Former Sep's Cleaners Site

Kings County

242 – 288 Livonia Avenue, Brooklyn, NY 11212

Site Management Plan

NYSDEC Site No. 224283
Prepared for:
Riverdale Osborne Towers Upper Management LLC

Prepared by:

Dr. Ravi Korlipara, P.E.
150 Broadhollow Road, Suite PH7
Melville, New York 11747

Peter Dermody CPG
Dermody Consulting
32 Chichester Ave.
Center Moriches, NY 11934

Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

December, 2025

CERTIFICATION

I, Dr. Ravi Korlipara, P.E., certify that I am currently a New York State registered professional engineer and that this Site Management 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) and Green Remediation (DER-31).

Signature

12/19/25
Date

NYS Professional License # 070038

Note: Include PE stamp

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LIST OF ACRONYMS

AS	Air Sparging
CO	Order on Consent
D	Deep
DER	Division of Environmental Remediation
EC	Engineering Control
ELAP	Environmental Laboratory Approval Program
IC	Institutional Control
MW	Monitoring Well
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCE	Tetrachloroethene
PID	Photoionization Detector
PRR	Periodic Review Report
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RAWP	Remedial Action Work Plan
S	Shallow
SIM	Select Ion Monitoring
SMP	Site Management Plan
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TCE	Trichloroethene
TO	Toxic Organics
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance, and reporting activities required by this Site Management Plan (SMP):

Site Identification: NYSDEC Site No. 224283,
242-288 Livonia Ave., Brooklyn, NY

Institutional Controls:	• The property may be used for commercial purposes. • All Engineering Controls (ECs) must be operated and maintained as specified in this SMP. • All ECs on the Site area must be inspected at a frequency and in a manner defined in this SMP. • System monitoring and other environmental or public health monitoring will be performed as defined in this SMP. • The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval from the NYSDEC. • Data and information pertinent to Site management must be reported at the frequency and in a manner as defined in this SMP; • Operation, maintenance, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;

Institutional Controls:	• Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement (see Appendix A for Environmental Easement); • The potential for soil vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries, and any potential impacts that are identified must be monitored or mitigated; and
Engineering Controls:	• The remaining contamination creates the potential for soil vapor intrusion and is currently being addressed by an active Sub-Slab Depressurization System (SSDS). • The asphalt cover in the rear driveway and the foundation of the on-site building prevents contact with and exposure to potentially impacted soil and soil vapor.
Inspections:	Bi-monthly
Site Cover Inspections:	Bi-monthly
Indoor Air Sampling, Sub-Slab Vacuum Monitoring:	Annually

Maintenance of SSDS Fans:	As needed
Periodic Review Report:	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

SECTION 1.0
INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Former Sep's Cleaners (the "Site"), approximately 0.57 acres in size, located between 242 – 288 Livonia Ave., Brooklyn, New York, which is located within a strip mall building that contains a rear driveway (see Figure 1 for Site layout and boundaries). The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix A. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, Site No. 224283, which is administered by the New York State Department of Environmental Conservation (NYSDEC).

The Site was initially remediated in accordance with Stipulation Agreement R2-20081016-500 that was executed on October 17, 2008. This Stipulation required the Remedial Party, Riverdale Osborne Towers Upper Management LLC, to investigate and remediate contaminated media at the Site. Following the initial remediation, the Remedial Party entered into an Order on Consent (CO) Index No. R2-20081016-500, with Site number 224283, on January 14, 2023 with the NYSDEC to provide management for the Site's existing engineering controls and remaining contamination.

After completion of the remedial work, some contamination was left in the subsurface at the Site, which is referred to as "remaining contamination." Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site management to control exposure to remaining contamination to ensure protection of public health and the environment. The Environmental Easement granted to the NYSDEC and recorded with the Office of the City Register of the City of New York, requires compliance with this SMP and all ECs and ICs placed at the Site.

This SMP was prepared as a requirement of the CO to manage the remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and

the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC).
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the CO Index #R2-20081016-500; Site #224283 for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Dr. Ravi Korlipara P.E. of Korlipara Engineering and Peter Dermody C.P.G. of Dermody Consulting, on behalf of Riverdale Osborne Towers Upper Manager LLC, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 3, 2010, and the guidelines provided by the NYSDEC including DER-31, Green Remediation. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 Revisions and Alterations

Revisions and alterations to this plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. For example, any changes to as-built drawings must be stamped by a New York State Professional Engineer. In accordance with the Environmental Easement

for the Site, the NYSDEC project manager will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its file.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER-10 for the following reasons:

1. 60-day advance notice of any proposed changes in Site use that are required under the terms of the CO, 6NYCRR Part 375, and/or Environmental Conservation Law.
2. 7-day advance notice of any field activity associated with the remedial program.
3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.
4. Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
5. Notice within 48 hours of any non-routine maintenance activity.
6. Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

8. At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the CO, and all approved work plans and reports, including this SMP.
9. Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

The Table below includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information.

Name	**Contact Information**	**Required Notifications**
Marlen Salazar, Project Manager	**Phone: 718-482-7129** **Marlen.Salazar@dec.ny.gov**	**All Notifications**
Jane O'Connell, P.G., NYSDEC Regional Remediation Engineer	**Phone: (718) 482-4599** **Jane.oconnell@dec.ny.gov**	**All Notifications**
Cris-Sandra Maycock, P.E., NYSDEC Section Chief A	**Phone: (718) 482-4679** **Cris-sandra.Maycock@dec.ny.gov**	**All Notifications**
Kelly Lewandowski, Site Control	**Phone: (518) 402-9569** **kelly.lewandowski@dec.ny.gov**	**Notifications 1,8 and 9**
Megan Rivera NYSDOH Project Manager	**Phone: (518) 402-7860** **Megan.Rivera@health.ny.gov**	**Notifications 3, 4, 6 and 7**
Scarlett McLaughlin, P.G., NYSDOH Region Chief	**Phone: (518) 402-7860** **Scarlett.McLaughlin@health.ny.gov**	**Notifications 4, 6 and 7**
Peter Dermody CPG Dermody Consulting	**Phone: 631 905-4868** **pdermody@dm-consulting.net**	**All Notifications**
Barry Cohen Certilman Balin	**Phone: 516 296-7044** **bcohen@certilmanbalin.com**	**All Notifications**

Notes:

- Notifications are subject to change and will be updated as necessary.
- Numbers in this column reference the numbered bullets in the notification list in this subsection.

SECTION 2.0
SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in Brooklyn, Kings County, New York and is identified as Block 3590, Lot 16 on the New York City Tax Map (see Figure 1). The Site is an approximately 0.57-acre area property bounded by Livonia Ave. to the north, a private parking lot to the south, an office building to the east, and Rockaway Ave. to the west. The boundaries of the Site are more fully described in Appendix A – Environmental Easement.

The owner of the Site parcel at the time of issuance of this SMP is Riverdale Osborne Towers Upper Management LLC.

The operators at the strip mall at the Site at the time of issuance of this SMP are Brownsville Gourmet Deli, Wing Luck Chinese Restaurant, Napoli Pizza, Pay-O-Matic Money Centers, and Shop Fair Supermarket.

2.2 Physical Setting

2.2.1 Land Use

The former Sep's Cleaners unit is currently occupied by the Brownsville Gourmet Deli. The Site is zoned R6 for residential use. The building contains a basement below the units with individual basement areas for each business, however, the check-cashing business does not have a basement beneath it (the pizza restaurant basement area extends under the check-cashing business).

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial and residential properties to the west, a parking lot and a commercial building occupied by Verizon to the south, commercial and residential properties to the east, and Livonia Ave. and an elevated passenger rail line to the north. Commercial and residential properties are present to the north of Livonia Ave.

The Site is connected to the New York City municipal water supply system and sewage is discharged to the municipal sewer system. The Site building was constructed in 1972.

Sep's Cleaners performed dry cleaning operations and was listed as a Resource Conservation and Recovery Act Small Quantity Generator of spent halogenated wastes.

The years of Sep's Cleaners operation at the Site are not known but appear to have been for a period during or after 1972 until approximately 2006.

2.2.2 Geologic and Hydrogeologic Conditions

The geology of the Site was evaluated during previous investigations that included continuous soil borings performed in the rear driveway to the south of the building from grade to the water table (which occurs at approximately 20 feet below grade). Additional geologic borings were performed prior to installing air sparging wells to determine the geology of the saturated zone from 20 to 45 feet below grade.

The Site-specific vadose zone geology (as shown in the geologic cross-section in Figure 2) generally consists of brown to dark brown medium-grained sand with occasional silt, minor and sporadic clay, and in the shallower soil, some fill materials including brick and wood fragments. The Site-specific geology in the saturated zone generally consists of brown medium-grained sand with occasional silt and gravel. See Appendix B for Site boring logs.

Based on U.S. Geological Survey reports, the Site area is underlain by unconsolidated deposits of sand, clay, and gravel of Cretaceous and Pleistocene ages. In the Site area, the upper sand and gravel deposits comprise the Upper Glacial Formation, which has a thickness of approximately 200 feet in the Site area. Beneath the Upper Glacial Formation, the Gardiners Clay unit appears to be present.

Based on this information, there was no evidence of significant areas of low permeability materials in the area of concern.

2.2.3 Hydrogeology

The groundwater at the Site occurs at a depth of approximately 20 feet below grade. Shallow and deep wells were installed at the Site (Figure 5 contains the well locations). All wells were constructed with one-inch-diameter PVC. The shallow wells contain 10-foot-long screens with 0.20-inch slots. The shallow wells were installed to a depth of 25 feet (five feet below the water table). The deep wells were installed to a depth of 45 feet below grade and were constructed in the same manner as the shallow wells with the exception that the deep wells contain five-foot screens at the depth interval of 40 to 45 feet below grade. All wells were gravel-packed with No. 2 Morie gravel to two feet above the screened interval. A two-foot bentonite seal was placed above the gravel pack and each

well was then grouted to grade. Flush-to-grade manholes were installed at grade at each well location. The well construction logs are provided in Appendix C.

The shallow groundwater wells were used to calculate the Site-specific groundwater flow direction which was determined to be generally to the south-southeast (see Figure 3 for the Site-specific groundwater elevation contour map). Based on the March, 1997 water table configuration for Kings and Queens County prepared by the U.S. Geological Survey, the groundwater flow direction in the area of the Site is also generally to the south-southeast and the water table elevation is approximately 7 feet above mean sea level. Based on U.S. Geological Survey topographic quadrangle maps, the surface elevation at the Site is approximately 26 feet above mean sea level and is generally flat.

Based on the U.S. Geological Survey Report entitled "Simulation of Ground-Water Flow and Pumpage in Kings and Queens Counties, Long Island, New York" (1999), the hydraulic conductivity in the area of the Site was reported to be approximately 200 to 300 feet per day.

The New York City Department of Environmental Protection website showed no public water supply wells within one mile of the Site and the Site area is supplied with drinking water from the Catskill/Delaware/Croton watershed distribution system.

2.3 Investigation and Remedial History

A Site Investigation (SI) was performed to characterize the nature and extent of contamination at the Site. Full titles for each of the reports referenced below are provided in Section 8.0, References. The results of the SI are described in the following reports:

- Site Investigation Report for the Former Sep's Cleaners Site" (Dermody Consulting, December, 2008)
- Supplemental SI reports by Dermody Consulting dated March 10, March 23, and May 1, 2009.

Generally, the SIs determined that soil contamination consisting primarily of tetrachloroethylene was present in the soil in the driveway at the rear of the building. The vadose zone column in this area is approximately 20 feet.

Soil

Figure 4 shows the Site layout and a summary of previous soil sampling results and the delineated areas of soil contamination. The figure shows that, prior to remediation, the

primary area of vadose zone soil contamination was present in the rear driveway from the area from the building to the former concrete dumpster platform. The concentration of tetrachloroethylene adjacent to the platform was 370,000 parts per billion (ppb) at SB-15 (0-2'). The second highest concentration of tetrachloroethylene was detected and 57 ppb at SB-8 (16-20') feet below grade. A secondary, less contaminated area of contamination was present from approximately 20 to 40 lateral feet to the east of the primary area. The concentration of tetrachloroethylene at this location, SB-22 (0-1'), was 4,200 ppb.

Also, the SI included information about shallow soil sampling performed at 12 locations below the concrete basement floor beneath the former Sep's Cleaners unit (now Brownsville Gourmet Deli). The results showed low concentrations of tetrachloroethylene and other VOCs in the soil that were all below the NYSDEC Part 375 Soil Cleanup Objectives.

Groundwater

Groundwater samples were obtained, prior to remediation, during the SIs from groundwater monitoring wells and Geoprobe sampling locations. Groundwater contamination was found to be present primarily beneath the rear driveway and was migrating generally to the south-southeast (see Figure 5 for SI groundwater sampling results and plume configuration).

The highest concentrations of tetrachloroethylene and its degradation products (39,000 ppb) were detected in the shallow groundwater at GW-5, which was located adjacent to the former concrete dumpster platform (this area also contained the highest tetrachloroethylene concentrations in the soil). The deeper groundwater at this location showed tetrachloroethylene concentrations of 2,500 ppb.

Soil Vapor

Soil vapor sampling was performed at 5 locations during the SIs beneath the concrete basement floor in the deli, the former beauty shop (now occupied by the deli), and the Chinese restaurant. The vapor sampling results primarily showed elevated concentrations of tetrachloroethylene (which ranged from 65 ppb to 140,000 ppb) as well as elevated concentrations of tetrachloroethylene degradation products. Indoor air samples were obtained from the deli (tetrachloroethylene was not detected), the beauty shop (tetrachloroethylene was detected at 83 ppb), the Chinese restaurant (tetrachloroethylene

was detected at 57 ppb), the basement beneath the deli and beauty shop (tetrachloroethylene was detected at 62 ppb), and the basement below the Chinese restaurant (tetrachloroethylene was detected at 76 ppb). These samples were obtained in 2008 and the New York State Department of Health air guideline level at that time was 100 ppb. It has since been reduced to 30 ppb.

It was also found that upgradient wells showed the presence of tetrachloroethylene and its degradation products in the groundwater (the documentation for the apparent source of the upgradient contamination was previously provided to the NYSDEC). Therefore, there is or was an off-Site contribution of contamination in the groundwater at the Site.

Also, soil vapor was detected beneath the downgradient building occupied by Verizon. Soil vapor intrusion (SVI) monitoring was performed for three years at the Verizon building and NYSDEC then determined that no further action was required (see Appendix D for No-Further-Action Letter for the Verizon Building).

2.4 Remedial Action Objectives

The Site was remediated in accordance with the NYSDEC-approved Remedial Action Work Plan (RAWP) (2009) and the subsequent Final Design Report (2013). The Remedial Action Objectives (RAOs) for the Site are as follows:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a Site.

2.5 Remaining Contamination

The remedial system operated from 2014 to 2022. Based on quarterly groundwater sampling results and remedial system monitoring, there was a significant decrease in the concentrations of contaminants over time. Following the completion of the remediation, remaining contamination remains present at the Site.

2.5.1 Soil

For the soil contamination, the soil excavation Interim Remedial Measures (IRM) addressed the area of soil containing the highest concentrations of contaminants.

In March, 2019, two soil samples were obtained to determine the efficacy of the remediation. The results showed that the VOC concentrations at both sampling locations decreased significantly. The concentration of tetrachloroethylene prior to remediation was 370,000 ppb at SB-15 in the shallow soil. 2019 sample SB-15A was obtained approximately two feet from SB-15 due to the installation of subsurface system piping adjacent and west of the concrete platform). The tetrachloroethylene concentration at SB-15A was 170 ppb is significantly below the Part 375-6.8 commercial guideline concentration of 150,000 ppb. Other VOCs are also present at this location at trace to very low concentrations.

For sample SB-22A, the shallow soil tetrachloroethylene concentration was 4,200 ppb prior to the commencement of remediation. The tetrachloroethylene concentration

during the subsequent March, 2019 sampling was reduced to 20 ppb. Other VOCs were present in the soil at trace concentrations. Appendix E provides a figure and table showing the soil concentrations prior to, and following, the remediation.

2.5.2 Groundwater

For the groundwater, baseline groundwater sampling was performed on July 8, 2014, just prior to the remedial system startup. Shallow (20 to 25 feet) and deep (40 to 45 feet) groundwater monitoring well pairs were installed at three locations (MW-4S/D, MW-5S/D, and MW-6S/D as shown on Figure 3 (the depth to groundwater was 20 feet). The highest initial concentration of tetrachloroethylene was detected at MW-4S 530 ppb). The June 2017 concentration at this well had been reduced to 6.9 ppb. The highest initial downgradient concentrations of tetrachloroethylene were detected at well MW-6S (250 ppb). The June 2017 concentration at this location was 7.0 ppb. For the sampling round performed in March 2019, all VOCs were reduced to concentrations below the groundwater standards.

Based on this information, the concentrations of groundwater contamination were significantly reduced by the remediation system. The last round of groundwater samples were obtained in January, 2021 and the results showed continued low concentrations and so the NYSDEC determined that the groundwater remediation was complete and no further monitoring was required. Appendix F provides a table of the last rounds of groundwater monitoring and a figure showing the well locations.

2.5.3 Soil Vapor

The Soil Vapor Extraction (SVE) operated to remove remaining VOCs from the vadose zone soil. During system operation, monitoring of the concentrations of volatile organic compounds (VOCs) from the SVE exhaust was performed with a photoionization detector (PID). The PID readings during the first few months of system operation showed vapor concentrations that in some instances exceeded 500 parts per million (ppm). For readings from 2017 and thereafter, concentrations of soil vapor had been generally below 5 ppm. The IRM and SVE had the effect of both removing soil contamination (as discussed above) and removing soil vapor contamination, which reduced the potential for SVI.

The SVE system continued to operate as a sub-slab depressurization system (SSDS) as well as a soil remediation system until October, 2022 when an SSDS was installed within the Site building.

The potential for soil vapor intrusion is currently being addressed by the SSDS.

Appendix G contains a figure showing the indoor air sampling locations and a table showing the recent (2024) results. Tetrachloroethylene and its degradation products were not detected in the basements of the strip mall.

SECTION 3.0
INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since the potential for soil vapor intrusion exists at the building at the Site due to the remaining contamination in the soil, Engineering Controls (ECs) and Institutional Controls (ICs) are required to protect human health and the environment. This EC/IC Plan describes the procedures for the implementation and management of all EC/ICs at the Site. The EC/IC Plan is one component of the SMP and is subject to revision by the NYSDEC. A Health and Safety Plan and Community Air Monitoring Plan is provided in in Appendix H for all Site activities. This plan provides:

- A description of all EC/ICs on the Site;
- The basic implementation and intended role of the EC/ICs;
- A description of the key components of the ICs;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of the EC/ICs, such as the implementation of the Excavation Work Plan (as provided in Appendix [I]) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for maintaining the EC/ICs required by the site remedy, as determined by the NYSDEC.

Soil vapors may be present beneath the on-Site building as the result of remaining contamination from the completed remediation or the off-gassing of tetrachloroethylene and other related compounds emanating from an upgradient source.

3.2 Institutional Controls

A series of ICs are required to: (1) implement, maintain, and monitor EC systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and

development of the Site to commercial and industrial uses. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to, or extinguishment of, the Environmental Easement. The IC boundaries are shown on Figure 1.

These ICs include:

- The property may be used for commercial and industrial use.
- All ECs must be operated and maintained as specified in this SMP.
- All ECs on the Site area must be inspected at a frequency and in a manner defined in this SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater and other environmental or public health monitoring will be performed as defined in this SMP.
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the ECs shall be performed as defined in this SMP;
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to

the property owner to assure compliance with the restrictions identified by the Environmental Easement;

- The potential for soil vapor intrusion must be evaluated for any additional buildings developed in the area within the IC boundaries, and any potential impacts that are identified must be monitored or mitigated.

3.3 Engineering Controls

3.3.1 Site Cover

Exposure to remaining contamination in soil at the Site is prevented by an approximately four-inch layer of asphalt in the driveway at the rear of the on-Site building as well as the building foundation's concrete slab, which is also approximately four inches thick. Figure 8 shows the area of the asphalt cover system in the rear driveway adjacent and south of the building. It also shows the area of the building basements which act as a cover system within the building. In addition, there are no known underground utilities in the area of the layout of the system or the area where the high levels of soil contamination had existed. Therefore, there are no reasonable expectations that a planned breach will be required. Any breach of the Site's cover system must be overseen by a Professional Engineer (PE) who is licensed and registered in New York State or a qualified person who directly reports to a PE who is licensed and registered in New York State. However, in the event of a breach of the asphalt for any reason, ground-intrusive activities will be conducted according to the Excavation Work Plan (EWP) located in Appendix I in accordance with the SMP requirements and will, at a minimum, include the following:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;

- A schedule for the work, detailing the start and completion of all intrusive work, and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

The cover system consists of a four-inch concrete layer throughout the basement of the building. The asphalt in the rear driveway had consisted of an approximately two-inch layer of asphalt. It was found that approximately two years ago, the owners of the Site added an additional two inches of asphalt to the driveway. This was a regular maintenance activity. Dermody Consulting did not ask the owners to add the additional asphalt. Procedures for operating and maintaining the cover system are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). Figure 1 shows the location of the ECs for the Site.

3.3.2 SSDS Installation and Operation

A schematic drawing of a SSDS unit is provided in Figure 7 schematic drawing the layout of the SSDS system is shown in Figure 8. . The SSDS was installed at the Site during the period from June to October, 2022. After its completion and commencement of operation in October, 2022, the system was inspected by the NYSDEC Project Manager. The system consists of 11 suction wells installed in the Site building's basement. Each

suction well consists of two-inch PVC pipe with a 20-inch screened section of pipe installed below the basement's concrete floor and a RadonAway GP-501 suction fan installed at each location (see Appendix J for Radon Fan Specifications). The vapors are discharged, through piping, to the exterior of the building and approximately two feet above the building's roofline. (see Appendix K for exterior piping photograph). In addition, vacuum monitoring points were installed at 18 locations to assure that adequate vacuum exists beneath the entire building to address the potential for soil vapor intrusion to the basement. Based on the SSDS installation and subsequent vacuum monitoring, it was determined that there is adequate vacuum throughout the basement floorspace and that the system was operating properly.

The SSDS installation and vacuum monitoring report was completed and submitted to NYSDEC on January 3, 2023 and approved on April 10, 2023. Procedures for operating and maintaining the SSDS are provided in the Operation and Maintenance Manual (Section 5.0 of this SMP).

Procedures for operating and maintaining the SSDS are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). Figures 1 and 8 show the location of the ECs for the Site.

3.3.3 Criteria for Completion of Remediation/Termination of the SSDS

Generally, remedial processes are considered complete when monitoring indicates that the remedy has achieved the remedial goals defined in the approved RAWP. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR). The SSDS is expected to be required for a period of 10 to 20 years or until such goals are met.

3.3.3.1 Site Cover Inspections

The Site cover system is a permanent control and the quality and integrity of this system will be inspected quarterly to effectively prevent contact with remaining contamination.

3.3.3.2 SSDS Operation

The SSDS operation will not be discontinued unless prior written approval is granted by the NYSDEC and NYSDOH project managers. In the event that monitoring data indicates that the SSDS is no longer required, a proposal to discontinue the system will be submitted by the remedial party to the NYSDEC and NYSDOH project managers. Conditions that warrant discontinuing the SSDS include contaminant concentrations in the sub-slab soil vapor that are minimal or non-existent followed by a temporary shutdown of the SSDS for 30 days. The sub-slab vapor concentrations of contamination will again be sampled and evaluated to determine if the contaminant concentrations remain sufficiently low to warrant the removal of the SSDS.

3.3.3.3 Soil Vapor Intrusion Evaluation

The construction of additional enclosed structures at the Site is unlikely. However, in the event that structures are constructed at the Site, an evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to soil vapor intrusion. Alternatively, a vapor mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system would include a vapor barrier and a passive SSDS system that is capable of being converted to an active system, if necessary.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (2006, last updated February 2024). Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the evaluation, the NYSDOH guidance, and construction details of the proposed structure.

SVI and indoor air sampling results, evaluations, and follow-up actions will also be summarized in the Periodic Review Report. If any indoor air analytical results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the new building within 15 days of receipt of analytical data.

SECTION 4.0
MONITORING AND SAMPLING PLAN

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the SSDS to reduce or mitigate impacts at the Site. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan provided in Appendix L.

This Monitoring Plan describes the methods for:

- Sampling and analysis of indoor air and sub-slab soil vapor.
- Assessing compliance with applicable NYSDEC and NYSDOH standards, criteria, and guidance (SCGs);
- Evaluating Site information to confirm that the remedy continues to be effective in protecting public health and the environment.
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency.
- Information on all designed monitoring systems.
- Analytical sampling program requirements.
- Reporting requirements.
- Quality Assurance/Quality Control (QA/QC) requirements.
- Annual inspection and periodic certification.

Monitoring and sampling of the indoor air will be performed. Contaminant levels will be evaluated to determine if the SSDS continues to be effective in achieving its goals. The monitoring programs and schedule are provided as follows:

Monitoring Schedule

Monitoring Program	Frequency	Matrix	Analysis
Sub-slab Vacuum	Annually	Air	Vacuum
Indoor Air	Annually	Air	VOCs by Method TO-15
Site-Wide Inspection	Quarterly	Not Applicable	Not Applicable

4.1 Sub-Slab Vacuum Monitoring

Sub-Slab vacuum monitoring will be performed annually at the 15 vacuum monitoring points. The monitoring will be performed with an Infiltec DM-1 digital micromanometer capable of measuring pressure changes to 0.001 inches of water. Vacuum levels above -0.004 inches of water will be considered an acceptable level of SSDS influence at that location.

4.2 Indoor Air Monitoring

Indoor air monitoring will be performed annually to assess the performance of the SSDS within each of the four basements: Brownsville Deli, the Chinese Restaurant, the Pizza Restaurant, and the Supermarket. The samples will be obtained with 6-liter Summa Canisters with 8-hour flow restrictors. The samples will be placed with the sample intake at breathing height (approximately 4-6 feet above floor level). The samples will be laboratory analysis for VOCs by Method TO-15 with Category B deliverables by an ELAP-certified laboratory. One duplicate sample will be obtained from one of the sample locations.

The purpose of the indoor air sampling is to confirm that the SSDS is adequately preventing soil vapor intrusion into the building.

4.3 SSDS Effluent Air

The effluent air was sampled during 2025 from each of the 11 SSDS locations. The purpose of the sampling is to determine the current effluent levels to determine if effluent carbon treatment is required for the discharged air. At each location, a six-liter Summa

Canister will be connected to a length of food-grade polyethylene tubing. The tubing will be placed in the sampling port on the effluent side of the exhaust fan and a vapor sample will be obtained over a period of approximately 30 minutes (at a sample collection rate of 0.2 liters per minute). The Summa Canister valve will then be closed and all canisters will be submitted to the laboratory for analysis of VOCs by USEPA Method TO-15 with Category B deliverables by an ELAP-certified laboratory. One duplicate sample will be obtained from one of the effluent air sample locations. In addition, for any future effluent air sampling events that may occur, 7 effluent samples will be obtained since 4 of the SSDS units' piping is manifolded.

It is not expected that SSDS effluent sampling will be required annually.

4.4 Site-Wide Inspections

Site-wide inspections will be performed quarterly and, if necessary, following severe weather events that may affect ECs or monitoring devices. These periodic inspections will be conducted when the ground surface is visible (i.e. no snow cover). Site-wide inspections will be performed by a Professional Engineer (PE) who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. During and following these inspections, an inspection form will be completed and prepared for submittal to the NYSDEC as provided in Appendix M – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, a health and safety inspection;
- Confirm that site records are up to date;
- Compliance with the schedules included in the Operation and Maintenance Plan (as presented in Section 5.0).

Reporting requirements are outlined in Section 7.0 of this plan.

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at

the Site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a Professional Engineer who is licensed and registered in New York State.. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action, describing and documenting actions taken to restore the effectiveness of the ECs.

4.5 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the indoor air on an annual basis. Sampling locations, required analytical parameters and schedule are provided below. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Indoor Air Location	Analysis	Frequency
IA-1	VOCS by Method TO-15	Annually in January
IA-2	VOCS by Method TO-15	Annually in January
IA-3	VOCS by Method TO-15	Annually in January
IA-4	VOCS by Method TO-15	Annually in January
IA-5	VOCS by Method TO-15	Annually in January
OA-1	VOCS by Method TO-15	Annually in January

4.5.1 Indoor Air Sampling

Indoor air sampling a will be performed annually to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Indoor air samples will be obtained from each of the four basements with the building. The samples will be laboratory-analyzed for TO-15 VOCs by an ELAP-certified laboratory (York Analytical Laboratories).

The sampling frequency may only be modified with the approval of the NYSDEC project manager. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC project manager. Deliverables for the soil vapor sampling program are specified in Section 7.0 – Reporting Requirements.

SECTION 5.0
OPERATIONS AND MAINTENANCE MANUAL

5.1 Introduction

This Operations and Maintenance (O&M) Manual describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site. This O&M Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS;
- Includes an O&M contingency plan; and,
- Will be updated periodically to reflect changes in Site conditions or the manner in which the SSDS is operated and maintained.

A copy of this O&M Manual, along with the complete SMP, is to be maintained at the Site. This O&M Plan is not to be used as a stand-alone document, but as a component of the SMP.

5.2 Engineering Control System Operation and Maintenance

The SSDS consists of 11 individually operated suction wells with suction fans (that is, if one of the units shuts down, the others will continue to operate). The piping is manifolded into 7 pipes that exit the rear wall at two locations. In the event of a power outage, the fans will automatically restart. There is no routine maintenance required for the SSDS. However, if one of the units is vandalized or otherwise damaged, the damaged unit will be shut down and the piping and/or the suction fan will be removed and replaced as soon as possible. Each unit will be inspected quarterly to assure that the SSDS is operating properly. All repairs or replacements will be reported to NYSDEC.

The locations of the SSDS units and vacuum monitoring points are shown in Figure 8.

5.2.1 SSDS System

Operation and maintenance of the SSDS will be performed to ensure that all process equipment is operating according to manufacturer and design specifications, and that the system remains effective in eliminating the vapor intrusion pathway into the Site building.

5.2.2 SSDS Monitoring

An SSDS was installed to eliminate all potential pathways of direct human contact with soil vapor contaminants through vapor intrusion into the on-Site building. This EC is being implemented until the potential for soil vapor intrusion is fully mitigated and meets NYSDOH guidelines. The SSDS creates a negative pressure gradient across the building basement's slab (i.e., a lower pressure beneath the slab than above the slab). Long-term monitoring will be performed to support EC efforts, providing an understanding of changes in contaminant concentrations, degradation, and distribution over time.

To monitor the vacuum pressure beneath the building basement's concrete slab, 18 soil vapor monitoring points were installed at various locations. Vacuum monitoring will be performed annually to assure vacuum levels at all locations are equal to or exceed the New York State Department of Health guideline requirement of a minimum vacuum of 0.004 inches of water. The vacuum monitoring points are generally located at the perimeter of each basement unit. Adequate vacuum at these locations will demonstrate that the SSDS units are providing acceptable vacuum throughout the basements.

5.2.3 Equipment Monitoring

During annual O&M visits, system parameters (sub-slab vacuum) will be recorded in the operator field data sheets. A visual inspection of the complete SSDS system will be conducted during the monitoring event. Each of the SSDS units will be inspected to assure that they are all operating. In addition, vacuum monitoring will be used to assure adequate vacuum and, therefore, proper operation of the SSDS system. In addition, all piping will be inspected to assure that it contains no cracks or other damage.

5.2.4 Sampling Event Protocol

During the annual inspection, air sampling will performed for the suction well effluent to determine the concentrations of each VOC and the results will be used to assure that there are no exceedances of the NYSDEC air discharge limits. The samples will be obtained with Summa Canisters from the discharge of the suction wells by attaching a dedicated length of tubing to the Summa Canister and placing the other end of the tubing into the sampling port on the PVC pipe above (on the effluent

side) of the suction fan. In addition, during the heating season, indoor air sampling will be performed within each of the four basement units. The samples will be obtained with Summa Canisters with flow restrictors set to obtain samples over an eight-hour period. Additional sampling details can be found in Section 4.0 of this SMP. Figure 7 shows the sampling and monitoring locations and will be attached to this O&M Manual to be left at the Site.

5.3 Maintenance and Performance Monitoring Reporting Requirements

Maintenance reports will include inspection forms (see Appendix M) and any other information generated during regular operations at the Site will be kept in hard copy and electronic files off Site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report. The following sections provide a description of the operations and maintenance of the SSDS. An As-built drawing for the SSDS is provided in Figure 8 and will be attached to the Operations and Maintenance Manual (Section 5.0 of this report) that will be stored at the Site.

5.3.1 Routine Maintenance Reports

A Site inspection form (see Appendix M will be completed during each routine maintenance event. The reporting will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance
- activities;
- Maintenance activities conducted;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

5.3.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a report will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

The results of the Site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective.
- The Monitoring Plan is being implemented.
- Operations and maintenance activities are being conducted properly.
- The Site remedy continues to be protective of public health and the environment and is performing as designed.

As part of the annual Site-wide inspection report, the following certification will be prepared for submittal to the NYSDEC annually:

For each EC/IC for the Site, it will be certified that:

- The inspection of the Site to confirm the effectiveness of the EC/ICs.
- The EC/ICs employed at the Site are unchanged from the date the control was put in place, or last approved by the NYSDEC.
- Nothing has occurred that would impair the ability of the control to protect public health and the environment.
- The EC systems are performing as designed and are effective.

If any component of the SSDS is found to have failed, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and

provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

5.3.3 System Monitoring

Individual system alarms had been installed at each of the SSDS locations, however, several had been removed by unknown persons and a decision was made to remove the alarms. Each SSDS unit is individually operated and powered and, therefore, if one unit becomes non-operational, all other units will continue to operate. Operational problems will be noted in the Periodic Review Report to be prepared for that reporting period.

To address the potential for an SSDS unit to become non-functional, inspections will be increased from quarterly to bi-monthly.

5.3.4 Evaluation of Records and Reporting

The results of the inspection and Site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The Site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP.

SECTION 6.0
PERIODIC ASSESSMENTS/ EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Climate change is not expected to have a significant impact on the remedial system or ECs/ICs at the Site. With the exception of the discharge piping, all components of the SSDS are within or below the Site building.

The primary threat from climate change is likely to be associated with sea level rise. However, since sea level rise is estimated to be approximately 1.4 inches per decade, and the Site is located at an elevation of 27 feet above mean sea level, flooding does not appear to be likely. Also, there are no streams or tidal creeks located within one mile of the Site.

If the frequency and intensity of storm events increase due to climate change, it is possible that heavy rains could occur more frequently at the Site. However, the Site and its surrounding area are generally level and significant amounts of surface water are not known to have accumulated on the ground surface at the Site.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section an environmental footprint analysis of the remedy, as implemented at the time of this SMP. This section of the SMP also provides a summary of green remediation evaluations to be completed for the site during site management and reported in Periodic Review Reports (PRRs).

The purpose of Green Remediation, as per the November, 2023 NYSDEC Memorandum, is to "consider all environmental effects of a remedy implementation and considers Best Management Practices (BMPs) to minimize the environmental footprint of remedial cleanups."

As per the USEPA Green Remediation BMP Fact Sheet, BMPs focus on the elements of greener cleanups including to:

- Reduce total energy use and increase percentage of energy from renewable resources
- Reduce air pollutants and greenhouse gas emissions
- Reduce water use and preserve water quality
- Conserve material resources and reduce waste
- Protect land and ecosystems

6.2.1 Timing of Green Remediation Evaluations

The remediation at the Site has been completed and employing BMPs at the Site is, therefore, limited to the current activities related to the addressing remaining contamination. These activities include the operation of an SSDS to address the potential for soil vapor intrusion at the building as well as monitoring and sampling related to the SSDS. As per the CLU-IN Green Remediation Focus, the USEPA BMPs that can be evaluated to reduce environmental impacts include Green Remediation Practices for "Site Investigation and Environmental Monitoring" and "Soil Vapor Extraction and Other Air-Driven Systems."

The Site Investigation and Environmental Monitoring will include annual sampling of the basement indoor air and SSDS effluent, as well as obtaining vacuum monitoring readings for the SSDS. The BMPs to be incorporated into this task are as follows:

- Select service providers, product suppliers, and analytical laboratories from the local area and consolidate the service and delivery schedules.
- Utilize electronic networks for data transfers, team decisions and document preparation.
- Reduce travel through increased teleconferencing and compressed work hours.
- Select facilities with green policies for worker accommodations and meetings.
- Integrate sources of on-Site renewable energy, where possible, to power hand-held devices, portable equi8pment, and stationary monitoring devices.
- Sampling and monitoring will be scheduled to complete these activities, where possible, to one day of field activities.

For the BMP for Soil Vapor Extraction and Other Air-Driven Devices BMP, the former remediation system contained an AS/SVE that acted to remediate the contaminated soil and groundwater, as well as addressing the potential for soil vapor intrusion in the Site building. Upon the NYSDEC determination that the Site remediation was complete, the AS/SVE system was replaced with an SSDS. This was done to reduce the amount of electricity used to address the potential for soil vapor intrusion.

As per the USEPA Fact Sheet, a vacuum blower typically uses 108,000 kilowatt hours (kWh). The now-existing and active SSDS at the Site contains 15 vapor withdrawal fans that use a total of 3 kWh. Therefore, the SSDS has provided a significant environmental benefit.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities after approval from the DER project manager. Reporting of these modifications will be presented in the PRR.

6.2.2 SSDS

The SSDS at the Site uses minimal electricity (approximately 150 watts per suction well) and will be operated properly considering the current site conditions to conserve materials and resources to the greatest extent possible. Spent materials will be sent for recycling, as appropriate.

6.2.3 Building Operations

The building at the Site will be operated and maintained to provide for the most efficient operation of the remedy while minimizing energy, waste generation, and water consumption.

6.2.4 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

- The Site will be visited four times per year for inspections, monitoring, and sampling
- There will generally be either one or two persons performing the Site sampling and inspections.
- Sampling, monitoring, and inspections will be performed, where possible, on the same day to reduce Site visits and labor time.
- Mass transit will be considered for Site visits.

6.2.5 Metrics and Reporting

Energy usage will be limited to the operation of 15 SSDS units that are rated at 150 watts per unit. There is no expected solid waste generation. Transportation is expected to require four vehicle trips to and from the Site per year plus one trip per year to transfer laboratory samples to the laboratory. There is expected to be no shipping or water usage during the Site visits. Land use and ecosystem issues or changes will be recorded to facilitate and document consistent implementation of green remediation during Site management and to identify corresponding benefits. A set of metrics has been developed and will be evaluated over time to ensure that green remediation actions are achieving the desired results.

6.3 SSDS Optimization

A Remedial System Optimization (RSO) study will be conducted any time that the NYSDEC project manager or the remedial party requests in writing that an in-depth evaluation of the system is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the RAWP;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;

- There is an anticipated transfer of the Site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focus on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

SECTION 7.0
REPORTING REQUIREMENTS

7.1 Site Management Reports

All Site management inspection, maintenance and monitoring events will be recorded on the appropriate Site management forms located in Appendix M. These forms are subject to NYSDEC revision. All Site management inspection, maintenance, and monitoring events will be conducted by a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of the table below and summarized in the Periodic Review Report.

Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Quarterly
Periodic Review Report	Annually, or as otherwise determined by the NYSDEC

*The frequency of events will be conducted as specified until otherwise approved by the NYSDEC project manager.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);

- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report will be submitted to the Department every year beginning 16 months after the Satisfactory Completion Letter is issued and until a no-further-action letter is issued by the NYSDEC. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A– Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site;
- Results of the required annual site inspections and severe condition inspections, if applicable;
- Description of any change of use, import of materials, or excavation that occurred during the certifying period;
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted;

- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media, which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:
  - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data;
  - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis;
  - O&M data summary tables;
  - A current plume map for sites with remaining groundwater contamination; and
  - A groundwater elevation contour map for each gauging event.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A Site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific RAWP;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

- Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
- Recommendations regarding any necessary changes to the SSDS and/or Monitoring Plan; and Samplng Plan;
- An update to the climate change vulnerability assessment if site or external conditions have changed since the previous assessment, and recommendations to address vulnerabilities.
- A summary of the Green Remediation evaluation, including a quantitative and qualitative overview of a site's environmental impacts and recommendations to improve the remedy's environmental footprint. The PRR will include the completed Summary of Green Remediation Metrics form provided in Appendix N.
- An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the RAWP, ROD or Decision Document; and
- The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls (ICs/ECs)

Following the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:

- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control;*

- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *Use of the site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program; and*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative].

"I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The Periodic Review Report may also need to be submitted in hard-copy format if requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an EC or IC or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an

emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it is approved by the NYSDEC project manager.

7.4 Remedial System Optimization Report

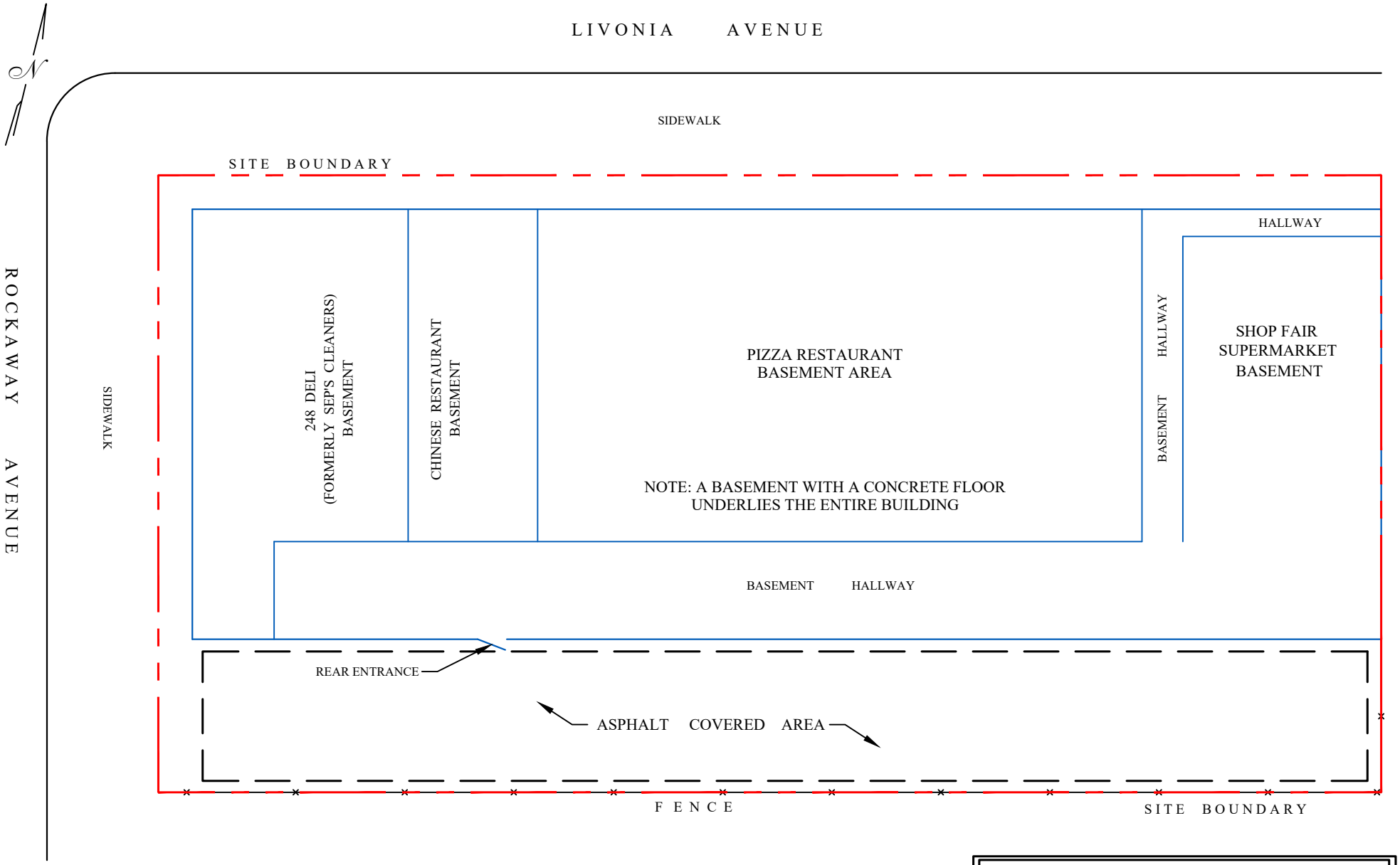
If an RSO is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC project manager for approval. A general outline for the RSO report is provided in Appendix Q. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager.

SECTION 8.0
REFERENCES

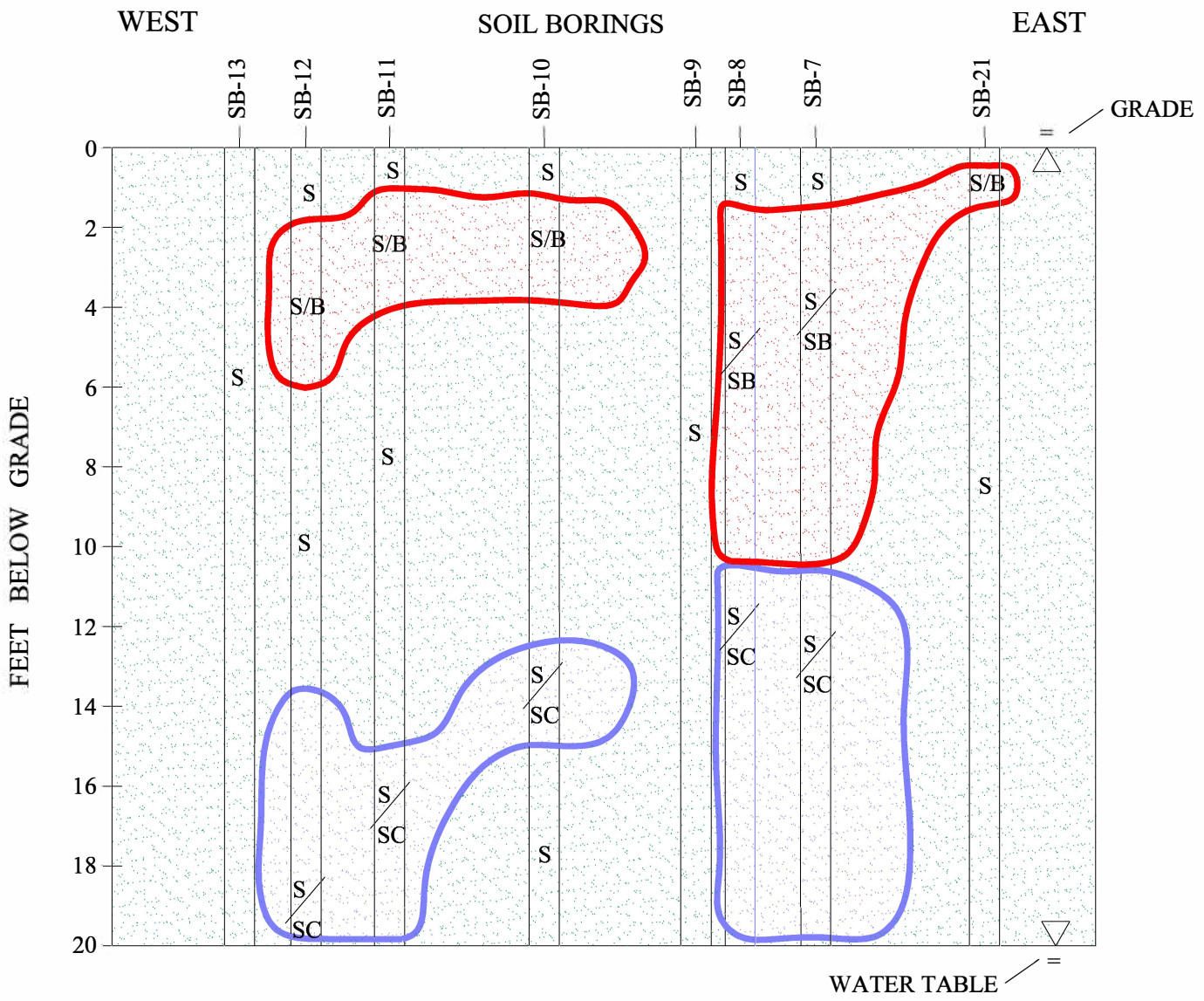
1. 6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.
2. NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation."
3. NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).
4. DER-31, Green Remediation, DEC Program Policy, January, 2011
5. "Site Investigation Report for the Former Sep's Cleaners Site" (Dermody Consulting, December, 2008)
6. Supplemental SI reports by Dermody Consulting dated March 10, March 23, and Site Investigation Report dated May 1, 2009.
7. Remedial Action Work Plan (RAWP) for the Former Sep's Cleaners Site (2009)
8. Final Design Report for the Former Sep's Cleaners Site (2013)

Figures



DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 1
SITE LOCATION AND
BOUNDARIES
250 LIVONIA AVENUE
BROOKLYN, NEW YORK



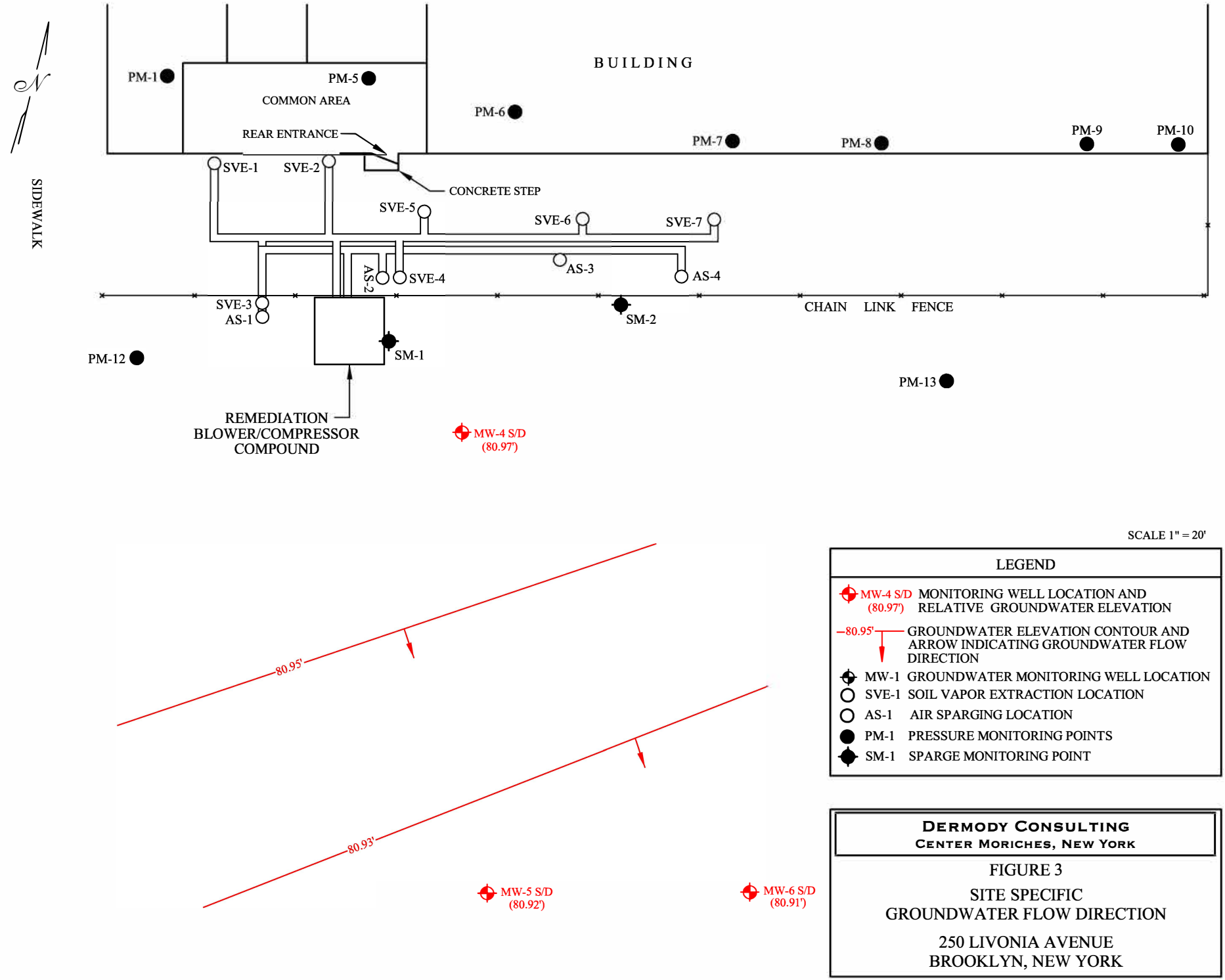
S/B - MEDIUM SAND WITH BRICK AND/OR WOOD FRAGMENTS

S - MEDIUM SAND

S/SC - MEDIUM SAND WITH SOME SILT/CLAY

DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 2
GEOLOGIC CROSS-SECTION
250 LIVONIA AVENUE
BROOKLYN, NEW YORK



SCALE 1" = 20'

LEGEND

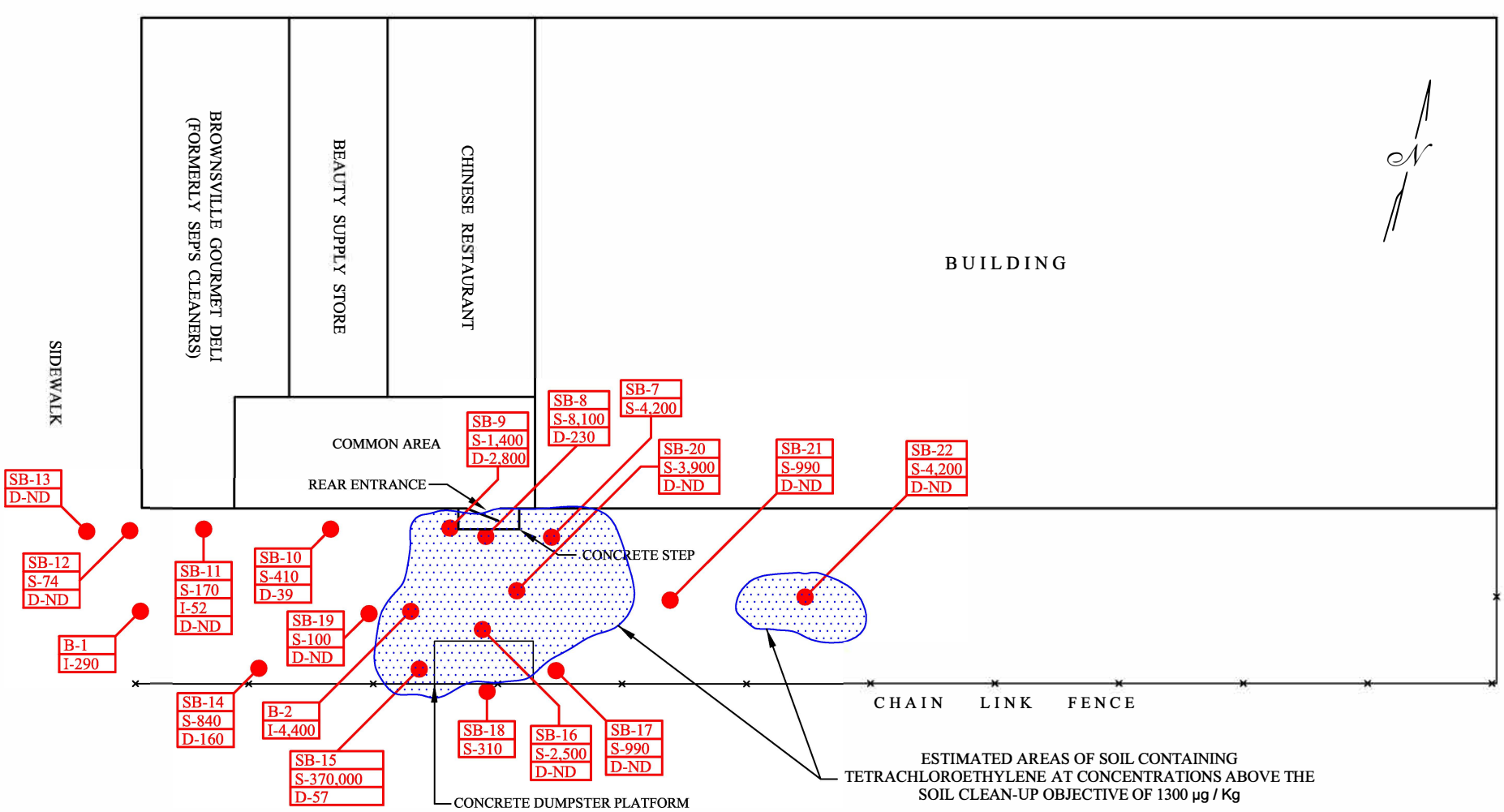
- MW-4 S/D (80.97') — MONITORING WELL LOCATION AND RELATIVE GROUNDWATER ELEVATION
- 80.95' — GROUNDWATER ELEVATION CONTOUR AND ARROW INDICATING GROUNDWATER FLOW DIRECTION
- MW-1 — GROUNDWATER MONITORING WELL LOCATION
- SVE-1 — SOIL VAPOR EXTRACTION LOCATION
- AS-1 — AIR SPARGING LOCATION
- PM-1 — PRESSURE MONITORING POINTS
- SM-1 — SPARGE MONITORING POINT

DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 3

SITE SPECIFIC
GROUNDWATER FLOW DIRECTION

250 LIVONIA AVENUE
BROOKLYN, NEW YORK



LEGEND

SB-7 SOIL BORING SAMPLING LOCATION

S-4,200 TETRACHLOROETHYLENE CONCENTRATIONS µg / Kg AND APPROXIMATE SAMPLING DEPTH: S- SHALLOW (0-6'), I- INTERMEDIATE (6'-16') AND D-DEEP (16'-20') ND- NOT DETECTED

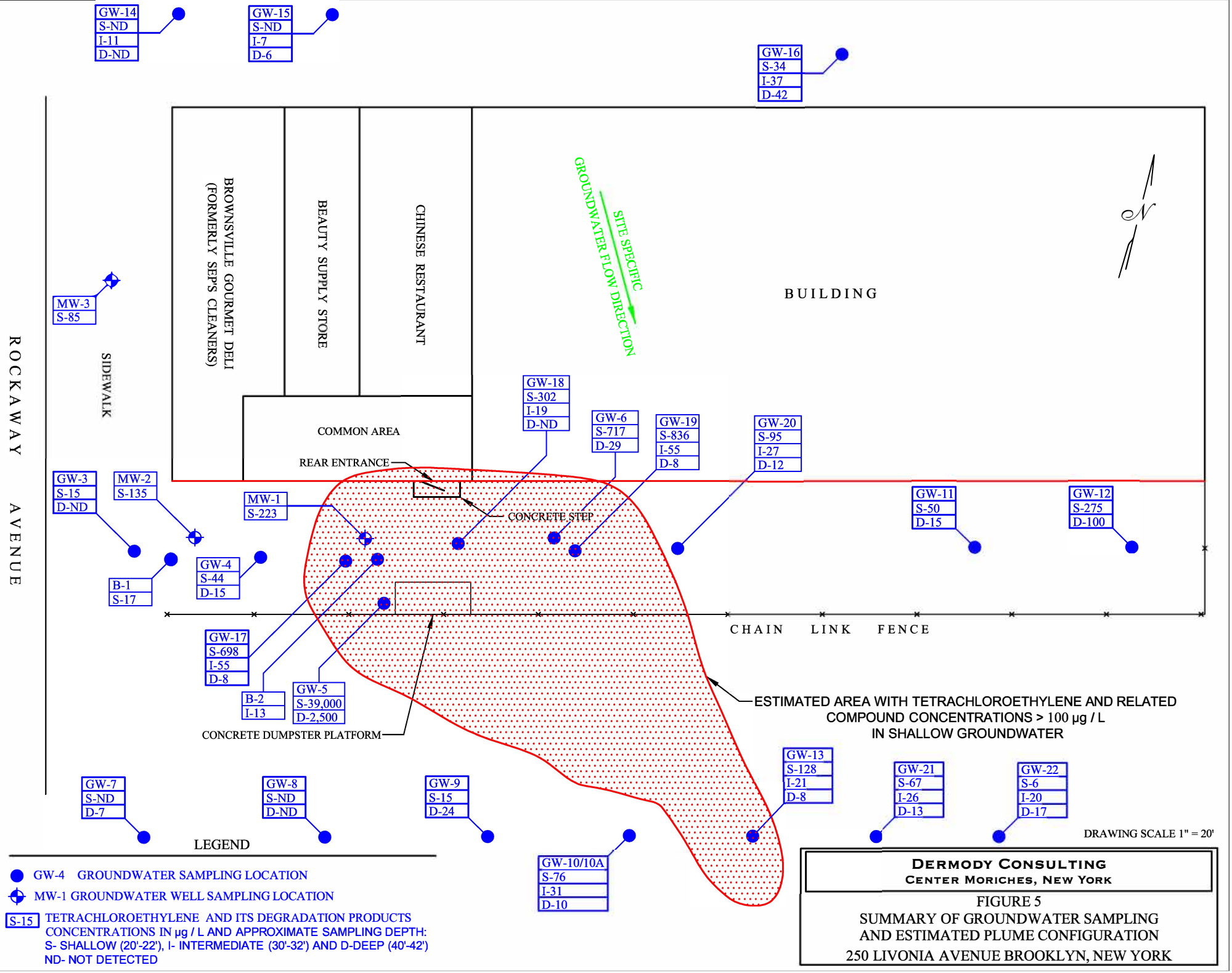
DRAWING SCALE 1" = 20'

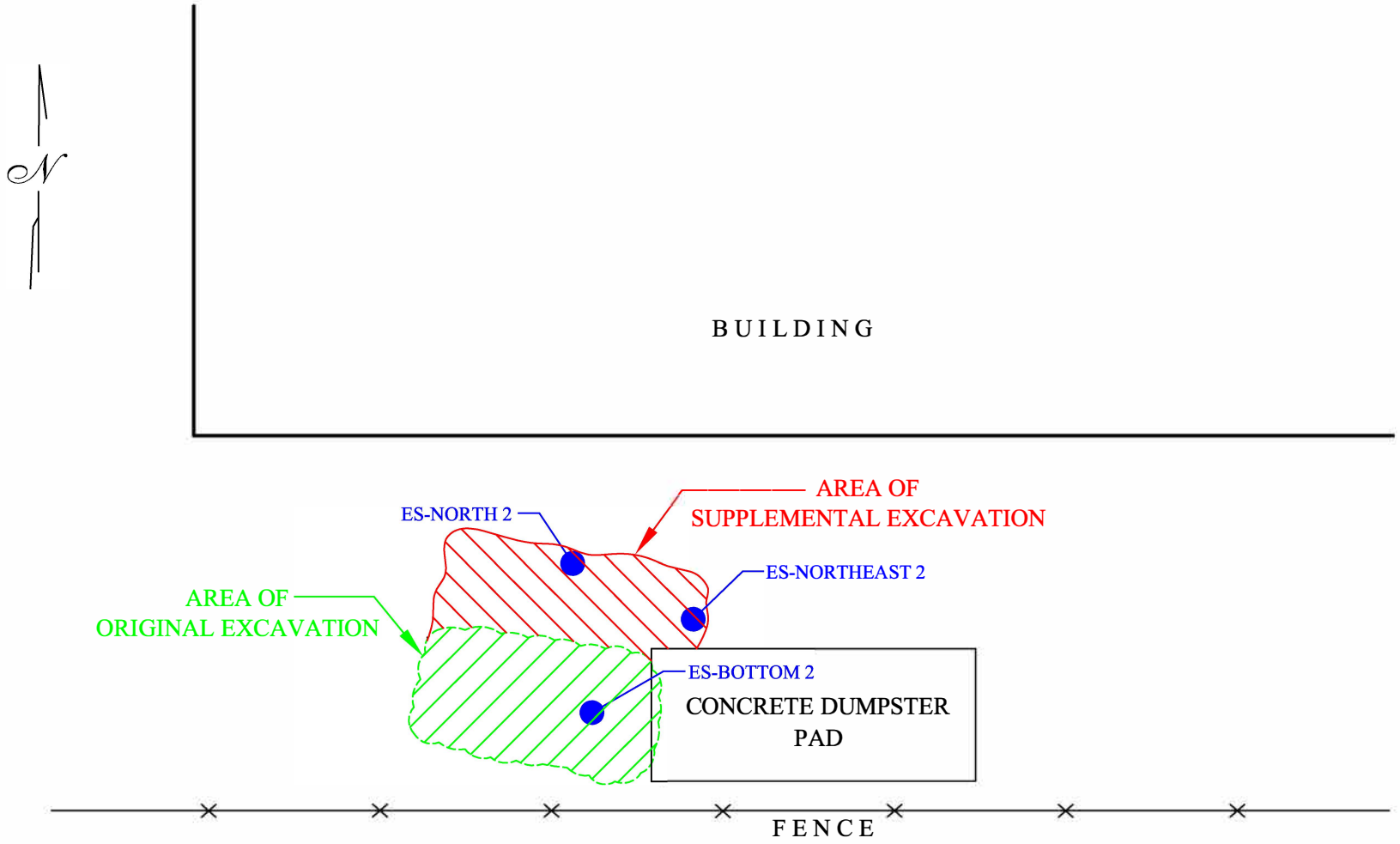
DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 4

SUMMARY OF EXTERNAL SOIL SAMPLING AND APPROXIMATE AREA OF CONTAMINATED SOIL

250 LIVONIA AVENUE
BROOKLYN, NEW YORK


GW-14
S-ND
I-11
D-ND
GW-15
S-ND
I-7
D-6
GW-16
S-34
I-37
D-42
BROWNSVILLE GOURMET DELI
(FORMERLY SEPS CLEANERS)
BEAUTY SUPPLY STORE
CHINESE RESTAURANT
BUILDING
GROUNDWATER FLOW DIRECTION
SITE SPECIFIC
N
MW-3
S-85
SIDEWALK
ROCKAWAY AVENUE
COMMON AREA
REAR ENTRANCE
CONCRETE STEP
GW-18
S-302
I-19
D-ND
GW-6
S-717
D-29
GW-19
S-836
I-55
D-8
GW-20
S-95
I-27
D-12
GW-3
S-15
D-ND
MW-2
S-135
MW-1
S-223
GW-11
S-50
D-15
GW-12
S-275
D-100
B-1
S-17
GW-4
S-44
D-15
CHAIN LINK FENCE
GW-17
S-698
I-55
D-8
B-2
I-13
GW-5
S-39,000
D-2,500
CONCRETE DUMPSTER PLATFORM
ESTIMATED AREA WITH TETRACHLOROETHYLENE AND RELATED
COMPOUND CONCENTRATIONS > 100 µg / L
IN SHALLOW GROUNDWATER
GW-13
S-128
I-21
D-8
GW-21
S-67
I-26
D-13
GW-22
S-6
I-20
D-17
GW-7
S-ND
D-7
GW-8
S-ND
D-ND
GW-9
S-15
D-24
GW-10/10A
S-76
I-31
D-10
DRAWING SCALE 1" = 20'
LEGEND
GW-4 GROUNDWATER SAMPLING LOCATION
MW-1 GROUNDWATER WELL SAMPLING LOCATION
S-15 TETRACHLOROETHYLENE AND ITS DEGRADATION PRODUCTS
CONCENTRATIONS IN µg / L AND APPROXIMATE SAMPLING DEPTH:
S- SHALLOW (20'-22'), I- INTERMEDIATE (30'-32') AND D-DEEP (40'-42')
ND- NOT DETECTED
DERMODY CONSULTING
CENTER MORICHES, NEW YORK
FIGURE 5
SUMMARY OF GROUNDWATER SAMPLING
AND ESTIMATED PLUME CONFIGURATION
250 LIVONIA AVENUE BROOKLYN, NEW YORK



DRAWING NOT TO SCALE

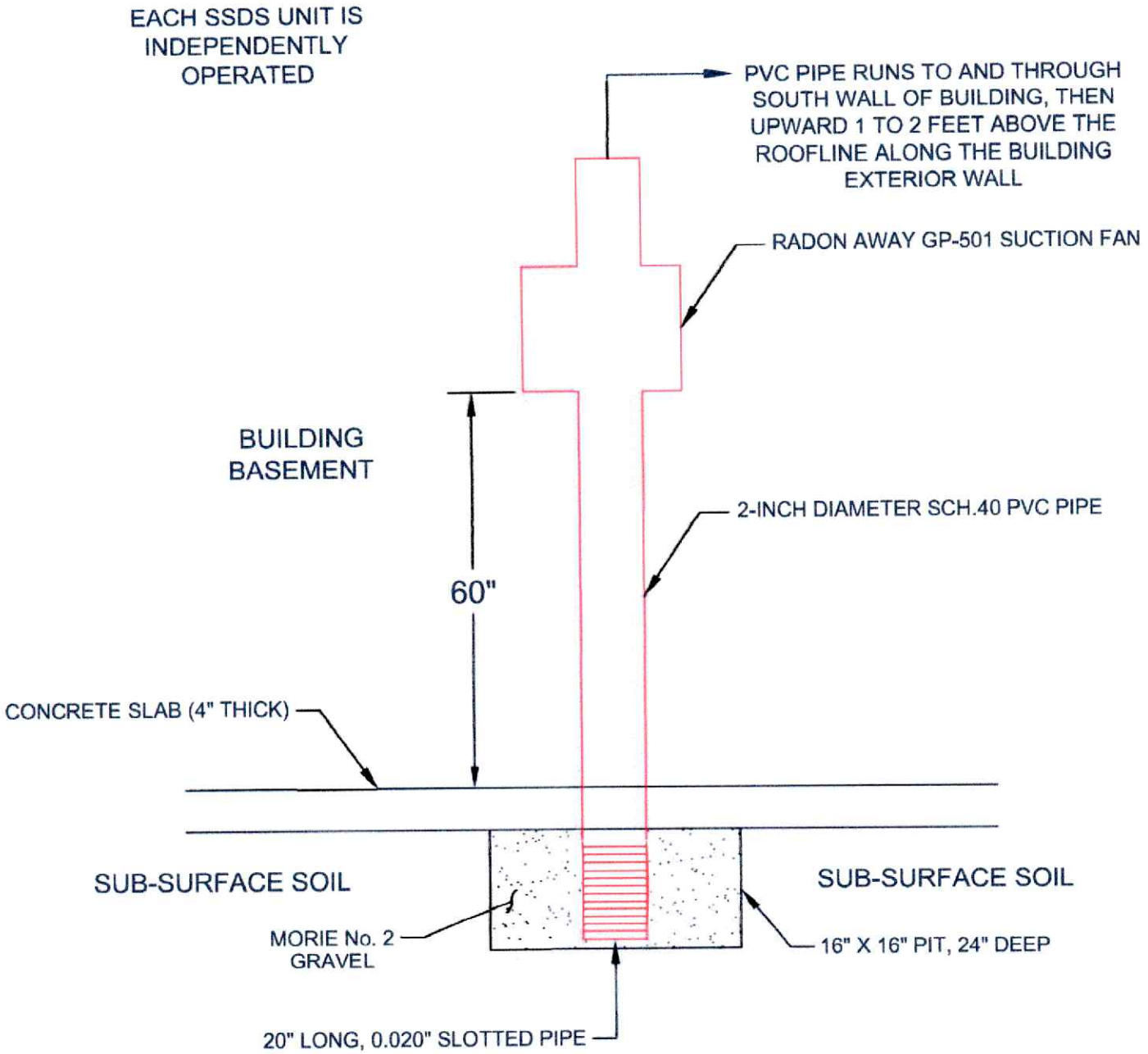
DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 6
AREA OF EXCAVATION AND
STAGE TWO END SAMPLING LOCATIONS
250 LIVONIA AVENUE
BROOKLYN, NEW YORK

LEGEND

● ES-NORTH END SAMPLING LOCATIONS

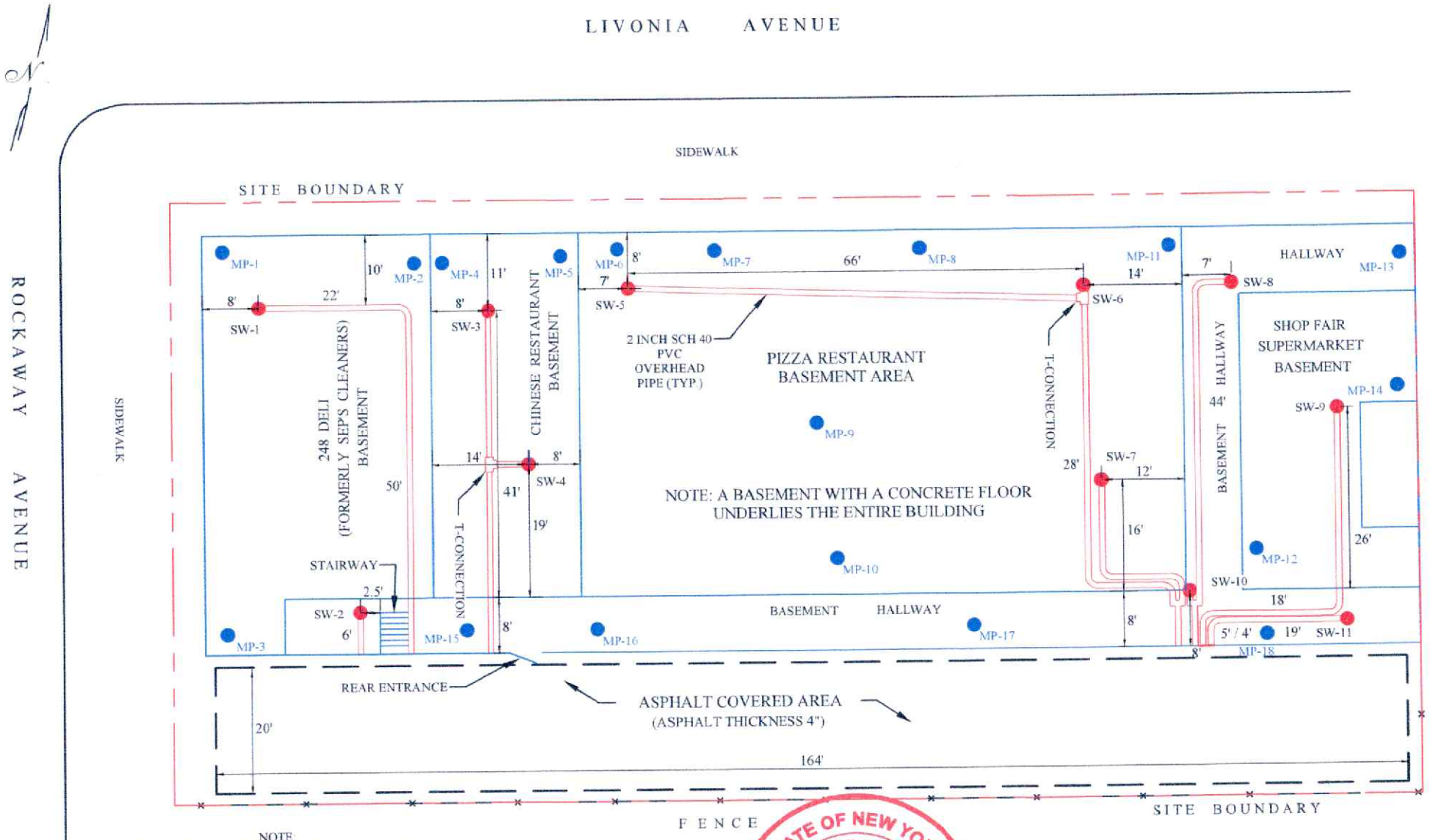
NOTE: END SAMPLES FROM THE EXCAVATION WALLS WERE OBTAINED FROM A DEPTH OF ONE FOOT BELOW GRADE



DRAWING NOT TO SCALE

DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 7
SCHEMATIC DIAGRAM FOR
SSDS UNITS
250 LIVONIA AVENUE
BROOKLYN, NEW YORK



NOTE:
THE PIPES EXIT THE BUILDING'S SOUTH WALL AND RUN UPWARDS ALONG THE EXTERIOR SOUTH WALL TO A HEIGHT OF APPROXIMATELY 2' FEET ABOVE THE 12-FOOT-HIGH ROOF LINE.

LEGEND

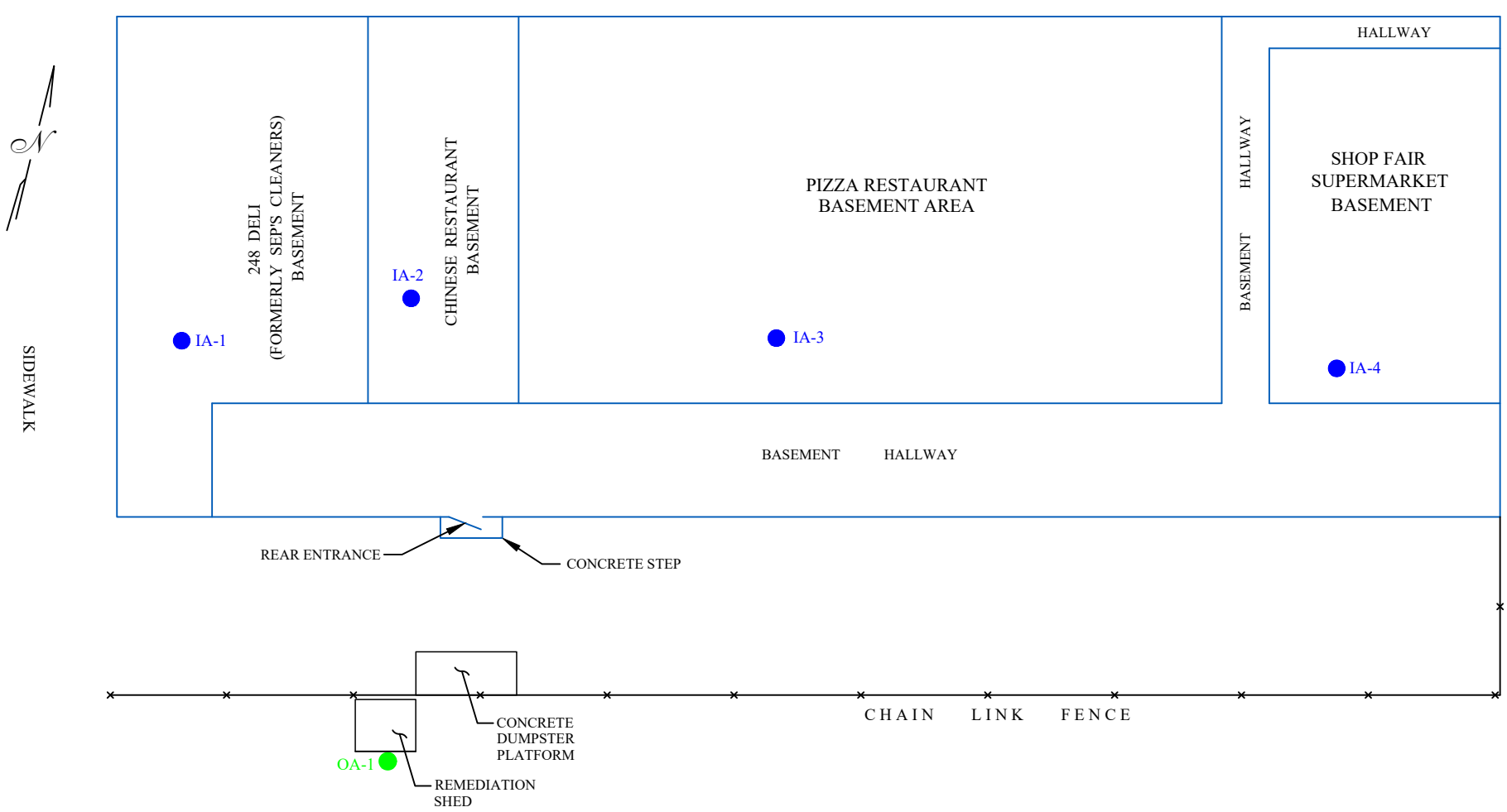
SCALE: 1" = 20'

- SW-1 SUCTION WELL LOCATION
- MP-1 APPROXIMATE LOCATIONS OF PRESSURE MONITORING POINTS

STATE OF NEW YORK
RAVI KUMAR KORLIPARA
070038
LICENSED PROFESSIONAL ENGINEER

DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 8
SITE COVER AND SSDS
LAYOUT
250 LIVONIA AVENUE
BROOKLYN, NEW YORK



LEGEND

IA-1 INDOOR AIR SAMPLE LOCATION

OA-1 OUTDOOR AIR SAMPLE LOCATION

DRAWING SCALE 1" = 20'

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CENTER MORICHES, NEW YORK

FIGURE 9

BASEMENT AND OUTDOOR
SOIL VAPOR INTRUSION SAMPLING LOCATIONS
250 LIVONIA AVENUE
BROOKLYN, NEW YORK

Appendix A

Environmental Easement

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

This page is part of the instrument. The City Register will rely on the information provided by you on this page for purposes of indexing this instrument. The information on this page will control for indexing purposes in the event of any conflict with the rest of the document.

2017030101426001001E0D38

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 10**

Document ID: 2017030101426001 Document Date: 01-30-2017 Preparation Date: 03-01-2017
Document Type: EASEMENT
Document Page Count: 9

PRESENTER:
MIT NATIONAL LAND SERVICES
ONE PENN PLAZA, 34TH FLOOR
PICK UP MICHAEL DANTZLER
NEW YORK, NY 10119
646-647-2688
MITCR183911K

RETURN TO:
CERTILMAN BALIN ADLER & HYMAN LLP
90 MERRICK AVENUE
9TH FLOOR
NEW YORK, NY 11554

PROPERTY DATA

Borough	Block	Lot	Unit	Address
BROOKLYN	3590	16	Entire Lot	250 LIVONIA AVENUE

Property Type: COMMERCIAL REAL ESTATE

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year____ Reel____ Page_____ *or* File Number_____

PARTIES

GRANTOR/SELLER:
RIVERDALE OSBORNE TOWERS COMMERCIAL LLC
C/O CPC RESOURCES, INC., 28 EAST 28TH STREET
NEW YORK, NY 10016

GRANTEE/BUYER:
PEOPLE OF THE STATE OF NEW YORK
625 BROADWAY
ALBANY, NY 12233

FEES AND TAXES

Mortgage :		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	82.00
Affidavit Fee:	$	0.00

Filing Fee:	$	100.00
NYC Real Property Transfer Tax:	$	0.00
NYS Real Estate Transfer Tax:	$	0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 03-30-2017 10:47
City Register File No.(CRFN): **2017000122868**

City Register Official Signature

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 95 of 30th day of January, 2017, between Owner(s) Riverdale Osborne Towers Commercial LLC, having an office at c/o CPC Resources, Inc., 28 East 28th Street, New York, New York 10016, County of New York, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 242-288 Livonia Avenue in the City of New York, County of Kings and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 3590 Lot 16, being the same as that property conveyed to Grantor by deed dated August 5, 2009 and recorded in the City Register of the City of New York as CRFN # 2009000254706. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.56577 +/- acres, and is hereinafter more fully described in the Land Title Survey dated August 9, 2016 prepared by Bartlett, Ludlam & Dill Associates, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation

established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of the Stipulation between Riverdale Osborne Towers Upper Manager LLC and the New York State Department of Environmental Conservation dated October 10, 2008 and having an Index Number: R2-20081016-500, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held

by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved b the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Spill Number: 0712821
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

And a Copy to Grantor:

CPC Resources, Inc.
Attn: General Counsel
28 East 28th Street, 9th Floor
New York, New York 10016

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

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IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Riverdale Osborne Towers Commercial LLC:

By: _____

Print Name: Elizabeth PROPP

Title: Sr. Vice President Date: 1-13-2017

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF NY)

On the 13 day of January, in the year 20 17, before me, the undersigned, personally appeared Elizabeth PROPP, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

CATHERINE ANNE KELLY
NOTARY PUBLIC-STATE OF NEW YORK
No. 01KE6312619
Qualified in Kings County
Commission Expires October 06, 2018

SEAL

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 30th day of January, in the year 2017, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SEAL

SCHEDULE "A" PROPERTY DESCRIPTION

Environmental Easement and Legal Description

Tax Map No. 3590.16

ALL those plots, pieces or parcels of real property situate, lying and being in the Borough of Brooklyn, City and State of New York, bounded and described as follows:

BEGINNING at a comer formed by the intersection of the easterly side of Rockaway Avenue with the southerly side of Livonia Avenue, as shown on the map showing a change in the street system, dated July 23, 1970 (V-2061), adopted by the Board of Estimate, on October 29, 1970.

RUNNING THENCE, easterly, along said southerly side of Livonia Avenue, a distance of 265.00 feet, to a point;

THENCE southerly, along a line which is parallel to said easterly side of Rockaway Avenue, a distance of 93.00 feet, to a point;

THENCE westerly, along a line which is parallel to said southerly side of Livonia Avenue, a distance of 265.00 feet, to said easterly side of Rockaway Avenue;

THENCE northerly, along said easterly side of Rockaway Avenue, a distance of 93.00 feet, to a point or place of BEGINNING, to a point or place of BEGINNING.

NOTE: Description matches recorded deed (CRFN #2009000254706).

The above described parcel having an area of 24,645 square feet or 0.56577 acre.

Appendix B
Boring Logs

Boring Log

Boring Location: SB-1
Date: November 25, 2008
Total Depth: 2 feet
Diameter: 3 inches
Sample Interval Length:
Drilling Method: Auger
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected from the top of the soil to 1' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 1 2			0' - 10" Concrete 10" - 2' Light brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-2
Date: November 25, 2008
Total Depth: 2 feet
Diameter: 3 inches
Sample Interval Length:
Drilling Method: Auger
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected from the top of the soil to 1' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 1 2			0' - 10" Concrete 10" - 2' Light brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-3
Date: November 25, 2008
Total Depth: 2 feet
Diameter: 3 inches
Sample Interval Length:
Drilling Method: Auger
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected from the top of the soil to 1' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 1 2			0' - 10" Concrete 10" - 2' Light brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-4
Date: November 25, 2008
Total Depth: 2 feet
Diameter: 3 inches
Sample Interval Length:
Drilling Method: Auger
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected from the top of the soil to 1' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 1 2	52		0' - 10" Concrete 10" - 2' Light brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-5
Date: November 25, 2008
Total Depth: 2 feet
Diameter: 3 inches
Sample Interval Length:
Drilling Method: Auger
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected from the top of the soil to 1' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 1 2	57		0' - 10" Concrete 10" - 2' Light brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-6
Date: November 25, 2008
Total Depth: 2 feet
Diameter: 3 inches
Sample Interval Length:
Drilling Method: Auger
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected from the top of the soil to 1' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 1 2	381		0' - 10" Concrete 10" - 2' Light brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-7
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected at 1'-2' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0	0.0		0' - 1' Gray to black medium-grain sand with gravel.
2	8.4	0'-4': 50	
4			1' - 2' Dark brown, medium-grain sand with brick fragments.
6	4.7	4'-8': 50	
8			
10	6.8	8'-12': 40	4' - 6' Dark brown, medium-grain sand with brick fragments.
12			
14		12'-16': 40	
16	0.0		8' - 10' Dark brown, fine to medium-grain sand with glass and wood fragments.
18		16'-20': 40	
20	0.0		12' - 14' Brown, fine to medium-grain sand with some silt, moist.
			16' - 18' Brown, fine to medium-grain sand with some silt, moist.

Dermody Consulting

Boring Log

Boring Location: SB-8
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at 4'-6' and 16'-18' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0	7.8		0' - 1' Gray black to dark brown coarse to medium-grain sand with gravel.
2	0.0	0'-4': 50	
4			1'- 2' Dark brown, medium-grain sand.
6	27.4	4'-8': 40	
8			4' - 6' Dark brown, medium-grain sand with brick fragments.
10	16.8	8'-12': 50	
12			8' - 10' Brown, medium-grain sand with wood fragments.
14	16.8	12'-16': 50	
16			12' - 14' Brown, fine to medium-grain sand with some silt, moist.
18	11.0	16'-20': 50	
20			16' - 18' Brown, fine to medium-grain sand with some silt, moist.

Dermody Consulting

Boring Log

Boring Location: SB-9
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at 1'-2' and 12'-14' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2 4 6 8 10 12 14 16 18 20	8.6 0.0 0.0 54.1 0.0	0'-4': 50 4'-8': 50 8'-12': 50 12'-16': 50 16'-20': 50	0' - 1' Gray to black, medium-grain sand with gravel. 1'- 2' Dark brown, medium-grain sand. 4' - 6' Brown, medium-grain sand. 8' - 10' Brown, medium-grain sand. 12' - 14' Brown, medium-grain sand. 16' - 18' Brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-10
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at 1'-2' and 16'-18' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2 4 6 8 10 12 14 16 18 20	0.0 0.0 0.2 0.0 0.0 17.3	0'-4': 50 4'-8': 50 8'-12': 50 12'-16': 50 16'-20': 50	0' - 1' Gray to black, medium-grain sand with gravel. 1'- 2' Dark brown, medium-grain sand with brick fragments. 4' - 6' Dark brown, medium-grain sand. 8' - 10' Dark brown, medium-grain sand. 12' - 13' Dark brown, medium-grain sand. 13' - 14' Brown, fine-grain sand with silt and clay, moist. 16' - 18' Brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-11
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at 1'-2', 15'-16', and 17'-18' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2 4 6 8 10 12 14 16 18 20	0.0 3.8 1.8 0.0 1.5 12.8 116	0'-4': 50 4'-8': 50 8'-12': 50 12'-16': 100 16'-20': 50	0' - 1' Gray to black, medium-grain sand with gravel. 1'- 2' Dark brown, medium-grain sand with brick fragments. 4' - 6' Brown, medium-grain sand. 8' - 10' Brown, medium-grain sand. 12' - 15' Brown, medium-grain sand. 15' - 16' Brown, fine to medium-grain sand with some silts and clay. 16' - 17' Brown, medium-grain sand with some silts and clay. 17' - 18' Gray, medium-grain sand and some silts. Fuel oil odor noted.

Dermody Consulting

Boring Log

Boring Location: SB-12
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at grade to 2', and 16'-18' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2 4 6 8 10 12 14 16 18 20	0.2 0.0 0.0 2.7 0.0 17.8	0'-4': 50 4'-8': 50 8'-12': 50 12'-16': 75 16'-20': 50	0' - 2' Dark brown, medium-grain sand. 4'- 6' Dark brown, medium-grain sand with brick fragments. 8' - 10' Brown, medium-grain sand. 12' - 14' Brown, medium-grain sand. 14' - 15' Brown, medium-grain sand with some silts and clay. 16' - 18' Brown, medium-grain sand with some silts and clay, moist. Fuel oil odor noted.

Dermody Consulting

Boring Log

Boring Location: SB-13
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected at 16'-18' below grade.

Soil characteristics could not be recorded from grade to 16 feet below grade due to zero percent recovery.

Depth *(in feet below grade)*	**PID Readings** *(ppm)*	**Percent Recovery**	**Soil Characteristics**
0 2 4 6 8 10 12 14 16 18 20	8.9	0'-4': 0 4'-8': 0 8'-12': 0 12'-16': 0 16'-20': 50	0' - 16' No geologic information obtained. 16' - 18' Brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-14
Date: November 24, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 4 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at grade to 2', and 16'-18' feet below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2 4 6 8 10 12 14 16 18 20	7.8 0.0 0.0 0.0 10.8	0'-4': 50 4'-8': 50 8'-12': 50 12'-16': 0 16'-20': 50	0' - 2' Brown, medium-grain sand with brick fragments. 4'- 6' Brown, medium-grain silt with brick and wood fragments. 8' - 10' Brown, medium-grain sand with fill material. 12' - 14' Minor amounts of concrete. 16' - 18' Brown, medium-grain sand with some silts, saturated.

Dermody Consulting

Boring Log

Boring Location: SB-16
Date: November 25, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 5 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at 1'-3' and 18'-20' feet below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2.5 5 7.5 10 12.5 15 17.5 20	6.9 0.0 0.0 7.8	0'-5': 80 5'-10': 80 10'-15': 80 15'-20': 100	0' - 1' Gray to black, medium-grain sand with gravel. 1' - 3' Brown, medium-grain sand with brick fragments. 5' - 9' Brown, medium-grain sand with brick fragments. 10' - 14' Brown, medium-grain sand. 15' - 20' Brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-17
Date: November 25, 2008
Total Depth: 20 feet
Diameter: 2 inches
Sample Interval Length: 5 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil samples collected at 2'-3', and 18'-20' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2.5 5 7.5 10 12.5 15 17.5 20	6.8 5.4 1.9 12.8	0'-5': 80 5'-10': 60 10'-15': 80 15'-20': 100	0' - 4' Brown, medium-grain sand with wood fragments, ash, and cinders. 5' - 8' Brown, medium-grain sand. 10' - 13' Brown, medium-grain sand. 15' - 20' Brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location: SB-18
Date: November 26, 2008
Total Depth: 15 feet
Diameter: 2 inches
Sample Interval Length: 5 feet
Drilling Method: Direct-push Technology
Drilling Company: Eastern Environmental Solutions, Inc.
Reported By: P. Dermody

Notes:
Soil sample collected at 1' - 2' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2.5 5 7.5 10 12.5 15	12.8 3.1 10.8	0'-5': 80 5'-10': 80 10'-15': 100	0' - 1' Gray to black, medium-grain sand with gravel. 1' - 4' Brown, medium-grain sand with brick fragments and cinders. 5' - 9' Brown, medium-grain sand with brick fragments and cinders. 10' - 15' Brown, medium-grain sand.

Dermody Consulting

Boring Log

Boring Location:	SB-19	**Notes:** Soil samples collected from 0' - 2' and 18' - 20' below grade.
Date:	2/25/2009	
Total Depth:	20 feet below grade	
Diameter:	2 inches	
Sample Interval Length:	5 feet	
Drilling Company:	Eastern Environmental Solutions, Inc.	
Consultant:	Dermody Consulting	

Depth *(in feet below grade)*	**PID Readings** *(ppm)*	**Percent Recovery**	**Soil Characteristics**
0 2.5 5 7.5 10 12.5 15 17.5 20	0'3': 1.6 5'-8': 0.0 10'-12': 0.0 12'-14': 6.2 15'-19': 0.0	0'-5': 60 5'-10': 60 10'-15': 80 15'-20': 80	0' - 3' Dark brown, medium-grained sand with brick and wood fragments 5' - 8' Dark brown, medium-grained sand with brick, wood, and concrete fragments 10' - 12' Brown, medium-grained sand and silt, moist. 12' - 14' & 15' - 19' Brown, medium-grained sand

Boring Log

Boring Location:	SB-20
Date:	2/25/2009
Total Depth:	20 feet below grade
Diameter:	2 inches
Sample Interval Length:	5 feet
Drilling Company:	Eastern Environmental Solutions, Inc.
Consultant:	Dermody Consulting

Notes:
Soil samples collected from 0' - 2' and 18' - 20' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2.5 5 7.5 10 12.5 15 17.5 20	0'3': 10.8 5'-9': 0.1 10'-14': 1.8 15'-19': 2	0'-5': 60 5'-10': 80 10'-15': 80 15'-20': 80	0' - 3' Dark brown, medium-grained sand with gravel and concrete fragments 5' - 9' Dark brown, medium-grained sand with gravel and concrete, brick, and glass fragments 10' - 14' & 15' - 19' Brown, medium-grained sand

Boring Log

Boring Location:	SB-21
Date:	2/25/2009
Total Depth:	20 feet below grade
Diameter:	2 inches
Sample Interval Length:	5 feet
Drilling Company:	Eastern Environmental Solutions, Inc.
Consultant:	Dermody Consulting

Notes:
Soil samples collected from 0' - 2' and 18' - 20' below grade.

Depth *(in feet below grade)*	PID Readings *(ppm)*	Percent Recovery	Soil Characteristics
0 2.5 5 7.5 10 12.5 15 17.5 20	0'-1': 12 1'-4': 1 5'-9': 1 10'-14': 21 15'-20': 2	0'-5': 80 5'-10': 80 10'-15': 80 15'-20': 100	0' - 1' Dark brown, medium-grained sand with brick fragments 1' - 20' Brown, medium-grained sand

Appendix C

Well Construction Logs

Well Construction Log

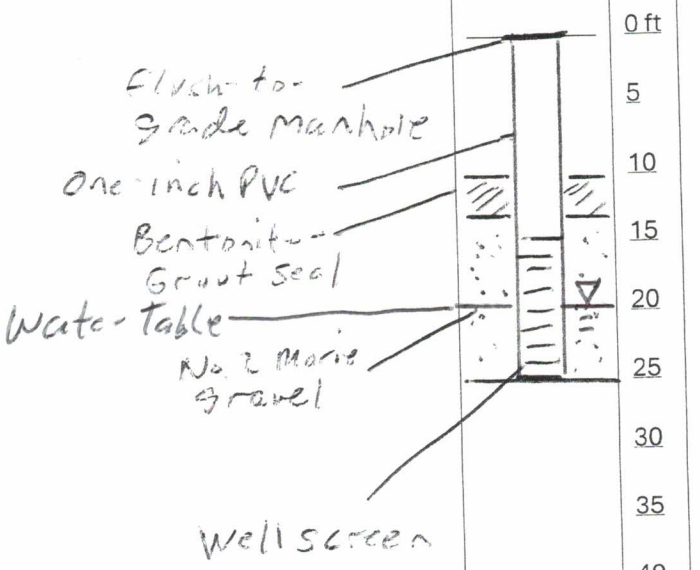
250 Livonia Ave.

Brooklyn, NY

Driller: Eastern Environmental Solutions Geologist: Peter Dermody, CPG

Well Number: MW-4S Well Size: PVC, Schedule 40, 1-inch diameter

Well Depth: 25' Screen Length: 10' Screen Slot Size: 0.020 inches



0 ft
5
10
15
20
25
30
35
40
45
50
55
60

Well Construction Log

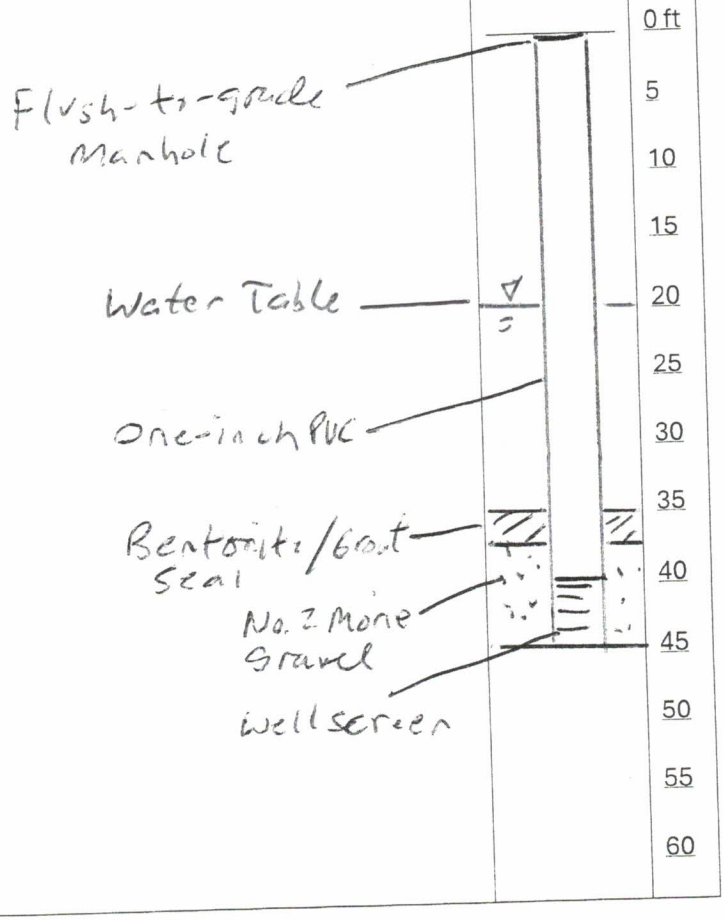
250 Livonia Ave.

Brooklyn, NY

Driller: Eastern Environmental Solutions Geologist: Peter Dermody, CPG

Well Number: MW-4D Well Size: PVC, Schedule 40, 1-inch diameter

Well Depth: Screen Length: Screen Slot Size: 0.020 inches



Well Construction Log

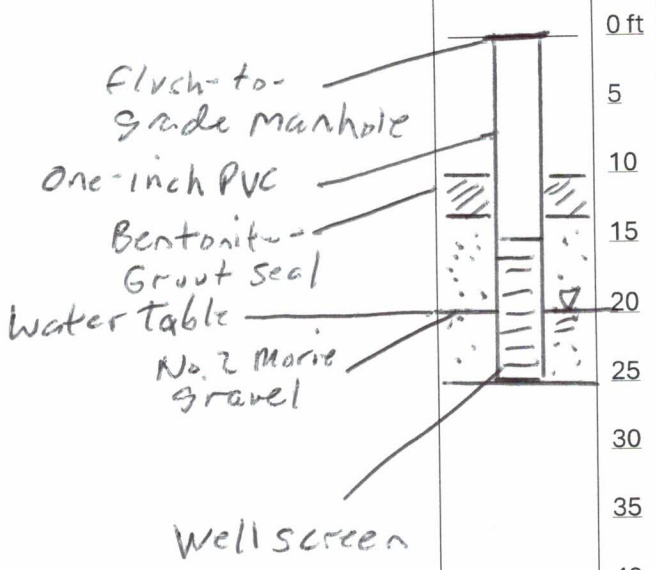
250 Livonia Ave.

Brooklyn, NY

Driller: Eastern Environmental Solutions Geologist: Peter Dermody, CPG

Well Number: MW-55 Well Size: PVC, Schedule 40, 1-inch diameter

Well Depth: 25' Screen Length: 10' Screen Slot Size: 0.020 inches



Well Construction Log

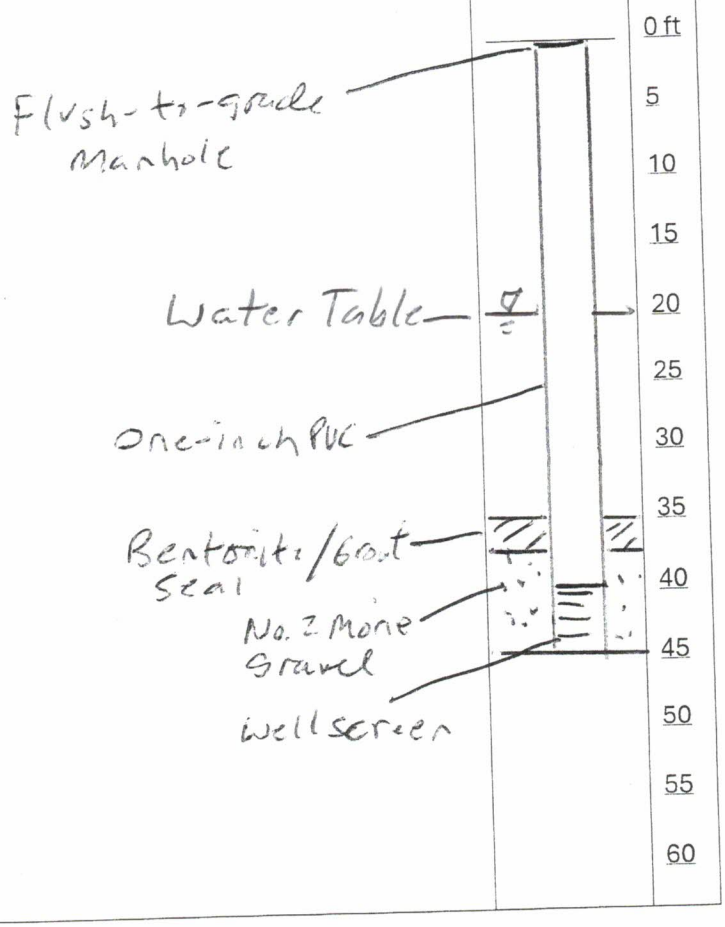
250 Livonia Ave.

Brooklyn, NY

Driller: Eastern Environmental Solutions Geologist: Peter Dermody, CPG

Well Number: MW-5D Well Size: PVC, Schedule 40, 1-inch diameter

Well Depth: 45' Screen Length: 5' Screen Slot Size: 0.020 inches



Well Construction Log

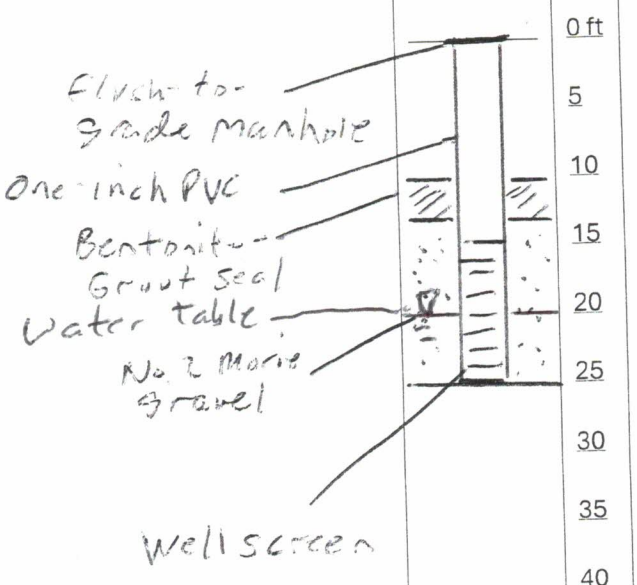
250 Livonia Ave.

Brooklyn, NY

Driller: Eastern Environmental Solutions Geologist: Peter Dermody, CPG

Well Number: MW-6S Well Size: PVC, Schedule 40, 1-inch diameter

Well Depth: 25' Screen Length: 10' Screen Slot Size: 0.020 inches



Well Construction Log

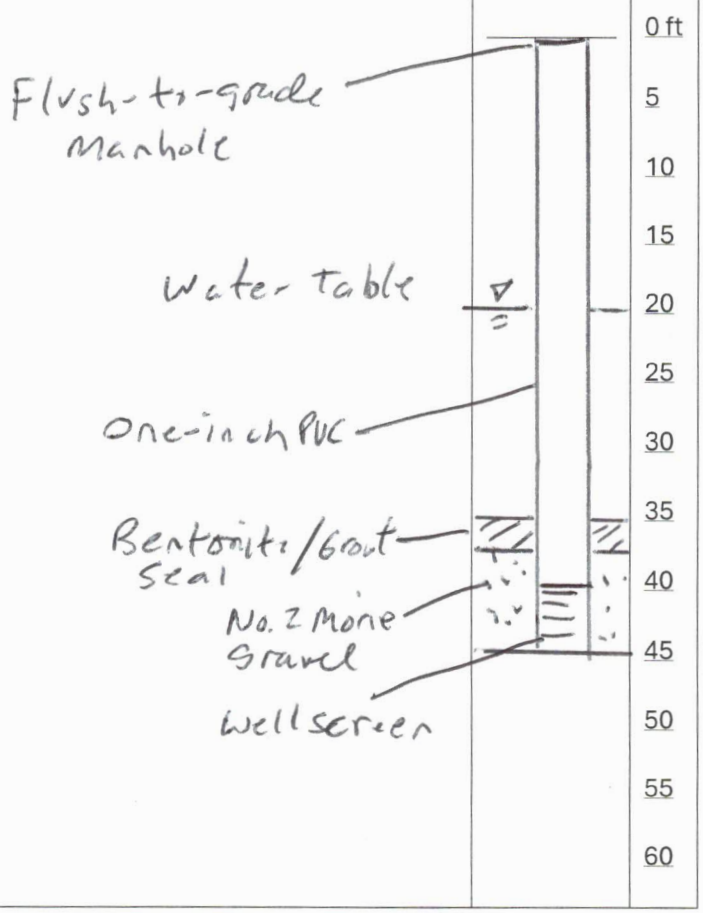
250 Livonia Ave.

Brooklyn, NY

Driller: Eastern Environmental Solutions Geologist: Peter Dermody, CPG

Well Number: MW-6D Well Size: PVC, Schedule 40, 1-inch diameter

Well Depth: 45' Screen Length: 5' Screen Slot Size: 0.020 inches



Appendix D

No-Further-Action Letter for

Verizon Building

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 2
47-40 21st Street, Long Island City, NY 11101
P: (718) 482-4995
www.dec.ny.gov

March 6, 2017

Elizabeth Propp
Vice-President
Riverdale Osborne Towers Upper Manager LLC
c/o CPC Resources, Inc.
28 East 28th Street, 9th Floor
New York, NY 10016

Re: Former Sep's Cleaners
250 Livonia Avenue, Brooklyn, NY
Stipulation Case # 0712821

Dear Ms. Propp:

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has completed its review of the letter report titled: "Verizon Building Soil Vapor Intrusion Investigation" dated December 29, 2016. The recommendation of no further action, which is based on the results of the sub-slab vapor and indoor air monitoring, is accepted. The report is determined to be in compliance with DER-10 and the NYSDOH Guidance for Evaluating Soil Vapor in the State of New York (2006) and is hereby approved.

If there are any questions regarding these comments, please call me at (718) 482-4096.

Sincerely,

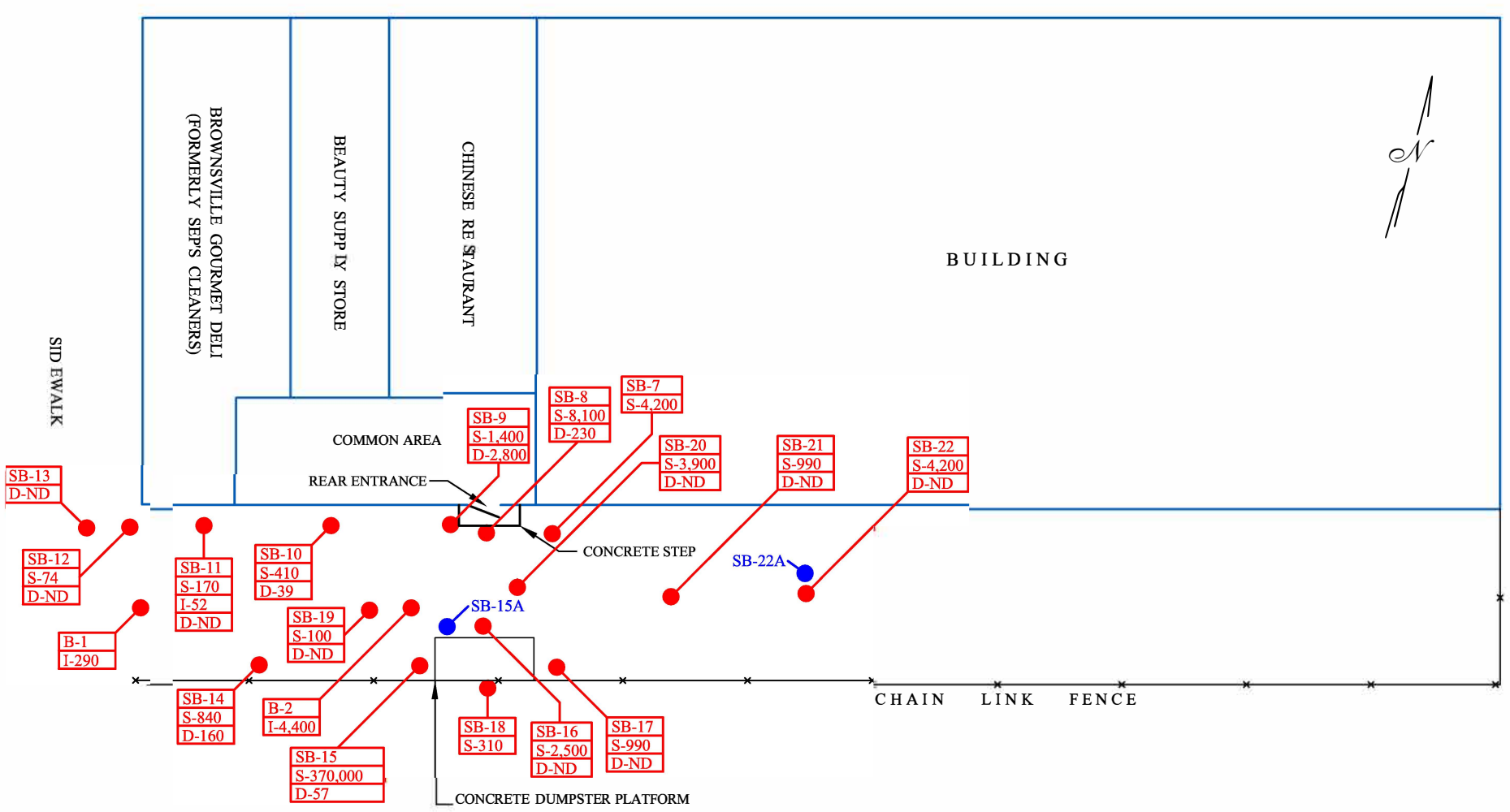
Nicholas S. Bollers

Nicholas S. Bollers
Environmental Engineer

ec: J. O'Connell, J. Urda – NYSDEC
J. Deming, B. Boyd – NYSDOH
B. Cohen – Certilman Balin Adler & Hyman, LLP
P. Dermody- Dermody Consulting

Appendix E

Figure and Table Summary of Soil Remediation



LEGEND

SB-15A SOIL BORING SAMPLING LOCATION

SB-7 SOIL BORING SAMPLING LOCATION

S-4,200 TETRACHLOROETHYLENE CONCENTRATIONS µg / Kg
AND APPROXIMATE SAMPLING DEPTH: S- SHALLOW
(0-6'), I- INTERMEDIATE (6'-16') AND D-DEEP (16'-20')
ND- NOT DETECTED

DRAWING SCALE 1" = 20'

DERMODY CONSULTING
CENTER MORICHES, NEW YORK

F I GURE 1

SUMMARY OF PRE- (IN RED) AND POST-SVE (IN BLUE) SOIL SAMPLING LOCATIONS

250 LIVONIA AVENUE
BROOKLYN, NEW YORK

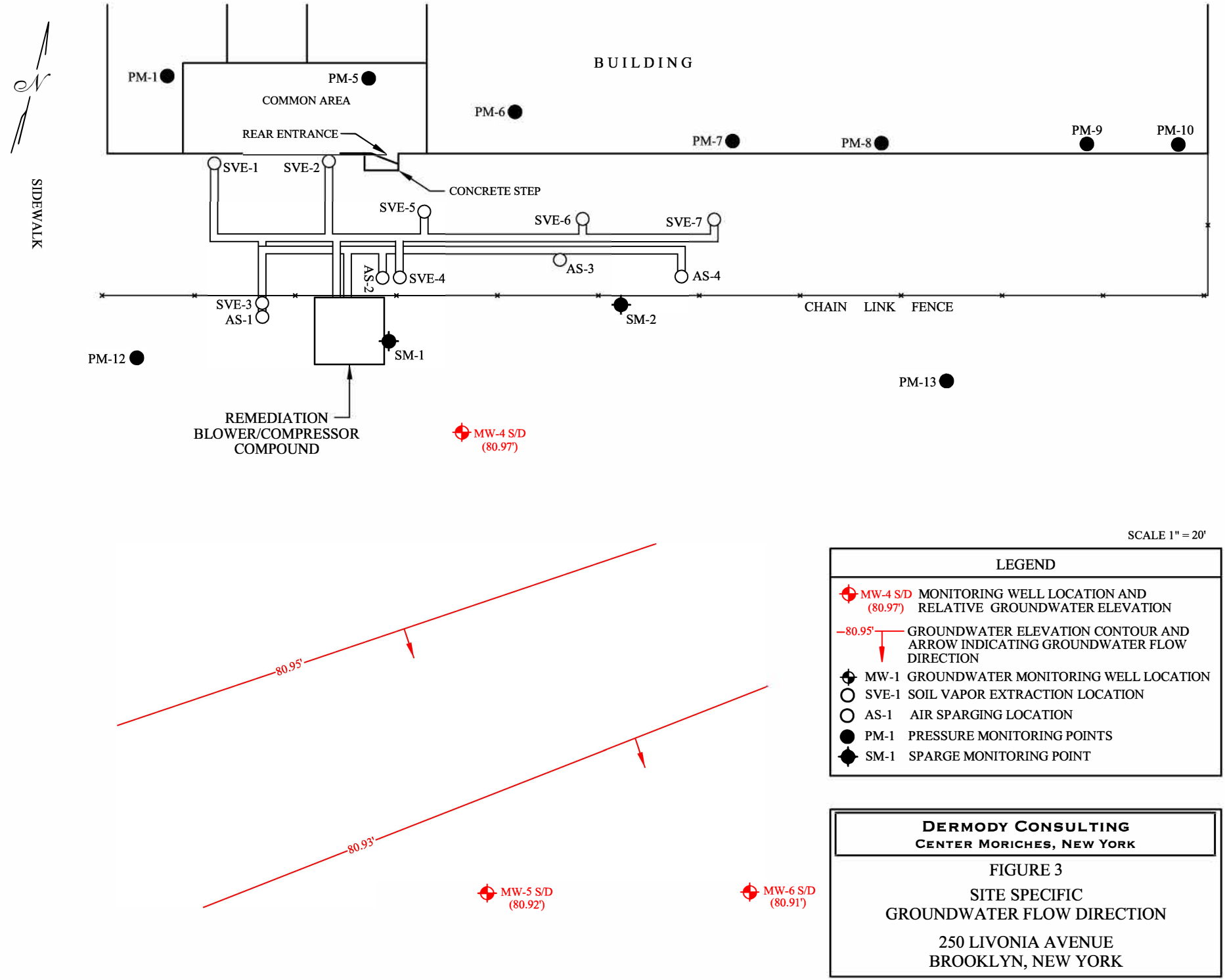
Table 1
Volatile Organic Compounds
Soil Sample Chemical Analytical Results
250 Livonia Ave Brooklyn, New York

Sample ID	SB-22A	SB-15A	NYSDEC Part 375 Commercial Use Soil Cleanup Objectives
Sample Depth	2-4’	7-8.5’	
Sample Date	10/24/18	10/30/18	
Naphthalene	3.2 J	ND	500,000
Tetrachloroethylene	20	170	150,000
Toluene	3.3	ND	500,000
cis-1,2-Dichloroethylene	ND	37	30,000
Methylene chloride	ND	7.0 J	500,000
Trichloroethylene	ND	45	200,000

Notes:
Results are in ug/kg.
Only detected analytes are reported.
ND = Not Detected
J = The concentration is estimated.

Appendix F

Figure and Table Summary of Groundwater Remediation



SCALE 1" = 20'

LEGEND

- MW-4 S/D (80.97') — MONITORING WELL LOCATION AND RELATIVE GROUNDWATER ELEVATION
- 80.95' — GROUNDWATER ELEVATION CONTOUR AND ARROW INDICATING GROUNDWATER FLOW DIRECTION
- MW-1 — GROUNDWATER MONITORING WELL LOCATION
- SVE-1 — SOIL VAPOR EXTRACTION LOCATION
- AS-1 — AIR SPARGING LOCATION
- PM-1 — PRESSURE MONITORING POINTS
- SM-1 — SPARGE MONITORING POINT

DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 3

SITE SPECIFIC
GROUNDWATER FLOW DIRECTION

250 LIVONIA AVENUE
BROOKLYN, NEW YORK

Table 1
Detected Volatile Organic Compounds (in ug/L)
250 Livonia Ave.
Brooklyn, New York
March 10, 2019

Sample ID	MW-4S 15-25' 3/10/19	MW-4S 15-25' 11/1/18	MW-4S 15-25' 6/24/18	MW-4S 15-25' 3/4/18	MW-4S 15-25' 10/11/17	MW-4D 15-25' 3/10/19	MW-4D 40-45' 11/1/18	MW-4D 40-45' 6/24//18	MW-4D 40-45' 3/4/18	MW-4D 40-45' 10/11/17	NYSDEC Class GA Ambient Water Quality Standards
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
cis-1,2-Dichloroethylene	0.86	ND	0.92	1.2	1.7	0.26 J	0.44 J	0.32 J	0.46	0.22	5
Tetrachloroethylene	4.4	5.0	4.3	**6.4**	**7.4**	3.3	3.5	3.8	**7.2**	2.5	5
Trichloroethylene	1.2	1.3	1.1	1.7	1.9	0.52	0.66	0.63	1.1	0.67	5
Chloroform	ND	ND	ND	ND	ND	**7.4**	3.5	0.96	ND	0.44	7
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Chloromethane	ND	ND	ND	ND	ND	0.41 J	ND	ND	ND	ND	5

Table 1
Detected Volatile Organic Compounds (in ug/L)
250 Livonia Ave.
Brooklyn, New York
March 10, 2019

Sample ID	MW-5S 15-25' 3/10/19	MW-5S 15-25' 11/1/18	MW-5S 15-25' 6/24/18	MW-5S 15-25' 3/4/18	MW-5S 15-25' 10/11/17	MW-5D 15-25' 3/10/19	MW-5D 40-45' 11/1/18	MW-5D 40-45' 6/24/18	MW-5D 40-45" 3/4/18	MW-5D 40-45' 10/11/17	NYSDEC Class GA Ambient Water Quality Standards
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
cis-1,2-Dichloroethylene	0.43 J	0.43 J	0.99	2.9	1.1	1.6	0.94	1.2	1.4	1.8	5
Tetrachloroethylene	2.0	2.2	3.7	5.0	3.0	2.7	3.7	2.6	3.1	2.5	5
Trichloroethylene	0.59	0.65	1.3	1.7	1.1	0.99	1.2	1.0	1.2	0.93	5
Chloroform	ND	ND	0.41 J	0.92	ND	ND	0.20 J	ND	ND	0.72	7
Chloromethane	ND	ND	ND	ND	0.30 OL-02,CCV- E,J	ND	ND	ND	ND	ND	5

Table 1
Detected Volatile Organic Compounds (in ug/L)
250 Livonia Ave.
Brooklyn, New York
March 10, 2019

Sample ID	MW-6S 15-25' 3/10/19	MW-6S 15-25' 11/1/18	MW-6S 15-25' 6/24/18	MW-6S 15-25' 3/4/18	MW-6S 15-25' 10/11/17	MW-6D 15-25' 3/10/19	MW-6D 40-45' 11/1/18	MW-6D 40-45' 6/24/18	MW-6D 40-45' 3/4/18	MW-6D 40-45' 10/11/17	NYSDEC Class GA Ambient Water Quality Standards
Acetone	7.8	ND	ND	ND	ND	NS	ND	1.3 J	**61**	6.8	50
cis-1,2-Dichloroethylene	ND	0.60	0.61	1.2	0.96	NS	ND	0.22 J	ND	ND	5
Tetrachloroethylene	0.41 CCV-E, J	**9.3**	**7.5**	**11**	**7.8**	NS	1.1	2.8	2.8	0.36	5
Trichloroethylene	ND	1.5	1.4	2.1	1.5	NS	0.26	0.66	0.79	ND	5
Chloroform	ND	ND	ND	ND	ND	NS	0.59	0.71	ND	ND	7
2-Butanone	ND	ND	ND	2.2	ND	NS	ND	ND	**210**	1.6	5
4-Methyl-2- Pentanone	ND	ND	ND	ND	ND	NS	ND	ND	0.93	1.4	5
Chloromethane	0.26 J	ND	ND	ND	ND	NS	ND	ND	ND	0.22 J	5

Notes:

J- the concentration is estimated due to detection below the reporting limit but above the detection limit.

CCV-E- The value reported is estimated. The value is estimated due to its behavior during continuing calibration verification (>20% Difference for average Rf or >20% Drift for quadratic fit).

Table 1
Detected Volatile Organic Compounds (in ug/L)
250 Livonia Ave.
Brooklyn, New York
March 10, 2019

All results are in micrograms per liter (ug/L).

Bolded values indicate an exceedance of the New York State Department of Environmental Conservation (NYSDEC) Class GA Ambient Water Quality Standards or TOGS 1.1.1 Guidance Values.

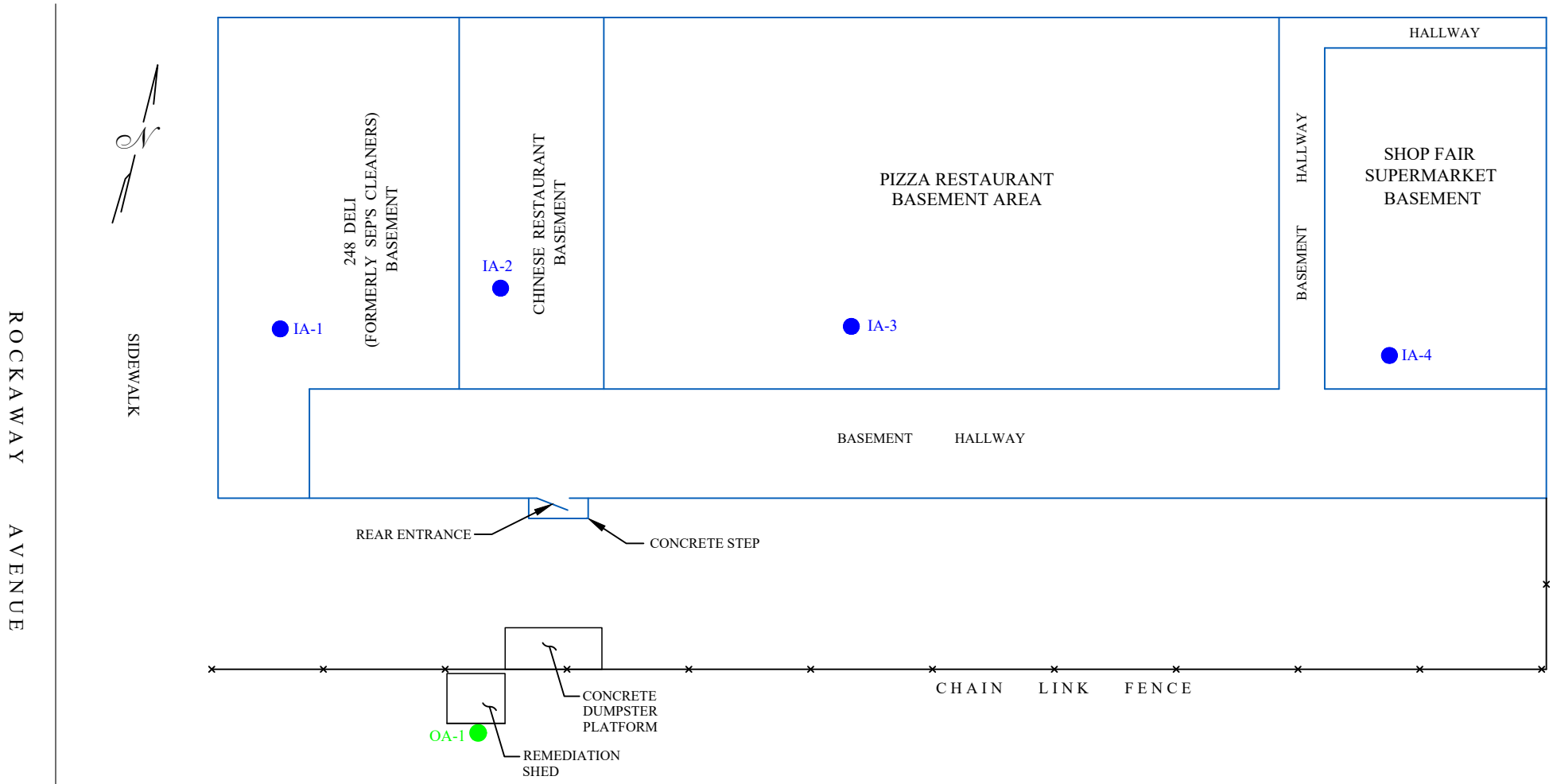
Only detected compounds are listed.

ND- not detected

NS- not sampled

Appendix G

Indoor Air Figure and Recent Results



LEGEND

IA-1 INDOOR AIR SAMPLE LOCATION

OA-1 OUTDOOR AIR SAMPLE LOCATION

DRAWING SCALE 1" = 20'

DERMODY CONSULTING
CENTER MORICHES, NEW YORK

FIGURE 1
BASEMENT AND OUTDOOR
AIR SAMPLING LOCATIONS
250 LIVONIA AVENUE

Table 1

Volatile Organic Compounds
Indoor and Outdoor Air Chemical Analytical Results
Former Sep's Cleaners, Brooklyn, New York

Sample ID	IA-1	IA-2	IA-3	IA-4	OA-1	Indoor EPA 95th Percentile/ NYSDOH Values
Sample Date	**3-30-24**	**3-30-24**	**3-30-24**	**3-30-24**	**3-30-24**	
1,4-Dichlorobenzene	0.48	ND	0.66	0.58	ND	12.5
1,2,4-Trimethylbenzene	0.70	0.45	0.62	0.52	ND	13.7
2-Butanone	2.1	2.5	4.0	3.5	1.2	12
2-Hexanone	1.6	ND	1.6	0.72	ND	--
4-Methyl-2-pentanone	0.82	ND	ND	ND	ND	8.1
Acetone	66	63	550	470	23	120.2
Acrylonitrile	0.19	0.78	0.72	4.4	0.63	--
Benzene	1.5	7.9	1.6	1.4	1.2	12.5
Carbon tetrachloride	0.50	0.63	0.99	1.2	0.42	0.7
Chloroform	2.4	7.0	5.5	11	ND	1.4
Chloromethane	0.89	16 TO-CCV, TO-LCS-H	3.8 TO-CCV, TO-LCS-H	5.2 TO-CCV, TO-LCS-H	4.4 TO-CCV, TO-LCS-H	4.4
Cyclohexane	0.49	ND	0.57	0.48	0.28	NL
Dichlorodifluoromethane	2.3	2.3	2.9	2.8	2.2	16.5
Ethylbenzene	0.73	0.44	0.72	0.61	0.36	5.7
***Ethyl acetate**	2.0	1.6	4.5	ND	ND	5.4
Isopropanol	31	410 E, TO-IPA	18	27	4.3	NL
Methylene chloride	1.6	1.3	1.8	1.5		**60**
n-Heptane	2.1	1.4	6.3	3.7	0.61	NL
n-Hexane	1.4	0.84	1.6	1.4	0.96	10.2

Table 1 (cont.)
Volatile Organic Compounds
Indoor and Outdoor Air Chemical Analytical Results
Former Sep's Cleaners, Brooklyn, New York

Sample ID	IA-1	IA-2	IA-3	IA-4	OA-1	Indoor EPA BASE 95th Percentile/ NYSDOH Values
Sample Date	**3-30-24**	**3-30-24**	**3-30-24**	**3-30-24**	**3-30-24**	--
o-Xylene	0.90	0.44	0.82	0.72	ND	7.9
p- & m- Xylenes	2.4	1.2	2.1	1.8	0.86	NL
p-Ethyltoluene	0.67	ND	ND	0.47	ND	NL
Styrene	0.51	ND	ND	0.60	ND	1.9
Tetrachloroethylene	1.7	0.62	0.64	1.6	0.56	15.9
Tetrahydrofuran	0.61	ND	ND	4.9	ND	NL
Toluene	9.9	6.4	30	17	1.4	43.0
Trichlorofluoromethane	1.0	1.4	1.7	1.6	1.3	18.1
2,2,4- Trimethylpentane*	ND	0.728	1.44	1.47	0.656	NL

Table 1 (cont.)
Volatile Organic Compounds
Indoor and Outdoor Air Chemical Analytical Results
Former Sep's Cleaners, Brooklyn, New York

Notes:

All results in mcg/m3.

ND: not detected.

*Analyte is not certified or the state of the sample origin does not offer certification for the analyte.

TO-CCV,LCS-H: The value reported is estimated for this compound due to its behavior during calibration verification.

TO-CCV: The value reported is estimated for this compound due to its behavior during calibration verification.

E: the concentration indicated for this analyte is estimated.value above the calibration range of the instrument,

NL: EPA BASE C1 value not listed.

Bolded values indicate EPA standard.

TO-IPA: the value for isopropanol is estimated. Dilutions are not conducted for this analyte.

Appendix H

Health and Safety Plan

/Community Air Monitoring Plan

Health and Safety Plan
and Community Air Monitoring Plan
for
250 Livonia Avenue
Brooklyn, New York

TABLE OF CONTENTS

TABLE OF CONTENTS *(CONTINUED)*

LIST OF TABLES

LIST OF ATTACHMENTS

SECTION 1.0
INTRODUCTION

This Health and Safety Plan (HASP) has been written for compliance with "OSHA Hazardous Waste Operations Standards (29 CFR 1910.120)", the guidance documents, "Standard Operating Safety Guidelines (Office of Solid Waste and Emergency Response, 1988)" and the "Occupational Safety and Health Guidance Manual for Hazardous Waste Activities" (U.S. Department of Health and Human Services, 1985).

1.1 Scope and Applicability of the HASP

This HASP is designed to be applicable to locations where soil and groundwater may be encountered at the Former Sep's Cleaners (the Site) located at 250 Livonia Avenue in Brooklyn, New York by all parties that either perform or witness the activities on Site. This HASP may also be modified or amended to meet specific needs of the work proposed. This HASP will detail the Site safety procedures, Site background, and safety monitoring. Contractors will be required to adopt this HASP in full.

The Health and Safety Officer (HSO) will be present at the Site to inspect the implementation of the HASP, however, it is the sole responsibility of the contractor(s) to comply with the HASP.

The HASP has been formulated as a guide to complement professional judgment and experience. The appropriateness of the information presented should always be evaluated with respect to unforeseen Site conditions which may arise.

1.2 Site Work Zone and Visitors

The Site work zone (a.k.a. exclusion zone) during well installations will be a 30-foot radius about the work location. This work zone may be extended if, in the judgment of the HSO, Site conditions warrant a larger work zone.

No visitors will be permitted within the work zone without the consent of the HSO. All visitors will be required to be familiar with, and comply with the HASP. The HSO will deny access to those whose presence within the work zone is unnecessary or those who are deemed by the HSO to be in non-compliance with the HASP.

All Site workers, including the contractors, will be required to have 40-hour hazardous material training (eight-hour refresher courses annually) and respirator fit test certification as stated in 29 CFR 1910.120. Copies of documentation certifying the above-listed requirements will be kept at the Site in the possession of the HSO.

The HSO will also give an on-Site health and safety discussion to all Site personnel, including the contractors, prior to initiating the Site work. Workers not in attendance during the health and safety talk will be required to have the discussion with the HSO prior to entering the work zone.

Emergency telephone numbers and directions to the nearest hospital are found in Attachment A.

SECTION 2.0
KEY PERSONNEL

The project manager for this project is Peter Dermody, Principal Hydrogeologist. Mr. Dermody and Ms. Tracy Wall, Hydrogeologist will also act as HSOs.

SECTION 3.0
SITE BACKGROUND

3.1 Site History and Known Chemical Constituents at the Site

The Site is located at 250 Livonia Avenue, Brooklyn, NY. The Site is developed with a single-story, multi-tenant commercial retail building. Topography at the Site is essentially flat. The primary chemicals known to be present at the Site are chlorinated VOCs, primarily tetrachloroethylene (a.k.a. perchloroethylene). Safety information on the primary VOCs at the Site are shown in Table 3.1.1.

TABLE 3.1.1
PRIMARY CHEMICALS DETECTED AT THE SITE WITH THRESHOLD LIMIT VALUES
FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

CONTAMINANT	SHORT TERM EXPOSURE LIMIT (STEL) 15 MINUTES	TIME-WEIGHTED AVERAGE 8 HOUR EXPOSURE LIMIT
Perchloroethylene (PCE)	200 ppm 1,357 mg/m^3	50 ppm 339 mg/m^3
Trichloroethylene (TCE)	200 ppm 1,070 mg/m^3	50 ppm 269 mg/m^3
1,2-Dichloroethene	-	200 ppm 793 mg/m^3

SECTION 4.0
TASK/OPERATION HEALTH AND SAFETY ANALYSIS

This section will present health and safety analyses.

4.1 Safety Analysis

The tasks will include the installation of components of the remediation system. In general, Dermody Consulting will employ one to two persons at the Site. No other site operations will be conducted by contractors without the presence of a Dermody Consulting representative on-Site.

Based on the Site history, it has been determined that known potential chemical concerns consist of VOCs in the soil and groundwater at the Site.

Organic vapor concentrations will be monitored in the work zone by utilizing a MiniRae photoionization detector (PID). The PID will be calibrated according to its manufacturer’s instructions. Background organic vapor concentrations will then be established in the work zone prior to drilling and recorded in the HSO field book. PID air monitoring will be conducted by Dermody Consulting personnel.

Upon commencement of drilling or trenching, PID readings will be obtained in the workers' breathing zone. A PID reading will also be obtained approximately every ten minutes during trenching, excavation, or well drilling. At the discretion of the HSO, PID readings may be obtained more frequently. All readings and observations will be recorded in the HSO field book.

Steady-state PID readings greater than five ppm in the worker's breathing zone will require upgrading to Level C personal protective equipment. Steady-state readings, for this purpose, will be defined as readings exceeding five ppm above background for a minimum of ten seconds. Readings will be obtained at points approximately one foot above and then around the borehole. These points will define the worker's breathing zone.

Upon encountering PID levels greater than five ppm above background in the worker's breathing zone, all personnel will be evacuated from the work zone in the upwind direction (if discernable). Specific evacuation routes will be discussed prior to commencement of work at each location based on work location and wind direction. In addition, an evacuation meeting place will be determined. Level C personal protection will be implemented including full-face air-purifying respirators with dust and organic vapor cartridges (personal protective equipment will be described in greater detail in Section 7.0). All personnel and contractors must be properly trained and fit tested prior to donning respirators. If, at any time, PID readings exceed steady-state levels greater than 25 ppm above background, or any conditions exist which the HSO determines will require Level B personal protective equipment, all work at the Site will cease immediately and all personnel will evacuate the work zone. Evacuation will occur in the upwind direction if discernable. Level B conditions are not anticipated to be encountered; however, if level B conditions arise, no Site work will be performed by Dermody Consulting or contractors, and a complete evaluation of the operation will be performed and this HASP will be modified.

All drilling personnel will be required to wear chemical-resistant gloves (such as butyl or nitrile) when the potential for dermal contact with soil is possible. Dermal contact with soils removed from the ground will be avoided.

4.2 Other Safety Considerations

4.2.1 Noise

During any operation which may generate potentially harmful levels of noise, the HSO may monitor noise levels with a Realistic[tm] hand-held sound level meter. Noise levels will be monitored in decibels (dBs) in the A-weighted, slow-response mode. Noise level readings which exceed the 29 CFR 1910.95 permissible noise exposure limits will require hearing protection (see Table 4.2.1.1 for permissible noise exposures).

TABLE 4.2.1.1
PERMISSIBLE NOISE EXPOSURES*
FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

Duration Per Day Hours	Sound Level dBA Slow Response
8	90
6	92
4	95
3	97
2	100
12	102
1	105
2	110
3 or less	115

NOTES: When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C_1/T_1+C_2/T_2$ C_6/T_6 exceed unity, then, the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level.

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

* Standards derived from 29 CFR 1910.95

Hearing protection will be available to all Site workers. The hearing protection will consist of foam, expansion-fit earplugs (or other approvable hearing protection) with an Environmental Protection Agency noise reduction rating of at least 29 dB. Hearing protection must alleviate worker exposure to noise to an eight-hour time-weighted average of 85 dB or below. In the event that the hearing protection is inadequate, work will cease until a higher level of hearing protection can be incorporated.

4.2.2 Slip/Trip/Fall Preventative Measures

To reduce the potential for slipping, tripping, or falling, the work zone will be kept clear of unnecessary equipment. All Site workers will be required to wear work boots with adequate tread to reduce the potential for slipping (work boots must be leather or chemical-resistant and contain steel toes and steel shanks).

4.2.3 Heat/Cold Stress

Heat stress may become a concern especially if protective clothing is donned which will decrease natural ventilation. To assist in reducing heat stress the following measures will be taken:

- An adequate supply of water or other liquids will be brought on Site. To prevent dehydration, personnel will be encouraged to drink generous amounts of water even if not thirsty.
- A shady rest area will be designated to provide shelter during sunny days.
- In hot weather, workers wearing protective clothing may be rotated.

When the temperature is over 70 degrees Fahrenheit and personnel are wearing protective clothing, heat stress monitoring may be implemented as follows:

- Heart rate may be measured by counting the radial pulse for 30 seconds at the beginning of the rest period. The heart rate should not exceed 110 beats per minute. If the rate is higher, the next work period will be shortened by ten minutes (or 33%). If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle will be shortened by 33%. The HSO will decide on the length of work periods and rest periods based on Site conditions.

- Body temperature may be measured, if deemed necessary, at the beginning of the rest period. Oral temperature should not exceed 99 degrees Fahrenheit. If it does, the next work period will be shortened by ten minutes (or 33%). However, if the oral temperature exceeds 99.7 degrees Fahrenheit at the beginning of the next period, the following work cycle will be further shortened by 33%. Work will not re-commence until the worker's body temperature has dropped below 99 degrees Fahrenheit.

Indications of heat stress range from mild (fatigue, irritability, anxiety, decreased concentration, dexterity or movement) to fatal. Medical help will be obtained for serious conditions.

Heat-related problems are caused by:

Prolonged Exposure: continuous exposure to heat and humid air, which can be aggravated by chafing clothes. Decreases ability to tolerate heat as well as being a nuisance.

Heat cramps: caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs of heat cramps include muscle spasm and pain in the extremities and abdomen.

Heat exhaustion: caused by increased stress on various organs to meet increased demands to cool the body. Signs of heat exhaustion include shallow breathing; pale, cool, moist skin; profuse sweating; dizziness, and lassitude.

Heat stroke: the most severe form of heat stress, which can be fatal. Medical help must be obtained immediately. Body must be cooled immediately to prevent severe injury and/or death. Signs of heat stroke include red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

Cold stress is a concern if work is conducted during cold weather or marginally cold weather during precipitation periods or moderate to high wind velocity periods. To assist in reducing cold exposure the following measures will be taken:

- All personnel will be required to wear adequate and appropriate clothing. This will include head gear to prevent the high percentage loss of heat that occurs in this area (thermal liners for hard hats if hard hats are required).
- Provide a readily available warm shelter near each work zone.
- Carefully schedule work and rest periods to account for the current temperature and wind velocity conditions.
- Monitor work patterns and physical condition of workers and rotate personnel, as necessary.

Indications of cold exposure range from shivering, dizziness, numbness, confusion, weakness, impaired judgment, impaired vision to drowsiness. Medical help will be obtained for serious conditions if they occur.

Cold exposure related problems are:

Frost bite: Ice crystal formation in body tissues. The restricted blood flow to the injured part results in local tissue destruction.

Hypothermia: Severe exposure to cold temperature resulting in the body losing heat at a rate faster than the body can generate heat. The stages of hypothermia are shivering, apathy, loss of consciousness, decreasing pulse rate and breathing rate, and death.

Signs and symptoms of heat and cold stress are listed in Table 4.2.3.

4.2.4 Potential Electrical Hazards

Potential electric hazards consist mainly of underground power lines. Underground potential electrical hazards will be minimized by having a utility mark-out performed for the Site. In addition, available as-built Site blueprints will be used to avoid contact with subsurface utility lines or structures. As a final precaution, prior to drilling at any location, post-hole digging or hand augering will be performed by the drillers to a depth of three to four feet to check for the existence of subsurface utility lines or structures.

TABLE 4.2.3
SIGNS AND SYMPTOMS OF HEAT AND COLD STRESS
DETECTED AT THE FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

Type of Heat Stress	Signs and Symptoms
Heat Exhaustion	Clammy skin Confusion Dizziness Fainting Fatigue Heat rash Light-headedness Nausea Profuse sweating Slurred speech Weak pulse
Heat Stroke (may be fatal)	Confusion Convulsions Hot skin, high temperature (yet may feel chilled) Incoherent speech Staggering gait Sweating stops (yet residual sweat may be present) Unconsciousness
Type of Cold Stress	**Signs and Symptoms**
Frost bite	Pain or prickling progressing to numbness Pale, hard, cold skin with waxy appearance Flushing of skin subsequent to re-warming Burning sensation and swelling that may persist for weeks Blisters
Hypothermia (may be fatal)	Shivering Apathy Loss of consciousness Decreasing pulse rate and breathing rate

4.2.5 The Buddy System

All activities in contaminated or potentially contaminated areas will be conducted by pairing off the Site workers in groups of two (or three if necessary). Each person (buddy) will be able to:

- Provide his or her partner with assistance.
- Observe his or her partner for signs of chemical or heat or cold exposure.
- Periodically check the integrity of his or her partner's protective clothing.
- Notify the HSO or others if emergency help is needed.

The buddy system will be instituted at the beginning of each work day. If new workers arrive on Site, a buddy will be chosen prior to the new worker entering the work zone.

4.2.6 Site Communications

Two sets of communication systems will be established at the Site: internal communication among personnel on-Site, and external communication between on-Site and off-Site personnel.

Internal communication will be used to:

- Alert team members to emergencies.
- Pass along safety information such as heat stress check, protective clothing check, etc.
- Communicate changes in the work to be accomplished.
- Maintain Site control.

Due to ambient noise, verbal communications may be difficult at times. If necessary, the HSO will carry a whistle (or compressed air horn if respirators are donned) to signal Site workers. A single whistle blast will be the signal to immediately evacuate the work zone through the access control point. This signal will be discussed with all Site workers prior to commencement of work.

An external communication system between on-Site and off-Site personnel will be established to:

- Coordinate emergency response.
- Report to the Project Manager.
- Maintain contact with essential off-Site personnel.

4.2.7 General Safe Work Practices

Standing orders which will be applicable during Site operations are as follows:

- No smoking, eating, drinking, or application of cosmetics in the work zone.
- No matches or lighters in the work zone.
- All Site workers will enter/exit the work zone through the Site access point.
- Any signs of contamination, radioactivity, explosivity, or unusual condition such as dead animals will require evacuating the Site immediately and reporting the information to the HSO.
- Loose fitting clothing or loose long hair will be prohibited in the work zone during drilling operations.
- A signal person will direct the backing of work vehicles.
- Equipment operators will be instructed to check equipment for abnormalities such as oozing liquids, frayed cables, unusual odors, etc.

SECTION 5.0
PERSONNEL TRAINING REQUIREMENTS

All Dermody Consulting personnel and contractor personnel will receive adequate training prior to entering the Site. Dermody Consulting and contractor's personnel will, at a minimum, have completed OSHA-approved, 40-hour hazardous materials Site safety training and OSHA-approved, eight-hour safety refresher course within one year prior to commencing field work. In addition, each worker must have a minimum of three days field experience under the direct supervision of a trained, experienced supervisor.

Prior to Site field work, the HSO will conduct an in-house review of the project with respect to health and safety with all Dermody Consulting personnel who will be involved with field work at the Site. The review will include discussions of signs and symptoms of chemical exposure and heat stress that indicate potential medical emergencies presented in Table 5.1. In addition, if necessary, review of personal protective equipment will be conducted to include the proper use of air-purifying respirators.

TABLE 5.1
SIGNS AND SYMPTOMS OF EXPOSURE TO CHEMICALS
DETECTED AT THE FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

Type of Hazard	Signs and Symptoms
Chemical Hazard	Behavioral changes Breathing difficulties Changes in complexion of skin color Confusion Coordination difficulties Coughing Depression Dermatitis Dilated Pupils Dizziness Euphoria Fatigue and/or weakness Flushed face and/or neck Insomnia Irregular heartbeat Irritability Irritation of eyes, nose, respiratory tract, skin or throat Headache Lacrimation Light-Headedness Muscle Fatigue Nausea Nervousness Numbness in limbs Paresthesia Sleepiness Tingling Tremors Vertigo Visual disturbance Vomiting

SECTION 6.0
PERSONAL PROTECTIVE EQUIPMENT

6.1 General Considerations

The two basic objectives of the personal protective equipment (PPE) are to protect the wearer from safety and health hazards, and to prevent the wearer from incorrect use and/or malfunction of the PPE.

All work is expected to be performed during daylight hours and workdays, and in general, are expected to be eight to ten hours in duration. Any work performed beyond daylight hours will require the permission of the HSO. This decision will be based on the adequacy of artificial illumination and the type and necessity of the task being performed.

Personal protection levels for the Site activities, based on past investigations, are anticipated to be Level D with the possibility of upgrading to Level C. The equipment included for each level of protection is provided as follows:

Level C Protection

Personnel protective equipment:

- Air-purifying respirator, full-face.
- Chemical-resistant clothing includes: Tyvek^{tm} (spun bonded olefin fibers) for particulate and limited splash protection or Saranex^{tm} (plastic film-laminated Tyvek) for permeation resistance to solvents.
- Coveralls*, or
- Long cotton underwear.*
- Gloves (outer), chemical-resistant.
- Gloves (inner), chemical-resistant.
- Boots (outer), leather or chemical-resistant, steel toe and shank.

- Boot covers (outer), chemical-resistant (disposable).*
- Hard hat (face shield).*
- Escape mask.*
- 2-way radio communications (inherently safe).*

(*) optional

Criteria for Selection of Level C Protection

Meeting all of these criteria permits use of Level C Protection:

- Oxygen concentrations are not less than 19.5% by volume.
- Measured air concentrations of identified substances will be reduced by the respirator to concentrations below the substance's threshold limit value (TLV).
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any body area left unprotected by chemical-resistant clothing.
- Job functions do not require self-contained breathing apparatus.
- Direct readings are below 50 ppm on the PID.

Level D Protection

Personnel protective equipment:

- Coveralls.
- Gloves.*
- Boots/shoes, leather or chemical-resistant, steel toe and shank.
- Safety glasses or chemical splash goggles.*
- Hard hat (face shield*).
- Escape mask.*

(*) optional

Criteria for Selection of Level D Protection

Meeting any of these criteria allows use of Level D Protection:

- No contaminant levels above 5 ppm organic vapors or dusty conditions are present.

- Work functions preclude splashes, immersion, or the reasonable potential for unexpected inhalation of any chemicals above the TLV.

Additional Considerations for Selecting Levels of Protection

Another factor which will be considered in selecting the appropriate level of protection is heat and physical stress. The use of protective clothing and respirators increases physical stress, in particular, heat stress on the wearer. Chemical protective clothing greatly reduces natural ventilation and diminishes the body's ability to regulate its temperature. Even in moderate ambient temperatures, the diminished capacity of the body to dissipate heat can result in one or more heat-related problems.

All chemical protective garments can be a contributing factor to heat stress. Greater susceptibility to heat stress occurs when protective clothing requires the use of a tightly fitted hood against the respirator face piece, or when gloves or boots are taped to the suit. As more body area is covered, less cooling takes place, increasing the probability of heat stress.

Wearing protective equipment also increases the risk of accidents. It is heavy, cumbersome, decreases dexterity, agility, interferes with vision, and is fatiguing to wear. These factors all increase physical stress and the potential for accidents. In particular, the necessity of selecting a level of protection will be balanced against the increased probability of heat stress and accidents.

6.2 Donning and Doffing Ensembles

Donning an Ensemble

A routine will be established and practiced periodically for donning a Level C ensemble. Assistance may be provided for donning and doffing since these operations are difficult to perform alone.

Table 6.2.1 lists sample procedures for donning a Level C ensemble. These procedures should be modified depending on the particular type of suit and/or when extra gloves and/or boots are used.

TABLE 6.2.1
SAMPLE DONNING PROCEDURES
FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

---

1. Inspect the clothing and respiratory equipment before donning (see Inspection in subsection 7.4).

2. Adjust hard hat or headpiece if worn, to fit user's head.

3. Standing or sitting, step into the legs of the suit; ensure proper placement of the feet within the suit; then gather the suit around the waist.

4. Put on chemical-resistant safety boots over the feet of the suit. Tape the leg cuff over the tops of the boots.

5. Don the respirator and adjust it to be secure, but comfortable.

6. Perform negative and positive respirator facepiece seal test procedures.

   - To conduct a negative-pressure test, close the inlet part with the palm of the hand or squeeze the breathing tube so it does not pass air, and gently inhale for about 10 seconds. Any inward rushing of air indicates a poor fit. Note that a leaking facepiece may be drawn tightly to the face to form a good seal, giving a false indication of adequate fit.

   - To conduct a positive-pressure test, gently exhale while covering the exhalation valve to ensure that a positive pressure can be built up. Failure to build a positive pressure indicates a poor fit.

7. Depending on type of suit:

   - Put on inner gloves (surgical gloves).

   - Additional over gloves, worn over attached suit gloves, may be donned later.

8. Put on hard hat

9. Have assistant observe the wearer for a period of time to ensure that the wearer is comfortable, psychologically stable, and that the equipment is functioning properly

Doffing an Ensemble

Exact procedures for removing Level C ensembles must be established and followed to prevent contaminant migration from the work area and transfer of contaminants to the wearer's body, the doffing assistant, and others.

Doffing procedures are provided in Table 6.2.2. These procedures should be performed only after decontamination of the suited worker. They require a suitably attired assistant. Throughout the procedures, both worker and assistant should avoid any direct contact with the outside surface of the suit.

6.3 Respirator Fit Testing

The fit or integrity of the facepiece-to-face seal of a respirator affects its performance. Most facepieces fit only a certain percentage of the population; thus each facepiece must be tested on the potential wearer in order to ensure a tight seal. Facial features such as scars, hollow temples, very prominent cheekbones, deep skin creases, dentures or missing teeth, and the chewing of gum and tobacco may interfere with the respirator-to-face seal. A respirator shall not be worn when such conditions prevent a good seal. The worker's diligence in observing these factors shall be evaluated by periodic checks. Fit testing will comply with 29 CFR 1910.1025 regulations.

6.4 Inspection

The PPE inspection program will entail five different inspections:

- Inspection and operational testing of equipment received from the factory or distributor.
- Inspection of equipment as it is issued to workers.
- Inspection after use.
- Periodic inspection of stored equipment.
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.

TABLE 6.2.2
DOFFING PROCEDURES
FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

---

1. Remove any extraneous or disposable clothing, boot covers, outer gloves, and tape.

2. Remove respirator by loosening straps and pulling straps over the top of the head and move mask away from head. Do not pull mask over the top of the head.

3. Remove arms, one at a time, from suit, avoiding any contact between the outside surface of the suit and wearer's body and lay the suit out flat behind the wearer. Leave internal gloves on, if any.

4. Sitting, if possible, remove both legs from the suit.

5. After suit is removed, remove internal gloves by rolling them off the hand, inside out.

The inspection checklist is provided in Table 6.4.1. Records will be kept of all inspection procedures. Individual identification numbers will be assigned to all reusable pieces of equipment and records should be maintained by that number. At a minimum, each inspection should record the ID number, date, inspector, and any unusual conditions or findings. Periodic review of these records may indicate an item or type of item with excessive maintenance costs or a particularly high level of down-time.

6.5 Storage

Clothing and respirators will be stored properly to prevent damage or malfunction due to exposure to dust, moisture, sunlight, damaging chemicals, extreme temperatures, and impact. Storage procedures are as follows:

Clothing:

- Potentially contaminated clothing will be stored in an area separate from street clothing.
- Potentially contaminated clothing will be stored in a well-ventilated area, with good air flow around each item, if possible.
- Different types and material of clothing and gloves will be stored separately to prevent issuing the wrong material by mistake.
- Protective clothing will be folded or hung in accordance with manufacturer's recommendations.

Respirators:

- Air-purifying respirators should be dismantled, washed, and placed in sealed plastic bags.

6.6 Maintenance

Specialized maintenance will be performed only by the factory or an authorized repair person. Routine maintenance, such as cleaning, will be performed by the personnel to whom the equipment is

TABLE 6.4.1
PPE INSPECTION CHECKLIST
FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

CLOTHING

Before use:

! Determine that the clothing material is correct for the specified task at hand.

! Visually inspect for:

! imperfect seams
! non-uniform coatings
! tears
! malfunctioning closures

! Hold up to light and check for pinholes.

! Flex product:

! Observe for cracks
! Observe for other signs of shelf deterioration

! If the product has been used previously, inspect inside and out for signs of chemical attack:

! discoloration
! swelling
! stiffness

During the work task, periodically inspect for:

! Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.

! Closure failure

! Tears

! Punctures

! Seam discontinuities

TABLE 6.4.1 - *CONTINUED*
PPE INSPECTION CHECKLIST
FORMER SEP'S CLEANERS
BROOKLYN, NEW YORK

GLOVES

Before use:

! Pressurize glove to check for pinholes. Blow into the glove then roll gauntlet toward fingers, or inflate glove and hold under water. In either case, no air should escape.

AIR-PURIFYING RESPIRATORS

! Inspect air-purifying respirators:

! before each use to be sure they have been adequately cleaned

! Check material conditions for:

! signs of pliability
! signs of deterioration
! signs of distortion

! Examine cartridges to ensure that:

! they are the proper type for the intended use
! the expiration date has not been passed
! they have not been opened or used previously

! Check faceshields and lenses for:

! cracks
! crazing
! fogginess

! Air purifying respirators will be stored individually in resealable plastic bags.

assigned. Respirators will be cleaned at the end of each day with alcohol pads or, preferably, by washing with warm soapy water.

6.7 Decontamination Methods

All personnel, clothing, equipment, and samples leaving the contaminated (work zone) area of the Site must be decontaminated to remove any harmful chemicals or infectious organisms that may have adhered to them. Decontamination methods either (1) physically remove contaminants, (2) inactivate contaminants by chemical detoxification or disinfection/sterilization, or (3) remove contaminants by a combination of both physical and chemical means. In many cases, gross contamination can be removed by physical means involving dislodging/displacement, rinsing, wiping off, and evaporation. Contaminants that can be removed by physical means include dust, vapors, and volatile liquids. All reusable equipment will be decontaminated by rinsing in a bath of detergent and water (respirators, gloves to be reused). Monitoring equipment will be decontaminated by wiping with paper towels and water.

All used PPE to be discarded will be placed in a 55-gallon drum and stored in a secure place at the Site while awaiting final disposition.

The effectiveness of the decontamination will be evaluated near the beginning of Site activities and will be modified if determined to be ineffective. Visual observation will be used for this purpose. The HSO will inspect decontaminated materials for discoloration, stains, corrosive effects, visible dirt, or other signs of possible residual contamination.

SECTION 7.0
CALIBRATION PROCEDURES, FREQUENCIES, AND MAINTENANCE

This section will present the calibration procedures, frequencies, and maintenance for the health and safety field monitoring instruments.

The use of the monitoring equipment is presented as follows (the manufacturer's owner's manuals for all equipment used will be present at the Site):

1. MiniRae PID - this instrument is a photoionization detector that measures the concentration of airborne ionizable gases and vapors. The MiniRae does not distinguish between individual compounds and will not read methane. The calibration will be performed with a cylinder of "zero gas" (hydrocarbon free air) to "zero" the instrument and a 100 ppm cylinder of isobutylene to calibrate the span.

The calibration procedures and frequencies for each instrument are presented as follows:

MiniRae PID

Isobutylene at 100 ppm in air will be used as Span Gas. A commercial zero grade gas will be used as the zero gas. Calibrate the instrument as follows:

1. Connect the supplied regulator to the Span Gas cylinder. Hand tighten the fittings.
2. Open the valve on the gas bag by turning the valve stem fully counter clockwise.
3. Attach the gas bag adapter nut to the regulator. Hand tighten the fittings.
4. Turn the regulator knob counter clockwise about half turn to start the flow of gas.
5. Fill the gas bag about half full and then close the regulator fully clockwise to turn off the flow of gas.
6. Disconnect the bag from the adapter and empty it. Flush the bag a few times with the Span Gas and then fill it.
7. Close the gas bag by turning the valve clockwise.

8. Hold down the power and N/- button to get to the password screen.

9. Press the select button for Zero Calibration.

10. Apply the “zero” gas and allow the MiniRae to calibrate for 30 seconds.

11. Press the select button for Span Gas Calibration.

12. Apply the span gas and allow the MiniRae to calibrate for 30 seconds.

The instrument will be calibrated prior to the commencement of each day's work. The instrument will be charged overnight prior to each day's work.

SECTION 8.0
EMERGENCY RESPONSE PLAN

This section will present the Emergency Response Plan (ERP) for the Site. Pre-emergency planning will consist of reviewing the ERP with all workers at the Site prior to initiation of work.

Personnel Roles

Should an emergency situation arise at the Site, the HSO will assume control and decision-making. The HSO will also resolve all dispute concerning health and safety requirements and precautions. The HSO will also:

- Be authorized to seek and purchase supplies as necessary.
- Have control over activities of everyone entering the Site.

The HSO will communicate, by field telephone or other, with off-Site personnel to include the Project Manager to evaluate data and assist in the decision-making process. Phone numbers for the fire department, police, ambulance, poison control center, New York State Department of Health, and NYS Department of Environmental Conservation Spill Response Department are listed on the next-to-last page of this document. The hospital which will be utilized during an emergency will be Brookdale University Hospital and Medical Center. The directions to the hospital, along with the hospital's emergency room phone number are presented on the last page of this document.

Copies of the last page of this document will be available at the Site and will be placed in all vehicles of personnel involved in activities at the Site.

Internal communications will consist of a single whistle (or compressed air horn if Level C is donned) blast. This blast will signal all workers to evacuate the work zone by the nearest exit.

Response Follow-Up

Following an emergency, or incident, a detailed report will be generated by the HSO. All equipment will be restored to pre-emergency conditions. The HASP will be reviewed following an

emergency to determine if it provides adequate information to assist in dealing with the emergency. The HASP may be revised to incorporate additional information as needed.

Emergency Recognition and Prevention

Before daily work assignments begin, each day a brief on-Site meeting will be held by the HSO which will address health and safety issues related to the day's work. Prior to initiation of work, a detailed on-Site health and safety meeting will be held to review all potential hazards, contingencies, and safety measures.

Safe Distances and Places of Refuge

The main potential cause of work zone evacuation is a significant vapor release. Vapor release evacuation will be discussed prior to work at each location and in general will be in the upwind direction. Wind direction will be monitored at each work location and all workers will be notified of the direction of evacuation prior to commencement of work. Safe distances will be discussed at each location and determined by the HSO. The PID will be used to determine if workers have evacuated a sufficient distance.

At all times, vehicles which may be utilized in an emergency for transport to the hospital (or other destination) will have clear access to leave the Site. The HSO will assure that an emergency vehicle does not become blocked-in by other vehicles.

Site Security and Control

The HSO will control entry of personnel into the work zone. No unnecessary person shall be permitted in the work zone.

Decontamination Procedures During Emergencies

In the event of a medical emergency, decontamination will be performed if it does not interfere with essential treatment. Decontamination will be performed by washing, rinsing, and/or cutting off protective clothing and equipment.

If decontamination cannot be performed, the victim will be wrapped in plastic to reduce contamination to other personnel. Emergency and off-Site medical personnel will be alerted to the potential contamination.

Emergency Medical Treatment and First Aid

Medical emergencies will be treated, in general, by medical experts by transporting the victim to the nearby hospital.

A first aid kit will be present on-Site for minor medical treatment.

SECTION 9.0
COMMUNITY AIR MONITORING PLAN

This section includes procedures to address potential community health and safety issues associated with investigation and remediation at the Site.

Air Monitoring

A community air monitoring plan will be implemented at the Site by Dermody Consulting during investigation and remediation activities. Under the community air monitoring plan, organic vapor concentrations will be monitored at the downwind edge of the immediate work area at the Site on a continuous basis. It will be the responsibility of the HSO to implement the plan and to ensure that proper action is taken in the event that any of the established action levels are exceeded.

To monitor organic vapors, a PID will be used. Calibration of the PID will be performed according to manufacturer's instructions. Background levels of organic vapors will be measured at the Site prior to beginning work and upwind of the work area periodically using a PID.

PID readings will be recorded in the field logbook for both background and work area perimeter. Logbook recordings will include the time, location, and PID readings.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil samples. Periodic monitoring during sample collection will generally consist of taking a reading upon arrival at a sample location, monitoring while overturning soil, and taking a reading prior to leaving a sample location.

VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downward perimeter of the immediate work area on a continuous basis. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The equipment will 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.

- 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 will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- 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 will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will 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.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will 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 will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- 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 will be employed. Work will 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.
- 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 will 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.

All readings will be recorded and be available for State regulatory personnel to review.

Noise Monitoring

Due to the use of heavy equipment at the Site during the investigation and remediation, there is the potential for noise to impact the Site workers and the surrounding community.

Since the facility is occupied, there is a potential that Site employees will be impacted by noise. In addition, work will be performed only during daytime hours. If appropriate, the HSO may periodically monitor noise levels at the work zone boundary and the closest property boundary with a Realistic^{tm} hand-held sound level meter. Noise levels will be monitored in dBs in the A-weighted, slow-

response mode. If noise level readings exceed an eight-hour time-weighted average of 85 dB at the closest property boundary or noise complaints are received, the HSO will take appropriate measures to reduce noise exposure beyond these boundaries.

ATTACHMENT A

EMERGENCY TELEPHONE NUMBERS, DERMODY CONSULTING CONTACT PERSONNEL, DIRECTIONS FROM THE SITE TO THE HOSPITAL

TABLE A.1

Emergency Telephone Numbers

New York City Police Department	911
Ambulance	911
Poison Control Center Hotline	1-800-222-1222
New York State Department of Health	1-800-458-1158
N.Y.S. Department of Environmental Conservation Spill Hotline	1-800-457-7362
Brookdale University Hospital and Medical Center Emergency	1-718-240-5180

Dermody Consulting Contact Personnel (631-878-3510)

Peter Dermody (cell) 631 905-4868
Tracy Wall (cell) 631 905-4259

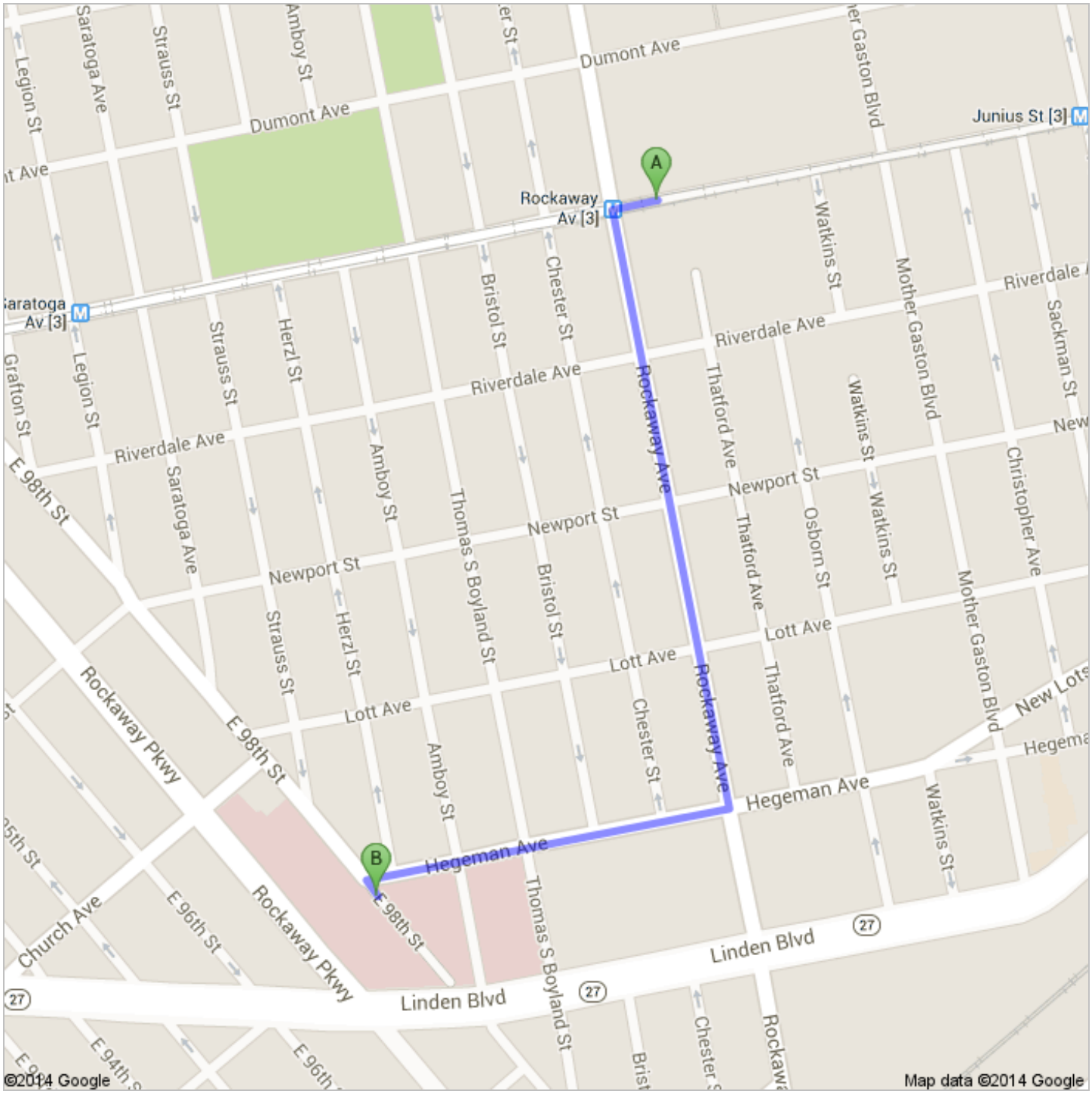
Directions to Brookdale University Hospital and Medical Center (1-718-240-5180)

Start out going west on Livonia Avenue toward Rockaway Avenue. Take the first left onto Rockaway Avenue. Turn right onto Linden Boulevard. Turn slight right onto Rockaway Parkway. Brookdale University Hospital and Medical Center is on your right and is located at One Brookdale Plaza.

A map and Mapquest directions to the hospital are included in the following pages.

Google

Directions to Brookdale Plaza, Brooklyn, NY 11212, USA
0.8 mi – about **3 mins**



250 Livonia Avenue, Brooklyn, NY 11212, USA

1.	Head **west** on **Livonia Ave** toward **Rockaway Ave**	go 177 ft total 177 ft
2.	Take the 1st left onto **Rockaway Ave** About 1 min	go 0.4 mi total 0.5 mi
3.	Turn right onto **Hegeman Ave** About 1 min	go 0.3 mi total 0.7 mi
4.	Turn left onto **E 98th St**	go 75 ft total 0.8 mi

Brookdale Plaza, Brooklyn, NY 11212, USA

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

Appendix I

Excavation Work Plan

APPENDIX I

EXCAVATION WORK PLAN (EWP)

NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the NYSDEC. Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information.

Table 1: Notifications*

Marlen Salazar, Project Manager	Phone: 718-482-7129 Marlen.Salazar@dec.ny.gov
Jane O'Connell, P.G., NYSDEC Regional Remediation Engineer	Phone: (718) 482-4599 Jane.oconnell@dec.ny.gov
Cris-Sandra Maycock, P.E., NYSDEC Section Chief A	Phone: (718) 482-4679 Cris-sandra.Maycock@dec.ny.gov
Kelly Lewandowski, Site Control	Phone: (518) 402-9569 kelly.lewandowski@dec.ny.gov
Arunesh Ghosh, NYSDOH Project Manager	Phone: (518) 402-7873 Arunesh.ghosh@health.ny.gov
Scarlett McLaughlin, P.G., NYSDOH Region Chief	Phone: (518) 402-7860 Scarlett.McLaughlin@health.ny.gov
Peter Dermody CPG Dermody Consulting	Phone: 631 905-4868 pdermody@dm-consulting.net
Barry Cohen Certilman Balin	Phone: 516 296-7044 bcohen@certilmanbalin.com

* Note: Notifications are subject to change and will be updated as necessary.

This notifications will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in this SMP;
- Identification of disposal facilities for potential waste streams; and

Identification of sources of any anticipated backfill, along with all required chemical testing results.

EXCAVATION CONTINGENCY PLAN

Describe the procedures to be followed upon discovery of an unknown source of contamination that may require remediation (USTs, stained soil, drums, etc.). This should include procedures for suspending excavation work, pumping fluids from tanks or containers, and reporting to the spill hotline. The following text will be included:

- If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

- Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and

previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

- Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

COMMUNITY AIR MONITORING PLAN

In the event of the need of excavation, the Health and Safety Plan (HASP)/Community Air Monitoring Plan (CAMP) presented in Appendix H will be consulted. Additional information may be incorporated into the CAMP including information obtained in Appendix 1A of DER-10, Generic Community Air Monitoring Plan. Also, at a minimum, this section will include:

- Details of the perimeter air monitoring program;
- Action levels to be used;
- Methods for air monitoring ;
- Analytes measured and instrumentation to be used;

- figure of the location(s) of all air monitoring instrumentation. A figure showing specific locations must be presented for monitoring stations based on generally prevailing wind conditions, with a note that the exact locations to be monitored on a given day will be established based on the daily wind direction.
  The following text should be included in this section:

- A figure showing the location of air sampling stations based on generally prevailing wind conditions will be prepared if an area that requires excavation is found . These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. If a sensitive receptor, such as a school, day care or residential area is adjacent to the site, a fixed monitoring station should be located at that site perimeter, regardless of wind direction, and discussed in the text.

- Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers on the day of exceedance. All data is to be reported in the final report for the excavation activity.

ODOR CONTROL PLAN

The following text will be included as part of this section:

- This odor control plan is capable of controlling emissions of nuisance odors on-and off-site. Specific odor control methods to be used on a routine basis will include limiting . If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events within one day of the odor event and notified of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Excavation Activities Report.

- All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils.. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

- If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

- If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

DUST CONTROL PLAN

The following text will be included in this section:

- A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

OTHER NUISANCES

The following items may be necessary depending on the type of wastes present, the location of the site and other site-specific concerns. These plans are generally not required for submission to the NYSDEC.

- A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

- A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

REPORTING

A report is to be submitted to the NYSDEC within 90 days of completion of the activities performed under this EWP. This report shall contain a summary of the activities performed; a summary of all data gathered and results; information about any media that was removed from the site: volume, contamination levels, area from which removed; and any other information that may be indicate a change to the "remaining contamination" that is at the site. Such changes may require revision of the SMP.

Appendix J

Radon Fan Specifications and Information

FOLLOWING CHARTS SHOW THE PERFORMANCE OF THE RPc, GPc, XPc AND XR SERIES RADON FANS

RPc Series Product Specifications

	Typical CFM Vs. Static Pressure "WC								
Model	0"	.2"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
RP140c	152	120*	64*	-	-	-	-	-	
RP145c	168	150*	123*	105	84*	64	44	20	3
RP260c	251	210*	157	117	70	26	-	-	-
RP265c	326	290*	241*	207	174*	143	118	89	60

*Denotes HVI Certified Values.

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
RP140c	14 - 19 watts	0.6" WC
RP145c	46 - 72 watts	1.7" WC
RP260c	47- 65 watts	1.3" WC
RP265c	86 - 122 watts	2.2" WC

*Reduce by 10% for High Temperature Operation. **Reduce by 4% per 1000 ft. of altitude.

Model	Size	Weight	Inlet/Outlet	L.2
RP140c	8.5"H x 9.7" Dia.	5.5 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)	25
RP145c	8.5"H x 9.7" Dia.	5.5 lbs	4.5" OD	15
RP260c	8.6"H x 11.75" Dia.	5.5 lbs	6.0" OD	48
RP265c	8.6"H x 11.75" Dia.	6.5 lbs	6.0" OD	30

Estimated Equivalent Length of Rigid Metal Ducting resulting in .2" WC pressure loss for Duct Size listed. Longer Equivalent Lengths accommodated at Flows Lower than that at .2" WC pressure loss (see CFM Vs Static Pressure "WC Table).

XPc and XR Series Product Specifications

	Typical CFM Vs. Static Pressure "WC					
	0"	.5"	1.0"	1.5"	1.75"	2.0"
XP201c	112	95	70	40	-	-
XR261	217	149	87	27	-	-

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
XP201c	45 - 66 watts	1.7" WC
XR261	67 - 117 watts	1.6" WC

*Reduce by 10% for High Temperature Operation. **Reduce by 4% per 1000 ft. of altitude.

Model	Size	Weight	Inlet/Outlet
XP201c	9.5"H x 8.5" Dia.	6 lbs	4.5" OD
XR261	9.5"H x 8.5" Dia.	7 lbs	6" OD

GPc Series Product Specifications

	Typical CFM Vs. Static Pressure "WC						
	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP301c	64	54	41	4	-	-	-
GP501c	-	-	66	58	50	27	4

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
GP301c	56-100 watts	2.3" WC
GP501c	68 - 146 watts	3.8" WC

*Reduce by 10% for High Temperature Operation. **Reduce by 4% per 1000 ft. of altitude

Model	Size	Weight	Inlet/Outlet
GP301c	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP501c	13"H x 12.5" Dia.	12 lbs	3.5" OD

RPc, XPc, XR and GPc Series Additional Specifications

Model	Recommended Duct	PVC Pipe Mounting	Thermal Cutout	Insulation Class
RP140c	3" or 4" Schedule 20/40 PVC	Mount on the duct pipe or with optional mounting bracket. For Ventilation, 4", 6" or 8" Rigid or Flexible Ducting	130°C/266°F	Class B Insulation
RP145c			130°C/266°F	
RP260c			150°C/302°F	Class F Insulation
RP265c			150°C/302°F	
XP201c	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
XR261				
GP301c	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
GP501c				

Continuous Duty
3000 RPM
Thermally Protected
RPc, GPc Residential and Commercial
XPc, XR Residential Only
Rated for Indoor or Outdoor Use

ENERGY STAR
RP140c Only

LISTED
Electric Fan
Intertek
77728

Conforms to UL STD. 507
Certified to CAN/CSA STD. C22.2 No.113

Appendix K

Exterior SSDS Piping Photograph

Photograph of one of the two clusters of exhaust pipes along the rear wall of the building.

Appendix L

Quality Assurance Project Plan

Quality Assurance Project Plan

Former Sep's Cleaners

1.0 Project Scope and Project Goals

The remediation at the Former Sep's Cleaners Site has been completed and post-remediation sampling is required to address the remaining contamination in the surface beneath the Site. A Sub-Slab Depressurization System (SSDS) was installed at the Site to address the potential for soil vapor intrusion. It continues to operate within the basement of the Site building as of the date of this SMP.

Groundwater and soil sampling is considered to be complete. The only sampling that will continue to be performed is indoor air sampling in each of the four basement units at the Site as well as SSDS vapor effluent sampling at each of the SSDS units.

The project goals are to operate the SSDS until the concentrations of subsurface soil vapors decrease to concentrations that the NYSDEC determines no further post-remediation is required.

1.1 Project Organization

The project manager and Quality Assurance Officer (QAO) is Peter Dermody, CPG. There will be no field analyses performed.

1.2 Sampling Procedures

Quality Assurance (QA) elements to be evaluated include accuracy, precision, sensitivity, representativeness and completeness. The data generated by the analytical laboratory for this project is required to achieve detection levels that meet the Contract Required Quantitation Limits (CRQLs) as specified in NYSDEC Analytical Services Protocol (NYSDEC ASP) for Superfund CLP and EPA SW-846 methods performed in accordance with NYSDEC ASP protocol. The analytical results meeting the CRQL for all sampling and analysis*).* The Quality Control (QC) elements that pertain to this project include instrument calibration, completeness of field data, sample holding times, sample preservation, and sample preparation of chain-of-custody forms.

The project Quality Assurance Officer (QAO) (Peter Dermody, CPG) is responsible for ongoing surveillance of project activities, for ensuring conformance to this QAPP, and evaluating its effectiveness. The QAO has access to any personnel or subcontractors, as necessary, to resolve technical problems and take corrective action as appropriate and has the authority to recommend that work be stopped when there are factors present that may jeopardize quality. The QAO will be available to respond to QA/QC problems.

2.0 Quality Assurance Project Plan Objectives For Data Measurement

2.1 Overview

Overall project goals are defined through the development of Data Quality Objectives (DQOs), which are qualitative and quantitative statements that specify the quality of the data required to support decisions. Data quality is measured by how well the data meet the QA/QC goals of the project. In this plan, "Quality Assurance" and "Quality Control" are defined as follows:

- Quality Assurance - The total integrated program for assuring reliability of monitoring and measurement data.
- Quality Control - The routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

As stated in the Guidance for Data Quality Objectives Process (EPA QA/G-4), DQOs are derived from the outputs of each step of the DQO process that:

- Classify the study objective;
- Define the most appropriate type of data to collect;
- Determine the most appropriate conditions from which to collect the data; and
- Specify acceptable levels of decision errors that will be used as the basis for establishing the quantity and quality of data needed to support the decision (USEPA, 1994).

2.2 QA/QC Requirements

2.3 Initial Instrument Calibration

Calibration curves will be developed for each of the compounds to be analyzed. Standard concentrations and a blank will be used to produce the initial curves. The development of calibration curves and initial calibration response factors must be consistent with method requirements presented in the most recent version of SW-846 and the NYSDEC's Analytical Services Protocol (ASP).

2.4 Continuing Instrument Calibration

The initial calibration curve will be verified every 12 hours by analyzing one calibration standard. The standard concentration will be the midpoint concentration of the initial calibration curve. The calibration check compound must come within 25% relative percent difference (RPD) of the average response factor obtained during initial calibration. If the RPD is greater than 25%, then corrective action must be taken as provided in the specific methodology.

2.5 Method Blanks, Field Blanks and Trip Blanks

Method blank or preparation blank is prepared from an analyze-free matrix, which includes the same reagents, internal standards and surrogate standards as the related samples. It is

carried through the entire sample preparation and analytical procedure. A method blank analysis will be performed once for each 12-hour period during the analysis of samples for Volatile Organic Compounds (VOCs). The method blank will be used to demonstrate the level of laboratory background and reagent contamination that might result from the analytical process itself.

Field blanks and trip blanks will also be collected to ensure no contamination arises from sampling equipment or the transportation and handling methods.

2.6 Duplicate samples are two or more samples considered representative sub-samples of the same source. The samples are identically processed throughout the measurement system. For the SVI monitoring, laboratory duplicate analyses will consist of one (1) sub-slab vapor sample, one (1) indoor air sample, and one (1) outdoor air sample for every batch of field samples. For the pre-design soil investigation, one (1) duplicate sample will be collected per day of sampling. Duplicate samples will be analyzed as per appropriate methodology. Duplicate analyses for Target Compound List (TCL) compounds will be associated with matrix spike and matrix spike duplicate analyses. The results of the duplicate analyses will be used to assess the precision of the measurement systems.

2.7 Surrogate Spike Analysis

Surrogate standard determinations will be performed on all samples and blanks analyzed by the analytical laboratory. All samples and blanks will be spiked with the appropriate surrogate compounds (as indicated by the methodology) before purging or extraction in order to monitor preparation and analyses of samples. Surrogate spike recoveries shall fall within the advisory limits in accordance with the SW-846 protocols for samples falling within the quantitation limits without dilution.

2.8 Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank Analysis

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) analyses can be performed to evaluate the matrix effect of the sample upon the analytical methodology along with the precision of the instrument by measuring recoveries. The MS/MSD samples will be analyzed for each group of samples of a similar matrix, at a rate of one for every batch of field samples. The Relative Percent Difference (RPD) will be calculated from the difference between the MS and MSD. Matrix spike blank (MSB) analysis will be performed to indicate the appropriateness of the spiking solution(s) used for the MS/MSD.

2.9 Accuracy

Accuracy is defined as the nearness of a result or the mean (x) of a set of results to the true value. Accuracy is assessed by means of reference samples and percent recoveries. Accuracy includes both precision and recovery, and is expressed as Percent Recovery (% REC). The MS sample is used to determine the percent recovery. The matrix spike % REC is calculated by the following equation:

$$\%REC = \frac{SSR - SR}{}$$

SA

where:
SSR = measurement from spiked sample
SR = measurement from un-spiked sample
SA = actual data of spike added

2.10 Precision

Precision is defined as the measurement of agreement of a set of replicate results among themselves without assumption of any prior information as to the true result. Precision is assessed by means of duplicate/replicate sample analyses. Analytical precision is expressed in terms of Relative Percent Difference (RPD) which is calculated using the following equation:

$$RPD = \frac{D_1 - D_2}{(D_1 + D_2)/2}$$

where:

RPD = Relative Percent Difference
D_1 = larger sample value
D_2 = smaller sample value (duplicate)

2.11 Sensitivity

The sensitivity objectives for this plan require that data generated by the analytical laboratory achieve detection levels low enough to meet the CRQLs as specified by SW- 846 methods. The Method Detection Limits (MDL) for target compounds and target analyses will be established by the analytical laboratory to be well below the remedial objectives and submit appropriate documentation to Walden as required by the QAO.

2.12 Representativeness

Representativeness is a measure of the relationship of an individual sample taken from a particular site to the remainder of the site and the relationship of a small aliquot of the sample (i.e., the one used in the actual analysis) to the sample remaining on-site. A blind duplicate is used to accomplish this task, as well as assessing the precision of the data. The RPD between the two samples should be less than 50%. The use of standardized techniques and statistical sampling methods influences the representativeness of an aliquot of sample to the sample at the site. The representativeness of samples is assured by adherence to sampling procedures presented in this document, therefore no specific representativeness samples are to be collected.

2.13 Completeness

Completeness is a measure of the quantity of data obtained from a measurement system as

compared to the amount of data expected from the measurement system. Completeness is defined as the percentage of all results that are not affected by failing QC qualifiers and should be between 90% and 100% of all analyses performed. The objective of completeness in laboratory reporting is to provide a thorough data support package. The laboratory data package provides documentation of sample analysis and results in the form of summaries, QC data and raw analytical data. The laboratory will be required to submit data packages that follow SW-846 reporting format, which, at a minimum, will include the following components:

1. All sample chain-of custody forms.
2. The case narrative(s) presenting a discussion of any problems and/or procedural changes required during analyses. Also presented in the case narrative are sample summary forms.
3. Documentation demonstrating the laboratory's ability to attain the contract specified detection limits for all target analyses in all required matrices.
4. Tabulated target compound results and tentatively identified compounds.
5. Surrogate spike analysis results (organics).
6. Matrix spike/matrix spike duplicate results.
7. QC checks sample and standard recovery results.
8. Blank method results.
9. Internal standard area and RT summary.

2.14 Comparability

Comparability is the degree to which analytical data generated from an individual laboratory can be compared with those from another laboratory, in terms of use of standardized industry methods and equivalent instrumentation techniques. No laboratory split samples will be taken for this project.

Appendix M

Site Management Forms

Site Management Form

Former Sep's Cleaners

Livonia Ave., Brooklyn

Date:_____

Inspector/Firm/
Position:_____

Maintenance Activities Conducted:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

System
Modifications:_____

_____
_____
_____
_____
_____
_____

Attach photos, sketches, additional pages, of location of problem or incidents, receipts for equipment.

Appendix N

Green Remediation Metrics Form

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)

Start Date: _____

Current Reporting Period

Reporting Period From: _____ To: _____

Contact Information

Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		

Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies and lab-supplied bottles, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service (bottle and sample delivery)		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site (not including treated water)		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Recommendations/Other:

CONTRACTOR CERTIFICATION
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of _____ (**Contractor Name**), which is responsible for the work documented on this form. According to my knowledge and belief, all of the information provided in this form is accurate and the site management program complies with the DER-10, DER-31, and CP-49 policies. _____ **Date** **Contractor**

Appendix O

RSO General Outline

RSO General Process

The RSO study will focus on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

The RSO is not a PRR but is complementary to the PRR. While the PRR focuses on the protectiveness of the remedy and compliance with the SMP, and reports on the remedial progress, the RSO focuses on optimization of and improvements to the remedy. An RSO is a thorough evaluation of and implementation of actions that will move the site to closure in a shorter time frame and/or provide cost savings in the long term. Some recommendations developed in the RSO process may address concepts such as:

- Improvements that will make the system more efficient, decrease maintenance costs and downtime, and effectively target the contamination;
- Modification or optimization of a treatment system process;
- Determining whether an in-situ remedy or monitored natural attenuation can replace an active ex-situ treatment remedy;
- Determining the effectiveness of the system versus system shutdown;
- Application of a new technology or remedial approach;
- Improvements that will reduce energy cost or frequency of site visits;
- Evaluation of vendors and disposal arrangements for cost savings;
- Consideration of alternate site management techniques; and
- Implementation of green remediation concepts.

When evaluating the remedial systems (RSO), the following questions should be asked:

1. Is the remedial technology employed at the site appropriate for current site conditions?

Many systems/remedies may be overdesigned, since the design process generally considers worst case scenarios and adds a factor of safety. In addition, a large portion of the contaminant mass may be removed or destroyed in the first few years of operation, after which contaminant mass removal rates generally decrease. This is often the case for groundwater pump and treat remedies. Given these two general factors, the RSO often reveals that current site conditions do not match initial design conditions and much of the system that was put in place during the original design may not be needed or is not cost effective to complete the remediation. For instance, if a groundwater treatment system was designed to treat influent at 100 gallons per minute with concentrations of 1,200 micrograms/liter (µg/L) of trichloroethylene (TCE), the system may include an air stripper, two granular activated carbon (GAC) units and a catalytic oxidizer to remove the TCE from the vapor discharge of the air stripper. If, after a year of operation, actual site conditions are flows of 40 gallons per minute and influent TCE concentrations of 250

µg/l, the Professional Engineer could consider removing the air stripper and catalytic oxidizer from the treatment process and treating the influent with two GAC units plumbed in series. This removes two energy-intensive and labor-intensive pieces of equipment from the treatment process, thereby lowering the O&M costs and decreasing the environmental footprint of the remedy.

2. Can green and sustainable technologies be employed to enhance the existing remedy, making it more sustainable, saving costs or bringing the site to closure more quickly?

The RSO will examine site conditions and determine whether the existing remedy can be enhanced by employing green or sustainable technologies. These technologies may include in-situ chemical oxidation or enhanced monitored natural attenuation techniques, or installation of passive venting, solar powered extraction wells, variable-speed drives, geothermal climate control, or tertiary wetland treatment. These technologies may also include activities such as limited excavation and treatment of source area soils that will allow natural attenuation to be the remedy for residual contamination at a site as opposed to the installation of a remediation system.

3. Is the remedy being properly maintained?

As a remedy ages, equipment maintenance becomes an issue as parts wear out and need to be replaced. This generally occurs at the same time there is pressure to reduce O&M costs. The RSO should evaluate effectiveness and efficiency of the system, not just system operation time. Improper maintenance can lead to the system working inefficiently from both a contaminant removal and contaminant destruction aspect. Inefficient contaminant removal or degradation could lead to prolonging the remedial process at a site, while inefficient contaminant destruction could potentially lead to a violation of the regulatory discharge criteria. An example of this would be an improperly maintained air stripper that loses its contaminant mass removal efficiency due to clogging of the air flow pathways. If the stripper is designed to remove 99 percent of the contaminants in the influent and that mass removal efficiency drops to 50 percent due to clogging, the remaining 50 percent of contaminant mass will still be in the effluent from the stripper, which creates a problem.

4. Can the system operation be modified using the existing technology or equipment to be equally or more effective but use less energy?

In the past, remedies often focused on contaminant destruction with little emphasis on energy conservation. During the RSO, the remedy should be examined to determine if the remedial equipment or process can be altered to save energy or maximize contaminant mass removal using the existing technology An example of this would be operating a Soil Vapor Extraction (SVE) system such that the SVE blower would alternately extract vapor from different groups (legs) of wells for set time intervals. By using such a procedure, the SVE system would remove significant mass from one set of wells for a time and then extract vapors from a different set of wells. During the period when soil vapor is not

being extracted, contaminant mass on the soils is allowed to equilibrate with the soil vapor. This recharging of the soil vapor with contaminants allows for higher mass removal rates once the leg is reactivated. By employing this strategy, a higher contaminant mass removal rate could be achieved using a smaller SVE blower and vapor treatment system. This may be equally effective at removing contaminant mass but would use significantly less energy. However, this procedure should not be used if the SVE system is being used to mitigate soil vapor intrusion into a building.

5. Can the system be taken offline in phases as the site is remediated?

The RSO should evaluate whether parts of the treatment system can be taken offline. Consider whether all of the vapor and groundwater extraction wells are still needed, given the current contaminant plume. In addition, an SVE system can be designed to be converted into a bioventing system to aid in the degradation of heavier compounds not yet stripped from the vadose zone.

6. Is our exit strategy defined well enough or should we enhance it?

Remedies are often implemented with no clear path to closure other than when the established regulatory threshold is met, the remedy is complete, and the site can be closed. This gives a beginning and an end to the process, but no directions to get from one point to the other within the process. An exit strategy provides a path to closure and lays out metrics that, once achieved, lead to the next step or phase of the remedy.

An exit strategy provides the shortest path to closure, which ultimately decreases the environmental footprint of the remedy.

The exit strategy should be short and concise. It defines the cleanup goals and the methods that will be used to assess whether the goals are being attained.

The exit strategy should address stakeholder concerns, meet all applicable regulations, identify all performance metrics, assess costs/risks/future use/benefits of the remedial actions, and identify all requirements to terminate remedial activities at the site. It must also determine the following:

1. How performance of the remedy will be measured.
2. Which decision logic/metrics will be used to select operational changes.
3. How attainment of cleanup goals will be demonstrated.
4. How system(s) operation and long-term monitoring will be terminated.
5. How site closeout will be performed.

The phases of an RSO include:

- Work plan development;
- Work plan implementation (usually includes data gathering and conceptual site model verification);

- RSO Report; and
- Implementation of recommended actions and final report.