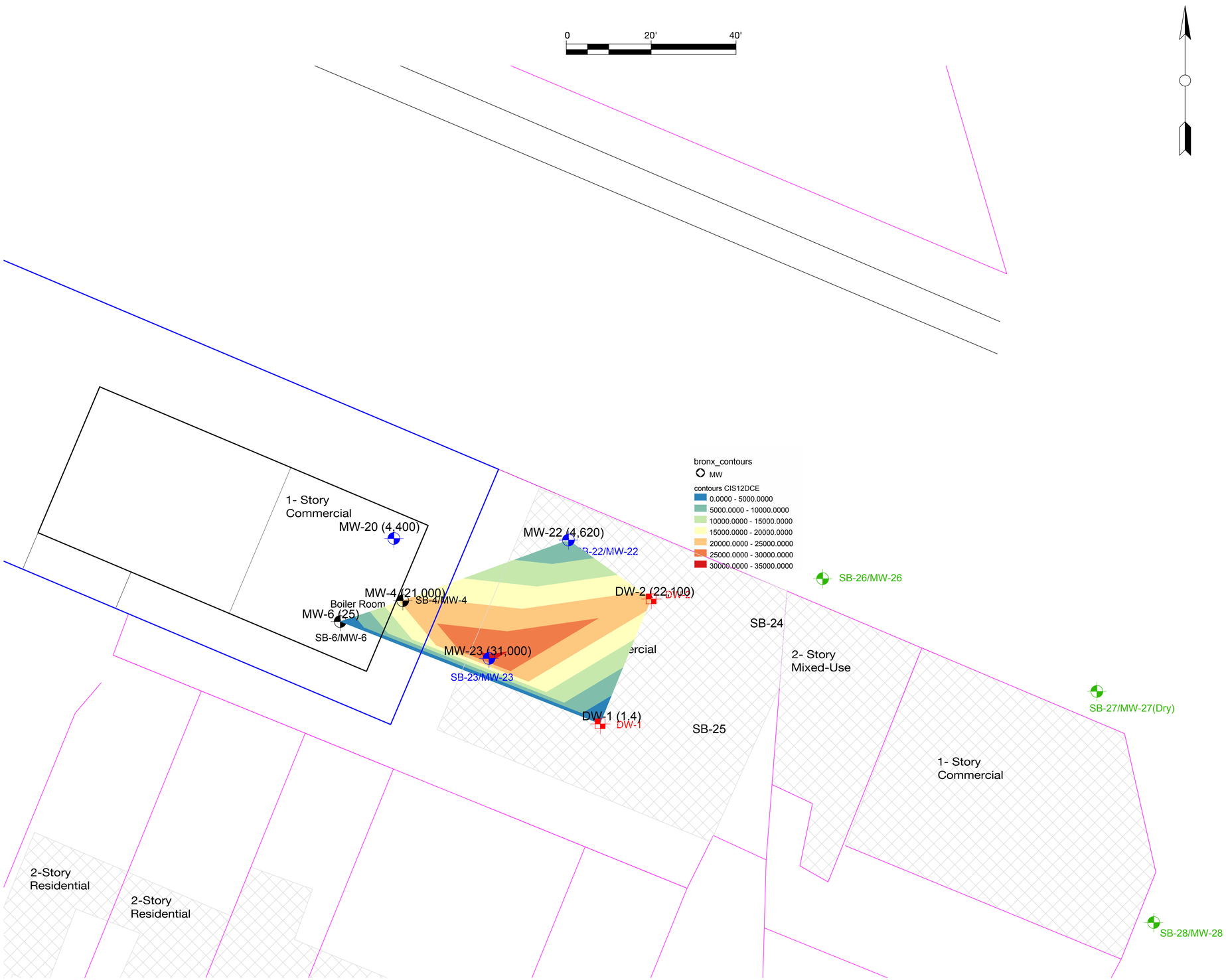
Project Name and Address

840 East 233rd Street
Bronx, NY 10466

Project	Figure
9628-BXNY	7
Date: 1/24/2024	
Scale: As Noted	

Figure 8

cis-1,2-Dichloroethylene GW Contour Diagram



Notes

Compound unit: ug/L
Monitoring Wells MW-26 - MW-28 were not included in contouring

Legend

	BCP Site Boundary
	Offsite Site Boundaries
	Soil Boring/Monitring Well
	Discrete Water Sample
	Soil Boring
	Soil Vapor
	Outdoor Air
	Basement Indoor Air
	Floor 1 Indoor Air
	Remedial Investigation
	Supplemental RI
	IRM
	RAWP Scoping

Title

cis-1,2-Dichloroethylene
GW Contour Diagram

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants
200 Broadhollow Road-Suite 207
Melville, New York 11747

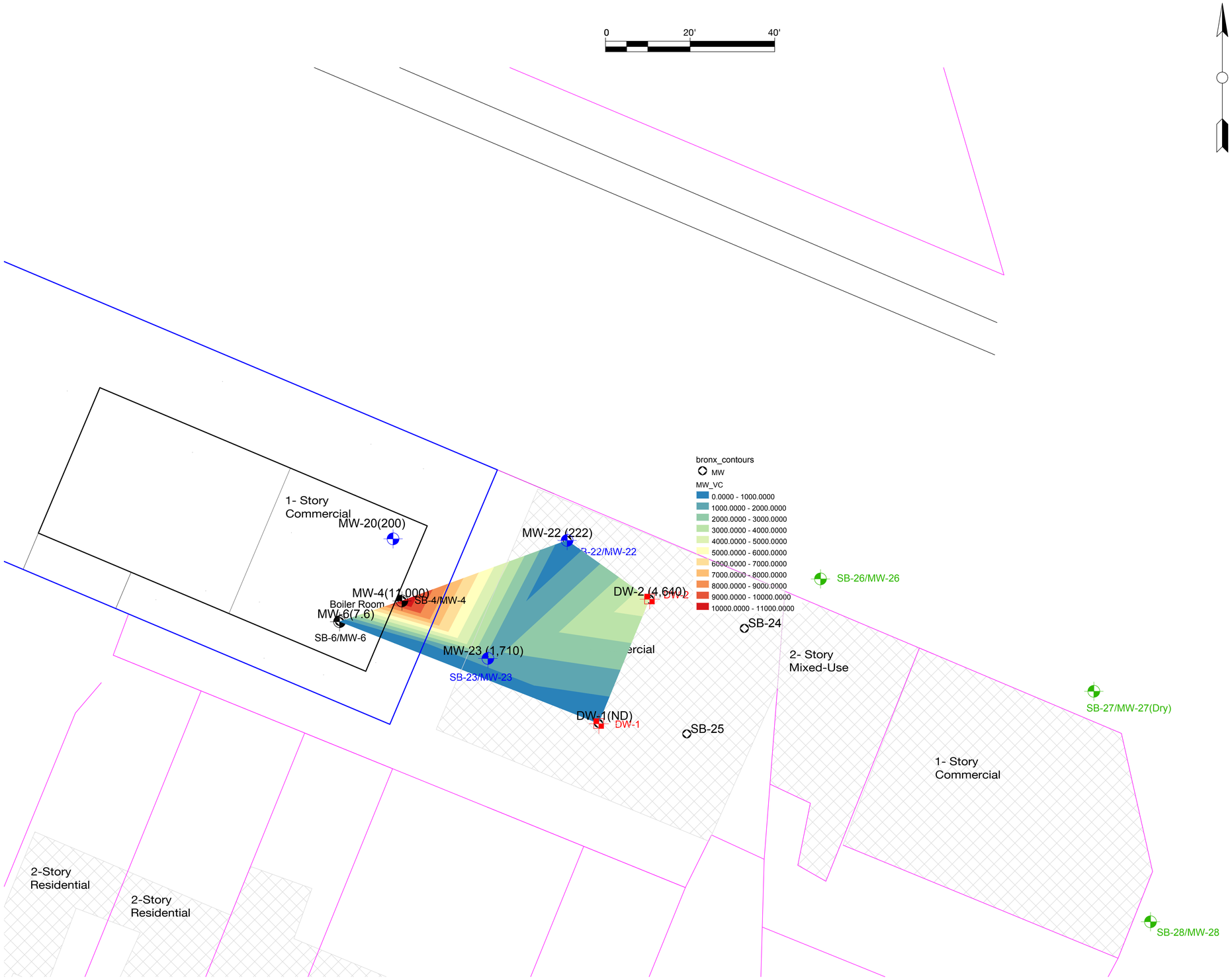
Project Name and Address

840 East 233rd Street
Bronx, NY 10466

Project	Figure
9628-BXNY	8
Date: 1/24/2024	
Scale: As Noted	

Figure 9

Vinyl Chloride GW Contour Diagram



Notes

Compound unit: ug/L
Monitoring Wells MW-26 - MW-28 were not included in contouring

Legend

	BCP Site Boundary
	Offsite Site Boundaries
	Soil Boring/Monitring Well
	Discrete Water Sample
	Soil Boring
	Soil Vapor
	Outdoor Air
	Basement Indoor Air
	Floor 1 Indoor Air
	Remedial Investigation
	Supplemental RI
	IRM
	RAWP Scoping

Title

Vinyl Chloride GW Contour Diagram

No.	Revision/Issue	Date

Advanced Cleanup Technologies
Environmental Consultants
200 Broadhollow Road-Suite 207
Melville, New York 11747

Project Name and Address

840 East 233rd Street
Bronx, NY 10466

Project: 9628-BXNY	Figure: 9
Date: 1/24/2024	
Scale: As Noted	

Appendix A : AirPura C700 DLX

Airpura AIR PURIFIERS

C700DLX

SPECIFIC CHEMICALS - VOCS

REMOVE SPECIFIC AIRBORNE CHEMICALS INCLUDING VOLATILE ORGANIC COMPOUNDS

THE AIRPURA C700DLX

Available in White / Black / Cream

THE AIRPURA LIMITED WARRANTY

5 years parts / 10 years labor

THE AIRPURA C700DLX ENHANCED CHEMICAL ABATEMENT UNIT OFFERS YOU:

- **26 LB ENHANCED IMPREGNATED ACTIVATED CARBON BED** Adsorbs airborne chemicals, gases and odors.
- **HEPA-BARRIER POST FILTER** Traps particles after the carbon bed.
- **635 CFM INTEGRATED FAN / MOTOR** Largest CFM available in a portable unit.
- **VARIABLE SPEED MOTOR** Gives you flexible air flow options.
- **PROPER CONTACT TIMES FOR EFFECTIVEFILTRATION** Correctly calibrated air flow /bed depth for efficient adsorbtion.
- **PRESSURE SEALED FILTER CHAMBER** Unique pressure seal on the filter chamber ensures all contaminants are filtered and non escape.

OVER 4000 CHEMICALS CAN BE REMOVED

Carbon blends are available to deal with over 4000 airborne chemicals including:

Ammonias
Nitrous dioxide
Nitrous trioxide
Monoethylamine
Hydrogen Sulfide
Mercury Vapors
Chlorine dioxide
Hydrogen Bromide
Sulfur dioxide
Hydrogen fluoride
Hydrogen chloride
Benzene
Methylene Chloride
Radioactive Iodine
Toulene
Napthene
Pasticides
Chlorine
Mold Mycotoxins

FILTER LIFE

CARBON FILTER	PREFILTER	HEPA FILTER
2 YEARS	12 MONTHS	3-5 YEARS

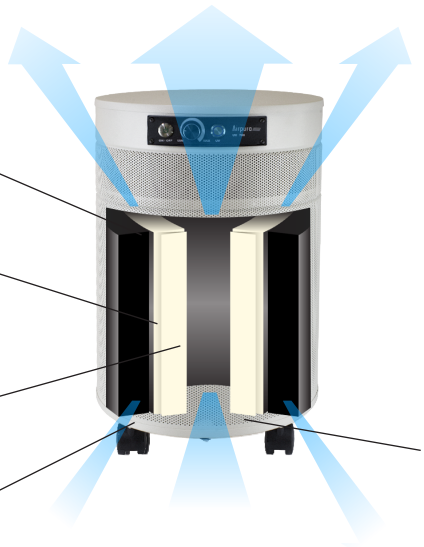
EXPERIENCE THE EVOLUTION OF CLEAN AND HEALTHY AIR

Airpura AIR PURIFIERS

C700DLX

SPECIFIC CHEMICALS - VOCS

FILTRATION SYSTEM



Cleanable prefilter
Vacuum through grill and change every 12 months

26 lbs enhanced carbon filter
Absorbs VOCs and specific airborne chemicals

HEPA-Barrier post filter
Traps carbon dust and particles

Pressure seals
Ensures integrity of filter chamber

Felt gaskets
No rubber off gassing.

TECHNICAL SPECIFICATIONS

ODOR, AIRBORNE CHEMICAL CONTROL
26 lbs super enhanced activated carbon
13" H x 13" OD x 7.5" ID

CARBON BED
2" deep x 570 sq" surface

AIRFLOW
635 CFM (FREEFLOW)
450 CFM (WITH FILTERS)
More cfm than any other homen unit available

PRE-FILTER
570 sq in x 1 in deep

SIZE
23" x 15"

WEIGHT
45 lbs total

VOLTAGE OPTIONS
115 or 220 volts

WATTS
120 on high / 40 on low

SOUND LEVEL
30.2 db on low (at 6 feet)
63.0 db on high (635 cfm)

ETL CERTIFIED
no 113 ANSI / UL 507

UNIQUE FEATURES

ALL METAL HOUSING ensures no plastic vapors are emitted.

MOTOR OUT OF THE AIR FLOW. Most air purifiers blow the clean air over the motor and pick up impurities, while our purifiers do not.

ELECTRICAL PARTS IN A SEALED CHAMBER OUT OF THE AIRFLOW. Increases safety and prevents off-gassing

PRESSURE SEALED FILTER CHAMBER prevents leakage of polluted air around filters.

FELT GASKETS SEAL THE FILTER CHAMBER. Maximize filtration with no rubber off-gassing found with other filters.

CLEAN MODERN APPEARANCE fits in with any decor.

LOW NOISE LEVEL (at 6 feet) 30.2 db on low 63 db on high (635 cfm).

SPECIFICALLY DESIGNED
TO REMOVE SPECIFIC AIRBORNE CHEMICALS AND VOCS

DWELL TIME
For best results the correct dwell time of the pollutants over the enhanced carbon bed is vital. The 560 CFM impeller/motor combined with the fixed speed control and unimpeded airflow of the Airpura 700 series allows you to set the airflow precisely and achieve the results you need.

EXPERTISE YOU CAN CALL ON
Airpura indoor air quality experts can offer you a solution to most airborne chemical problems. Contact your Airpura dealer or call us directly to discuss your needs.

YOUR AIRPURA™ DEALER

EXPERIENCE THE EVOLUTION OF CLEAN AND HEALTHY AIR

Appendix B

Health and Safety Plan

SITE-SPECIFIC HEALTH AND SAFETY PLAN

This plan presents the site-specific health and safety information. This information is supplemented by Advanced Cleanup Technologies, Inc.'s Corporate Health and Safety policies and procedures which are consistent with Occupational Safety and Health Administration (OSHA) 1910.120.

Project Information:

Project Name:	Jay Dry Cleaners Site (C203119) 840 East 233rd Street, Bronx, NY 10466
Telephone:	Not available
Date of HASP Preparation	August 2018
Dates of Field Investigation:	September through November 2018
Project Tasks:	1. Install soil borings and monitoring wells 2. Conduct soil and groundwater sampling 3. Investigate soil vapor and ambient air quality

Project Organization:

	Name	**Telephone**
Project Director:	Paul Stewart	(516) 441-5800
Project Manager:	Jason Stewart	(516) 441-5800
Health and Safety Officer (HSO):	Yisong Yang	(516) 441-5800
Field Operations Manager:	Timothy Young	(516) 441-5800
Field Subcontractors:	None	

Medical Assistance:

Hospital:	Montefiore Medical Center, Wakefield Campus 600 E 233rd Street, Bronx, NY 10466
Telephone:	(718) 920-9000
Directions: (see attached Route to Hospital Figure)	• Head north toward E 233rd Street • Turn left onto E 233rd Street • Turn left on Carpenter Avenue • Turn right • Turn left • Arrive at Montefiore Medical Center, Wakefield Campus

Emergency Contacts:

Agency/Facility	Telephone	Emergency Telephone
EMS - Ambulance		911
Police Department	(718) 920-1211	911
Fire Department	(718) 999-2000	911
Hospital Emergency Room	(718) 920-9000	911
Poison Control Center	1-800-222-1222	911

Site Description:

Developed with building and asphalt/concrete paving.

Contaminants of Concern:

Primarily tetrachloroethene.
Other volatile organic compounds detected at the site include trichloroethene and light hydrocarbons.

Physical Hazards:

Noise, slips, trips, falls; heavy equipment and vehicular traffic, heat or cold stress

Biological Hazards:

Rabid animals, stinging insects (weather dependent)

Electrical Hazards:

Overhead and underground power lines, lightning, electrical equipment

Permissible Exposure Limits and Primary Health Hazards for Primary Contaminants of Concern:

Chemical	ACGIH TL	ACGIH STEL/ Ceiling	OSHA PEL	OSHA Ceiling/ST Conc. (ppm)	Primary Health Hazard
Tetrachloroethene (PCE)	25	100	100	200	Liver, kidneys, eyes, upper respiratory system, central nervous system
Trichloroethene (TCE)	50	100	100	200	Respiratory system, heart, liver, kidneys, central nervous system, skin

Summary of Characteristics and Health Hazards:

Potential Sources	Soil, groundwater, air
Contaminant Characteristics	Toxic
Form of Hazards	Dusts, liquids, vapors
Routes of Exposure	Inhalation, ingestion, skin, eyes

Level of Protection:

Modified Level D

Monitoring:

VOCs will be monitored in the work zone during intrusive activities. A Community Air Monitoring Plan will be implemented in accordance with the attached protocol.

Monitoring Action Levels using a Photoionization Detector:

Background	Level D
Background to 5 units* above background in breathing zone	Halt work and allow area to ventilate prior to resuming work. Should levels persist, upgrade to Level C protection if required upon approval of HSO.
Greater than 5 units* above background in breathing zone	Halt work, evacuate area and allow area to ventilate prior to resuming work. Evaluate conditions.

* Units equal to total ionizable organic/inorganic vapor/gases and reading sustained for 1 minute or longer.

Site Control Measures:

Exclusion zone will be immediate area of sampling activities and distance of direct push mast.
Contaminant reduction zone will be onsite area to be specified adjacent to temporary decontamination pad.

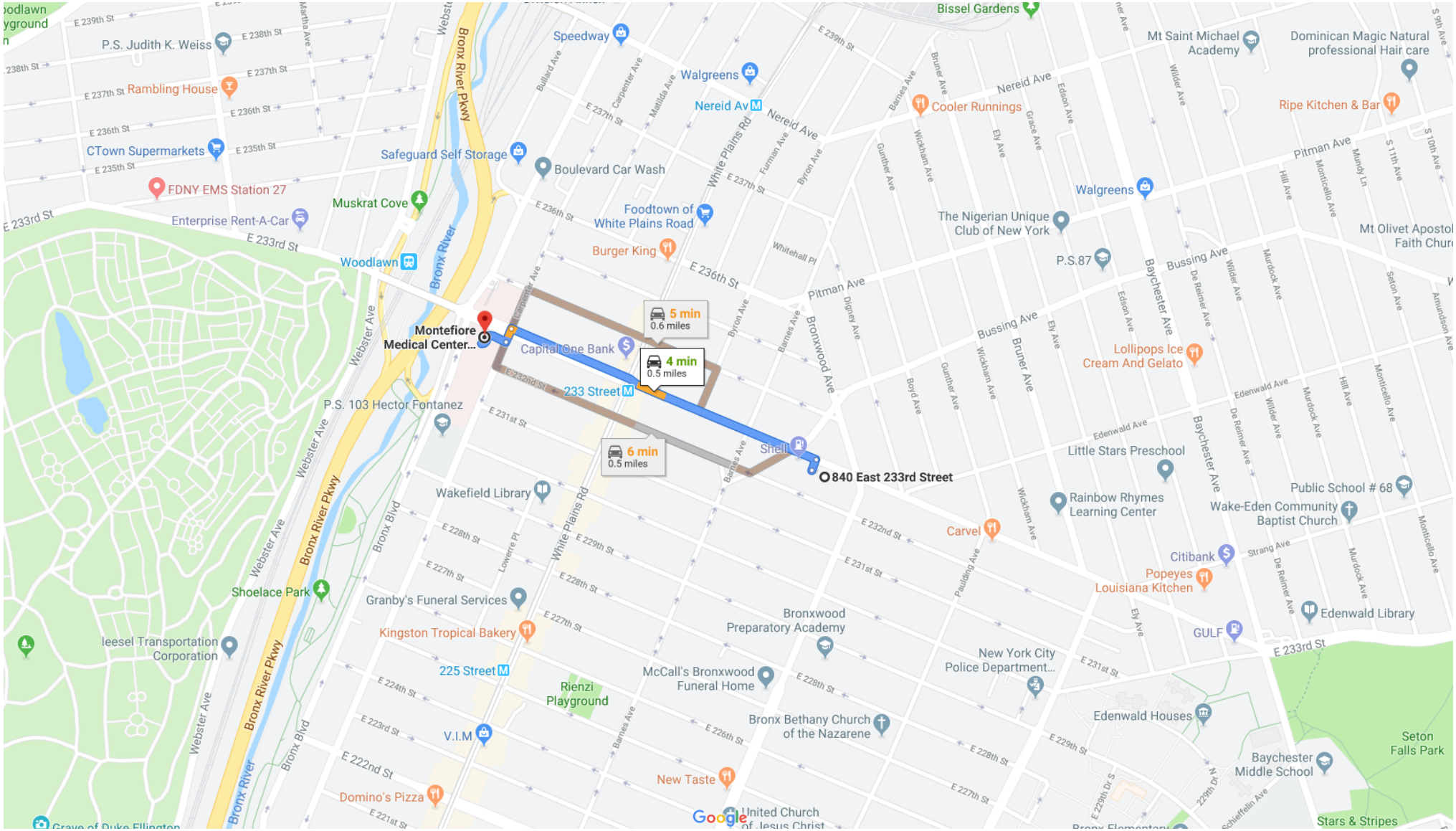
General Emergency Procedures:

Substance	**Exposure Symptom**	**First Aid**
PCE, TCE	- Dermal irritation - Dizziness, nausea	- Rinse affected area with water - Ventilate, artificial respiration

Decontamination:

- equipment decontamination for downhole equipment to be conducted within temporary decontamination pad - personal decontamination to be conducted after equipment decontamination

Route to Hospital


Montefiore Medical Center...
840 East 233rd Street
5 min
0.6 miles
4 min
0.5 miles
6 min
0.5 miles
Capital One Bank
233 Street
Shell
Bronx River Pkwy
Bronx River
Webster Ave
White Plains Rd
Nereid Av
Speedway
Walgreens
Boulevard Car Wash
Safeguard Self Storage
Foodtown of White Plains Road
Burger King
Muskrat Cove
Woodlawn
Enterprise Rent-A-Car
FDNY EMS Station 27
CTown Supermarkets
Rambling House
P.S. Judith K. Weiss
Bissel Gardens
Mt Saint Michael Academy
Dominican Magic Natural professional Hair care
Ripe Kitchen & Bar
Cooler Runnings
Walgreens
The Nigerian Unique Club of New York
P.S.87
Lollipops Ice Cream And Gelato
Little Stars Preschool
Rainbow Rhymes Learning Center
Public School # 68
Wake-Eden Community Baptist Church
Carvel
Citibank
Popeyes Louisiana Kitchen
Edenwald Library
GULF
New York City Police Department...
Edenwald Houses
Baychester Middle School
Seton Falls Park
Stars & Stripes
Wakefield Library
P.S. 103 Hector Fontanez
Shoelace Park
Granby's Funeral Services
Kingston Tropical Bakery
Bronxwood Preparatory Academy
McCall's Bronxwood Funeral Home
Rienzi Playground
225 Street
V.I.M
Bronx Bethany Church of the Nazarene
New Taste
Domino's Pizza
United Church of Jesus Christ
Google

SAFETY DATA SHEET

Creation Date 10-Dec-2009 **Revision Date** 23-Jan-2018 **Revision Number** 5

1. Identification

Product Name **Tetrachloroethylene**

Cat No. : **AC445690000; ACR445690010; AC445690025; AC445691000**

CAS-No 127-18-4
Synonyms Perchloroethylene

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause drowsiness or dizziness
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Tetrachloroethylene	127-18-4	>95

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Move to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects	None reasonably foreseeable. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode when heated.

Hazardous Combustion Products
Chlorine Hydrogen chloride gas Phosgene
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	0	0	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation.
Environmental Precautions	Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Ensure adequate ventilation. Avoid ingestion and inhalation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Tetrachloroethylene	TWA: 25 ppm STEL: 100 ppm	(Vacated) TWA: 25 ppm (Vacated) TWA: 170 mg/m^3 Ceiling: 200 ppm TWA: 100 ppm	IDLH: 150 ppm	TWA: 100 ppm TWA: 670 mg/m^3 TWA: 200 ppm TWA: 1250 mg/m^3 STEL: 200 ppm STEL: 1340 mg/m^3

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Characteristic, sweet
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-22 °C / -7.6 °F
Boiling Point/Range	120 - 122 °C / 248 - 251.6 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	6.0 (Ether = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	18 mbar @ 20 °C
Vapor Density	No information available
Density	1.619
Specific Gravity	1.625
Solubility	0.15 g/L water (20°C)
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	> 150°C
Viscosity	0.89 mPa s at 20 °C
Molecular Formula	C2 Cl4
Molecular Weight	165.83

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat. Exposure to moist air or water.

Incompatible Materials Strong acids, Strong oxidizing agents, Strong bases, Metals, Zinc, Amines, Aluminium

Hazardous Decomposition Products Chlorine, Hydrogen chloride gas, Phosgene

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Tetrachloroethylene	LD50 = 2629 mg/kg (Rat)	LD50 > 10000 mg/kg (Rat)	LC50 = 27.8 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Tetrachloroethylene	127-18-4	Group 2A	Reasonably Anticipated	A3	X	A3

IARC: (International Agency for Research on Cancer)

NTP: (National Toxicity Program)

ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)
Mexico - Occupational Exposure Limits - Carcinogens
A1 - Confirmed Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen
A4 - Not Classifiable as a Human Carcinogen
A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)

STOT - repeated exposure Kidney Liver Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Tetrachloroethylene	Group II Chemical	Not applicable	Not applicable

Other Adverse Effects Tumorigenic effects have been reported in experimental animals.

12. Ecological information

Ecotoxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Tetrachloroethylene	EC50: > 500 mg/L, 96h (Pseudokirchneriella subcapitata)	LC50: 4.73 - 5.27 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 11.0 - 15.0 mg/L, 96h static (Lepomis macrochirus) LC50: 8.6 - 13.5 mg/L, 96h static (Pimephales promelas) LC50: 12.4 - 14.4 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 100 mg/L 24 h EC50 = 112 mg/L 24 h EC50 = 120.0 mg/L 30 min	EC50: 6.1 - 9.0 mg/L, 48h Static (Daphnia magna)

Persistence and Degradability Insoluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility. Will likely be mobile in the environment due to its volatility.

Component	log Pow
Tetrachloroethylene	2.53 - 2.88

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Tetrachloroethylene - 127-18-4	U210	-

14. Transport information

DOT

UN-No UN1897
Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Packing Group III

TDG

UN-No UN1897

Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Packing Group III

IATA
UN-No UN1897
Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Packing Group III

IMDG/IMO
UN-No UN1897
Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Subsidiary Hazard Class P
Packing Group III

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Tetrachloroethylene	X	X	-	204-825-9	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Tetrachloroethylene	127-18-4	>95	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Tetrachloroethylene	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Tetrachloroethylene	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Tetrachloroethylene	100 lb 1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Tetrachloroethylene	127-18-4	Carcinogen	14 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Tetrachloroethylene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant Y
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 10-Dec-2009
Revision Date 23-Jan-2018
Print Date 23-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Creation Date 03-Feb-2010 **Revision Date** 14-Jul-2016 **Revision Number** 2

1. Identification

Product Name **Trichloroethylene**

Cat No. : **T340-4; T341-4; T341-20; T341-500; T403-4**

Synonyms Trichloroethene (Stabilized/Technical/Electronic/Certified ACS)

Recommended Use Laboratory chemicals.
Uses advised against

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Heart, spleen, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause drowsiness or dizziness
Suspected of causing genetic defects
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Harmful to aquatic life with long lasting effects
WARNING! This product contains a chemical known in the State of California to cause cancer, birth defects or other reproductive harm.

3. Composition / information on ingredients

Component	CAS-No	Weight %
Trichloroethylene	79-01-6	100

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Move to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a

	pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms/effects	None reasonably foreseeable. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	410 °C / 770 °F
Explosion Limits	
Upper	10.5 vol %
Lower	8 vol %
Oxidizing Properties	Not oxidising
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode when heated. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Hydrogen chloride gas Chlorine Phosgene Carbon monoxide (CO) Carbon dioxide (CO_2)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Should not be released into the environment. Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe vapors or spray mist. Do not ingest.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from light. Do not store in aluminum containers.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Trichloroethylene	TWA: 10 ppm STEL: 25 ppm	(Vacated) TWA: 50 ppm (Vacated) TWA: 270 mg/m³ Ceiling: 200 ppm (Vacated) STEL: 200 ppm (Vacated) STEL: 1080 mg/m³ TWA: 100 ppm	IDLH: 1000 ppm	TWA: 100 ppm TWA: 535 mg/m³ STEL: 200 ppm STEL: 1080 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Characteristic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-85 °C / -121 °F
Boiling Point/Range	87 °C / 188.6 °F
Flash Point	No information available
Evaporation Rate	0.69 (Carbon Tetrachloride = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	10.5 vol %
Lower	8 vol %
Vapor Pressure	77.3 mbar @ 20 °C
Vapor Density	4.5 (Air = 1.0)
Specific Gravity	1.460
Solubility	Slightly soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	410 °C / 770 °F
Decomposition Temperature	> 120°C
Viscosity	0.55 mPa.s (25°C)

Molecular Formula C2 H Cl3
Molecular Weight 131.39

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Light sensitive.

Conditions to Avoid Incompatible products. Excess heat. Exposure to light. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Strong bases, Amines, Alkali metals, Metals,

Hazardous Decomposition Products Hydrogen chloride gas, Chlorine, Phosgene, Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Trichloroethylene	LD50 = 4290 mg/kg (Rat) LD50 = 4920 mg/kg (Rat)	LD50 > 20 g/kg (Rabbit) LD50 = 29000 mg/kg (Rabbit)	LC50 = 26 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Trichloroethylene	79-01-6	Group 1	Reasonably Anticipated	A2	X	Not listed

IARC: (International Agency for Research on Cancer)

IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mutagenic Effects Mutagenic effects have occurred in humans.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)
STOT - repeated exposure Kidney Liver Heart spleen Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not empty into drains. The product contains following substances which are hazardous for the environment. Contains a substance which is:. Harmful to aquatic organisms. Toxic to aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Trichloroethylene	EC50: = 175 mg/L, 96h (Pseudokirchneriella subcapitata) EC50: = 450 mg/L, 96h (Desmodesmus subspicatus)	LC50: 39 - 54 mg/L, 96h static (Lepomis macrochirus) LC50: 31.4 - 71.8 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 0.81 mg/L 24 h EC50 = 115 mg/L 10 min EC50 = 190 mg/L 15 min EC50 = 235 mg/L 24 h EC50 = 410 mg/L 24 h EC50 = 975 mg/L 5 min	EC50: = 2.2 mg/L, 48h (Daphnia magna)

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Trichloroethylene	2.4

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Trichloroethylene - 79-01-6	U228	-

14. Transport information

DOT

UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE
Hazard Class 6.1
Packing Group III

TDG

UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE
Hazard Class 6.1
Packing Group III

IATA

UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE

Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN1710
Proper Shipping Name	TRICHLOROETHYLENE
Hazard Class	6.1
Packing Group	III

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Trichloroethylene	X	X	-	201-167-4	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

Component	TSCA 12(b)
Trichloroethylene	Section 5

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Trichloroethylene	79-01-6	100	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Trichloroethylene	X	100 lb	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Trichloroethylene	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Trichloroethylene	100 lb 1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Trichloroethylene	79-01-6	Carcinogen Developmental Male Reproductive	14 µg/day 50 µg/day	Developmental Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Trichloroethylene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 03-Feb-2010
Revision Date 14-Jul-2016
Print Date 14-Jul-2016
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

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End of SDS

Appendix C

Community Air Monitoring Plan

New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Additional Community Air Monitoring Plan Requirements

- When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.
- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m3 or less at the monitoring point.

Appendix D

Sample Chain of Custody

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

860-645-1102
email: greg@phoenixlabs.com

P.O. # Page of

Data Delivery:
☐ Fax #: _____
☐ Email: _____
☐ Phone #: _____

Report to:	**Project Name:**	**Data Format:** (Circle) Equis Excel Other:
Customer:	**Invoice to:**	**Requested Deliverable:** RCP ASP CAT B
Address:		MCP NJ Deliverables
	Sampled by:	**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)	Ambient/Indoor Air	Soil Gas	Grab (G) Composite (C)	TO-15	APH	
		THIS SECTION FOR LAB USE ONLY											MATRIX			ANALYSES		

Relinquished by:	Accepted by:	Date:	Time:

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: _____

SPECIAL INSTRUCTIONS, QC REQUIREMENTS, REGULATORY INFORMATION:

Turnaround Time:
1 Day* ☐
2 Day* ☐
3 Day* ☐
4 Day* ☐
5 Day* ☐
Standard ☐
*SURCHARGES MAY APPLY

Requested Criteria: (Please Circle)

CT:
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