FORMER CLEANERS SALES AND EQUIPMENT CORP.
SUB-SLAB DEPRESSURIZATION SYSTEM
WORK PLAN

Site No. C241177

Prepared for
135 Kent Avenue Management Corp.
135 Kent Avenue
Brooklyn,, New York 11249-3154

Prepared by
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90 - B Knickerbocker Avenue
Stony Brook, New York 11790

Final
January 2014

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Professional Engineer Certification

Certification:

I, John V. Soderberg, P.E., certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Report 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)

John Soderberg, P.E

Signature

SEAL:

STATE OF NEW YORK
JOHN V. SODERBERG
49975
LICENSED PROFESSIONAL ENGINEER

NYS P.E. License No.: 049975.

Dated: February 14th 2014

1. INTRODUCTION

This Sub-Slab Depressurization System Work Plan (Work Plan) has been prepared by Berninger Environmental, Inc. (BEI) under the direction of Mr. John V. Soderberg, P.E. for the property located at 135 Kent Avenue, Brooklyn, New York (Site) (Block 2333, Lot 5) (Figure1). The Work Plan has been prepared at the request of the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) to address the sub-slab and indoor vapors found during the Soil Vapor and Indoor Air Investigation performed at the subject site. The investigation was performed in November 2012 and the findings have been provided to both agencies along with a table of detections, sampling locations and inventory forms. The investigation has determined that soil vapors are present above the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (Final 2006), and vapor intrusion is present

A site plan for the first and second floor and basement is provided as Figure 2.

1.1 SITE BACKGROUND INFORMATION

The site is approximately 12,500 square feet in area and is currently developed with a two story commercial/residential building (measuring approximately 125' X 100'). The first floor of the building is divided into individual commercial tenant spaces operated by a coffee shop, a real estate broker, a deli, a furniture store, a clothing store, and storage areas. An elevator is located in the east/southeast portion of the building. A small utility room measuring approximately 20' X 10' exists beneath a portion of the building. One sump and two clean-out accesses, all with dirt bottoms exist in the floor of the utility room. A boiler historically operated in the utility room. The second floor consists of approximately eleven residential units.

Cleaners Sales & Equipment Corp. (Cleaners Sales), a wholesale distributer of dry cleaner fluids and laundry supplies, previously operated at the site. A Certificate of Occupancy from November 28, 1927 listed the Site as a new warehouse building. Circa 1958, Cleaners Sales, a dry cleaner fluid {i.e. tetrachloroethylene or “perc” (PCE”)} distribution facility, as well as the afore-mentioned laundry supply distributor, began operating onsite. For approximately the first eighteen years, drums of PCE were delivered to the Site and stored prior to local distribution. Drums came sealed and were never opened prior to transport. Subsequently, for approximately the following nineteen years, empty drums were filled with PCE via a tanker truck utilizing a dispenser nozzle with an automatic shut off. After which, for the final seven years of operation (circa 1995). A tanker truck containing PCE filled a 5,000 gallon above ground storage tank (AST) located next to the former loading bay area in the northwest portion of the first floor. The AST was fully contained in a 10' X 20' welded steel containment with a 7' extension for containment of the fill pumps, valves and controls. Two 4" steel pipes connected the AST to the fill connections located on the outside wall of the loading bay.

One pipe transferred solvent into the tank and one pipe returned the vapors to the tanker truck. PCE was then transferred to fifteen-gallon containers via a sophisticated fill station purchased from Dow Chemical. This fill station was located in a contained area next to the AST to be distributed to local dry cleaners.

The PCE distribution business ended in October 2002 and the AST was removed. Prior to removal of the tank, ultrasonic testing was performed on the AST walls and the AST passed.

A 3,000 gallon heating oil underground storage tank (UST) exists at the Site. The UST was decommissioned and closed in-place in 2003. Prior to decommissioning, a tank tightness test was performed by Dry-As-A-Bone, Inc. on March 31, 2003. Subsequent to passing the tightness test, the UST was pumped of all remaining oil, cleaned and filled with foam by Windmill Oil Tank Services in April 2003.

Cleaners Sales has a USEPA ID No. NYR000113480 for hazardous waste generation of PCE. The Site is listed in the NYSDEC database as an "unregulated" Chemical Bulk Storage Facility (CBS No. 2-000353 for the former 5,000 gallon above ground PCE storage tank).

A recent Soil Vapor and Indoor Air Investigation was perform in November 2013 at the Site. That investigation has determined that soil vapor intrusion exists in the sub-slab and indoor air at the 135 Kent Avenue Site. Based on the findings of that investigation a Sub-Slab Depressurization System is required to remove the indoor air vapors from the first and second floors of the Site.

As a temporary solution to address these indoor vapors carbon filtration fans have been installed on the first and second floors to assist in removing the vapors. These carbon fans have been installed in the real estate broker's area, the coffee shop, the furniture store, the clothing store, by the elevator shaft on the first floor and two on the second floor at both ends of the common hallway.

2. SUB-SLAB DEPRESSURIZATION SYSTEM

This section presents the approach and methods for testing and installation of the Sub-Slab Depressurization System. The basis for proposing this testing and installation are derived from the NYSDOH Guidance for Evaluation Soil Vapor Intrusion in the State of New York (Final 2006).

Soil vapor can enter a building through cracks or perforations in slabs or basements floors and walls, and through openings around sump pumps or where pipes and electric wiring go through the foundation primarily because of a difference between interior and exterior pressures. This intrusion is similar to how vapors enter buildings from the subsurface. Given this similarity, well-established techniques for mitigating exposures to vapors may also be used to mitigate exposures related to soil vapor intrusion.

In December 2013, personnel traveled to the site to check for any cracks, openings in walls, under the elevator, sump pits, piping and electric perforations in the slab and found a few areas that required filling in and sealing. The following day personnel returned to perform this filling in and sealing to reduce possible vapor intrusion into the first floor tenant spaces. In addition carbon filtration units were ordered for installation. On January 06, 2014 seven carbon filtration units were installed in the real estate broker's area, the coffee shop, the furniture store, the clothing store, by the elevator shaft on the first floor and two carbon units on the second floor at both ends of the common hallway.

In addition, further investigation was performed to determine the type of HVAC system the building had and we have been informed that no HVAC system exists in the building. Each individual first floor tenant space has its own gas service with a stand-alone gas burner, which has a two pipe system that draws fresh air from the outside through the outside diameter pipe and exhausts through the inner pipe. The second floor tenants also have a similar system with a stand-alone gas burner and the same dual intake and exhaust pipe. The building's roof was also checked and no pipes exit the roof except an old exhaust pipe from the separate basement area from the old heating system.

2.1 METHODS OF MITIGATION

The most effective mitigation method involves sealing infiltration points and actively manipulating the pressure difference between the building's interior and exterior (on a continuous basis). As discussed in the following sections, the appropriate method to use will largely depend upon the building's foundation design. Furthermore, buildings having more than one foundation design feature (e.g. basement under one portion of the building and a crawl space beneath the remainder) may require a combination of mitigation methods. This section describes methods of mitigation that are expected to be the most reliable options under a wide range of circumstances. Occasionally, there are site specific or building specific conditions under which alternative methods (such as HVAC modification, sealing, room pressurization passive ventilation systems, or vapor barriers) may be more appropriate. Such mitigation proposals may be considered on a case-by-case basis.

Buildings with a basement slab or slab on grade foundation.

In conjunction with sealing potential subsurface vapor entry points, an active sub-slab depressurization system (SSDS) is the preferred mitigation method for buildings with a basement slab or slab-on-grade foundation. A SSD system uses a fan-powered vent and piping to draw vapors from the soil beneath the building's slab (i.e. essentially creating a vacuum beneath the slab) and discharges them to the atmosphere. This results in lower sub-slab air pressure relative to indoor air pressure, preventing the infiltration of sub-slab vapors into the building.

The most common approach to achieving depressurization beneath the slab is to insert the piping through the floor slab into the crushed rock or soil underneath. The depressurization approach. Or combination of approaches, selected for a building should be determined on a building specific basis due to building specific features that may be conducive to a specific depressurization approach.

Although sealing is not a reliable mitigation technique on its own, it can significantly improve the effectiveness of a SSD system since it limits the flow of subsurface vapors into the building. All joints, cracks and other penetrations of slabs, floor assemblies and foundation walls below or in contact with the ground surface should be sealed with materials that prevent air leakage.

If a SSD system is not a practicable alternative or that exposures will be mitigated concurrently by a method selected to remediate subsurface contamination, alternative mitigation methods may be considered, such as the following:

a. HVAC modifications.
   No HVAC system exists with this building

b. Soil Vapor Extraction (SVE) system - a technique used to remediate contaminated subsurface soils vapor. SVE systems use high flow rates, induced vacuum or both to collect and remove contamination. While SSD systems use a minimal flow rate to affect the minimum pressure gradient needed to reverse air flow across a building's foundation.

   A Subsurface Investigation Work Plan was developed and provided to the NYSDEC for review and approval. It can be assumed based on the Soil Vapor Intrusion Investigation findings that soil contamination exists below the buildings slab-on- grade foundation. Upon completion of that approved Investigation Work Plan and the determination soil contamination is present remedial action recommendations will most likely be the installation of a SVE system to work in conjunction will an SSD system.

Other sections of the Guidance for Evaluating Soil Vapor Intrusion include buildings with crawl space foundations, buildings with dirt floors, buildings with multiple foundation types and, undeveloped parcels which do not apply to the 135 Kent Ave. Site and will not be discussed in this Work Plan.

2.2 INSTALLATION AND DESIGN OF MITIGATION SYSTEMS

Once a mitigation method is selected, it should be designed and installed. The components of the design and installation of mitigation systems, the procedures for specific mitigation techniques, and references for technical guidance are provided in the following subsections.

General Recommendations:
Systems should be designed and installed by a professional engineer or environmental professional. In most areas of the state, there are contractors who have met certain requirements and are trained to identify and fix vapor problems in buildings.

Typically, the party responsible for remediating the site is responsible for arranging design and installation activities. All design and installation activities should be documented and reported to the agencies. Furthermore, once a mitigation system is installed, an information package should be given to the building's owner and tenants, if applicable, to facilitate their understanding of the system's operation, maintenance and monitoring.

With the exception of SVE systems, the mitigation methods introduced here are not intended to remediate the source of subsurface vapors (i.e., contaminated groundwater, soil, etc.). Rather, they are designed to minimize the infiltration of subsurface vapors into a building.

System Specific Recommendations:
Basic design and installation recommendations for mitigation systems follow. These are based upon recommendations and requirements given by the EPA for mitigating exposures related to vapor intrusion. Not all apply to the 135 Kent Ave. Site.

a. **Sealing** - To improve the effectiveness of depressurization and ventilation systems and to limit the flow of subsurface vapors into the building, materials that prevent air leakage should be used, such as elastomeric joint sealant, compatible caulks, non-shrink mortar, grouts, expanding foam or drain compounds. In some situations, this may be a consideration in choosing an appropriate sealing material.

b. **Soil Vapor Retarder** - Not to be considered for the 135 Kent Ave. Site.

c. **Depressurization Systems**

1. The systems should be designed to avoid the creation of other health, safety, or environmental hazards to building occupants (e.g. back drafting of natural draft combustion appliances).

2. The systems should be designed to minimize soil vapor intrusion effectively

while minimizing excess energy usage, to avoid compromising moisture and temperature controls, other comfort features, and to minimize noise.

3. To evaluate the potential effectiveness of a SSD before it is installed, a diagnostic test (commonly referred to as a "communication " test) should be performed to measure the ability of the suction field and air flow to extend through the material beneath the slab. The test is commonly conducted by applying suction on a centrally located hole drilled through the concrete slab and simultaneously observing the movement of smoke downward into small holes drilled in the slab at locations separated from the central suction hole. A similar quantitative evaluation may also be performed by using a digital micro-manometer or comparable instrument. Depending on test results, multiple suction points may be needed to achieve the desired effectiveness of the system.

4. Passive systems (i.e., a SSD system without a vent fan) not being considered.

5. The vent fan and discharge piping should not be located in or below a livable or occupied area of the building to avoid entry to extracted subsurface vapors into the building in the event of a fan or pipe leak.

6. To avoid entry or extracted subsurface vapors into the building, the vent pipe's exhaust should be:

a. above the eave of the roof (preferably, above the highest eave of the building at least 12 inches above the surface of the roof);
b. at least 10 feet above ground level;
c. at least 10 feet away from any opening that is less than 2 feet below the exhaust point; and
d. 10 feet from any adjoining or adjacent building, or HVAC intakes or supply registers.

7. Rain caps, if used, should be installed so as not to increase the potential for extracted subsurface vapors to enter the building.

8. To avoid accidental changes to the system that could disrupt its function, the depressurization system should be labeled clearly.

9. A warning devise or indicator should be installed to alert building occupants if the active system stops working properly. Example of system failure warning devises and indicators include the following: a liquid gauge, (i.e. a manometer), a sound alarm, a light indicator, and a dial (needle display) gauge. The warning devise or indicator should be placed where it can be easily heard or seen. The

party installing the system should verify the warning devise or indicator is working properly. Building occupants should be made aware of the warning devise or indicator (what it is, where it is located, how it works, how to read/understand it, and what to do if it indicates the system is not working properly).

d. HVAC systems will not be discussed as the 135 Kent Ave. Site only has individual
tenant gas heat systems with some having portable AC units in windows.

e. Crawl Space ventilation will not be discussed as none exists at the 135 Kent Ave. Site.

f. SVE systems designed to also mitigate exposures will not be discussed at this time until the subsurface investigation has been performed and the findings of that investigation determine a SVE system is required.

2.3 POST-MITIGATION TESTING

Once a mitigation system is installed, its effectiveness and proper installation should be confirmed. The party that installed the system should be responsible for conducting post-mitigation testing and for developing a post-mitigation testing plan. Minimum objectives for post-mitigation testing associated with specific mitigation methods are provided in the following subsections. All post-mitigation testing activities should be documented and reported to the agencies.

SSD systems with sealing

a. Reasonable and practical actions should be taken to identify and fix leaks. With the depressurization system operating, smoke tubes are used to check for leaks through concrete cracks, floor joints, and at the suction point. Any leaks identified should be resealed until smoke is no longer observed flowing through the opening.

b. Once a depressurization system is installed, its operation may compete with the proper venting of fireplaces, wood stoves and other combustion or venting appliances (e.g. furnaces, clothes dryers, and water heaters), resulting in the accumulation of exhaust gases in the building and the potential for carbon monoxide poisoning. Therefore, in buildings with natural draft combustion appliances, the building should be tested for back drafting of the appliances, back drafting conditions should be corrected before the depressurization system is placed in operation.

c. The distance that a pressure change is induced in the sub-slab area (i.e. a pressure field extension test) should be conducted. Analogous to a communication test, this test is commonly conducted by operating the depressurization system and simultaneously drill through the slab at sufficient locations to demonstrate that a vacuum is being created beneath the entire slab. A similar quantitative evaluation may also be performed by using a digital micro-manometer or comparable instrument. If adequate depressurization is not occurring, the reason (e.g., improper fan operation) should be identifies and corrected,

d. Adequate operation of the warning devise or indicator should be confirmed.

e. Except as indicated below, post mitigation indoor and outdoor air sampling should be conducted in all buildings where pre-mitigation samples were collected and in all buildings where physical data suggest possible impediments to comprehensive sub-slab communication of the depressurization system (i.e., locations with wet or dense sub-slab soils, multiple foundations and footings, minimal pressure differentials between the interior and sub-slab).

Generally, indoor and outdoor air sampling locations, protocols and analytical methods should be consistent between pre-mitigation and post-mitigation sampling, where applicable. In buildings with basements, post-mitigation indoor air sampling from the basement alone (i.e., without a concurrent indoor air sample from the first floor) is recommended in most circumstances.

Typically, post mitigation sampling should be conducted no sooner than 30 days after installing a depressurization system. If the system is installed outside of the heating season or at the end of a season, post-mitigation air sampling may be postponed until the next heating season.

In cases of widespread mitigation due to vapor contamination and depending upon the basis of making decisions (e.g., “blanket mitigation” approach within a specified area of documented vapor contamination), a representative number of buildings from an identified study area, rather than each building, may be sampled. Prior to implementation, this type of post-mitigation sampling approach should be approved by State agency personnel.

If post-mitigation sampling results do not indicate a significant decrease in the concentrations of volatile chemicals previously believed to be present in the indoor air due to soil vapor intrusion, the reason (e.g., indoor or outdoor sources, improper operation of the mitigation system, etc.) should be identified and corrected as appropriate.

SMD system with soil vapor retarder is not being considered for the 135 Kent Ave. Site.

HVAC modification No HVAC system exists.

Crawl space ventilation and seal. A crawl space does not exist at the 135 Kent Ave. Site.

SVE system designed to also mitigate exposures. To be considered after subsurface investigation has been performed.

2.4 OPERATION, MAINTENANCE & MONITORING OF MITIGATION SYSTEM

When mitigation systems are implemented at a site, the operation, maintenance and monitoring (OM&M) protocols for the systems should be included in a site specific Site Management Plan (formerly referred to as Operation, Maintenance and Monitoring Plan). The party that installed the system should conduct OM&M activities and should develop the Site Management Plan. Recommendations for minimum OM&M activities associated with specific mitigation methods are provided in the following subsections. Also included is a discussion of non-routine maintenance. All routine and non-routine OM&M activities should be documented and reported to the agencies.

SSD and SMD systems

Routine maintenance should commence within 18 months after the system becomes operational, and should occur every 12 to 18 months thereafter. Based upon a demonstration of the system's reliability, the State recommends that, if a different frequency is desired, a petition describing the alternative frequency and the reasons that frequency is preferred be submitted to the State. Any comments the State may have on the petition should be considered before the frequency is altered.

During routine maintenance, the following activities (at a minimum) should be conducted:

a. a visual inspection of the complete system (e.g., vent fan, piping, warning devise or indicator, labeling on systems, soil vapor retarder integrity. etc.);
b. identification and repair of leaks; and
c. inspection of the exhaust or discharge point to verify no air intakes have been located nearby.

As appropriate preventative maintenance (e.g., replacing vent fans), repairs and/or adjustments should be made to ensure its continued effectiveness at mitigating exposures related to soil vapor intrusion. The need for preventative maintenance will depend upon the life expectancy and warranty for the specific part, as well as visual observations over time. The need for repair and/or adjustments will depend upon the results of a specific activity compared to that obtained when system operations were initiated.

If significant changes are made to the system or when the system's performance is unacceptable, the system may need to be redesigned and restarted. Many, if not all, of the post-mitigation testing activities, as previously described may be appropriate. The extent of such activities will primarily depend upon the reason for the change and the documentation of sub-slab depressurization.

Generally, air monitoring is not recommended if the system has been installed properly and maintaining a vacuum beneath the entire slab.

In addition to routine OM&M activities described here, the building's owner and tenants are given information packages that explain the system operation, maintenance and monitoring. Therefore, at any time during the system's operation, the building's owner or tenants may check that the system is operating properly.

Other mitigation systems
For other mitigation systems(e.g., HVAC crawl Space ventilation, etc.) routine maintenance activities are generally comparable to post-mitigation testing activities. Activities typically include a visual inspection of the complete system, and identification and repair leaks. System performance checks, such as air stream velocity measurements of ventilation systems, also should be performed.

As appropriate, preventive maintenance (e.g., replacing filters, cleaning lines, etc.), repairs and/or adjustments should be made to the system to ensure its continued effectiveness at mitigating exposures related to soil vapor intrusion. If significant changes are made to the system or when the system's performance is unacceptable, redesigning and restarting the system may be appropriate.

Air monitoring, such as periodic sub-slab vapor, indoor air and outdoor air sampling, may be appropriate to determine whether existing building conditions are maintaining the desired mitigation endpoint and to determine whether changes are appropriate. The type and frequency of monitoring is determined based upon site-specific and building-specific conditions, taking into account applicable environmental data, building operating conditions, and the mitigation method employed.

Non-routine maintenance may also be appropriate during the operation of a mitigation system. Examples of such situations include the following:

a. the building's owner or occupants report that the warning devise or indicator

b. residual contamination, if any, in subsurface vapors is not expected to affect indoor air quality significantly based upon soil vapor and/or sub-slab vapor sampling results;

c. residual contamination, if any, in subsurface vapors is not affecting indoor air quality when active mitigation systems are turned off based upon indoor air, outdoor air and sub-slab vapor sampling results at a representative number of buildings; and

d. there is no "rebound" effect for which additional mitigation efforts would be appropriate observed when the mitigation system is turned off for a prolonged periods of time. This determination should be based upon indoor air, outdoor air and/or sub-slab vapor sampling from the build over a time period, determined by site-specific conditions.

Given the prevalence of vapors throughout the State of New York , consideration should be given to leaving the system in place and operating to address exposures related to vapor intrusion after concurrence is reached that the system is no longer needed to mitigate exposures related to soil vapor intrusion. This action should be done only with permission of the property owner and after the property owner is aware of their responsibilities in operating, monitoring and maintaining the system for this specific purpose. If the property owner declines the offer, the system should be shut down and, if requested, removed in a timely manner.

2.6 ANNUAL CERTIFICATION

Mitigation systems are considered engineering controls, defined as any physical barrier or methods employed to:

1. Actively or passively contain, or monitor hazardous waste or petroleum;
2. Restrict the movement of hazardous waste or petroleum to ensure the long-term effectiveness of remedial actions; or
3. Eliminate potential exposure pathways to hazardous waste or petroleum.

Therefore, depending upon the remedial program, submission of an annual certification to the State may be required. This certification must be prepared and submitted by a professional engineer or environmental professional and affirm that the engineering controls are in place, are performing properly and remain effective. This requirement of certification remains in effect until the State provides notification, in writing, that this certification is no longer needed.

If a property owner declines a mitigation system, the party responsible for arranging the design and installation of the system should renew the offer on an annual basis, unless they demonstrate environmental conditions have changes and that a system is no longer needed.

3. PILOT TESTING

The first step in the design of a Sub-Slab Depressurization System is a pilot test to determine where to locate sub-slab pipes or piping that will create a vacuum throughout the sub-slab of the entire building.

3.1 Sub-Slab Pilot Testing

To evaluate the potential effectiveness of a SSD system before it is designed, a diagnostic test (commonly referred to as a "communication" test) should be performed to measure the ability of a suction field and air flow to extend through the material beneath the slab. The test is commonly conducted by applying suction on a centrally located hole drilled through the concrete slab and simultaneously observing the movement of smoke downward into small holes drilled in the slab at locations separated from the central suction hole. A similar quantitative evaluation may also be performed by using a digital micro-manometer or comparable instrument like a magnehelic gauge which measures Hg" of vacuum. Dependent on test results, multiple suction points may be needed to achieve the desired effectiveness of the system.

3.2 Determining Radius Of Influence & Vacuum Motor Size

The pilot test is expected to be performed in the hallway area between the clothing store and the furniture store where most of the tanks and drums were previously located during the time the Cleaners Sales operated and where the highest sub-slab test results were found. A 2 inch PVC slotted pipe will be installed below the hallway floor and sealed around the outside edges with a quick set non-VOC compound. Small diameter holes 1/8 to 1/4 inch will be drilled through the floor at a number of locations in tenant spaces. It is expected that small diameter holes will be drilled in both the clothing and furniture stores, in the hallway behind the real estate office, behind the deli in the hallway and perhaps one of the store rooms.

Two vacuum motors will be transported to the 135 Kent Ave Site with one a one horsepower regenerative blower and the second a radon blower. The reason for both vacuum motors is to conduct the pilot test using both motors with the first the Radon motor to confirm if all testing points have vacuum using magnehelic gauges at each location. Sub-Slab depressurization systems normally use small vacuum blowers. However, a larger vacuum motor will be used if we do not see any vacuum reading using the smaller motor. The reading observed at each of the small test holes will determine the radius of influence and vacuum motor size to use in the SSDS design.

During the pilot testing we will be using a flexible exhaust hose connected to the vacuum blower, which will be routed to the outside of the building above the first floor during the pilot testing. A sampling port will be located in this exhaust hose to allow for discharge air sampling using a summa canister which will be tested for TO-15 parameters.

The pilot testing results of the discharge air will be used in the design of the SSDS to treat any exhaust vapors that do not meet the requirements of the NYSDEC DAR-1, Air Guidance before discharge to the ambient air. After the SSDS pilot test is performed, approximate calculations will be performed to determine whether or not the SSDS needs to have treatment/filtration unit(s) installed in order to mitigate the discharged soil vapors.

If pilot test results along with calculations determine that the SSDS requires treatment/filtration unit(s) a non-collapsible hose will be connected to the blower outlet or exhaust to form an air emission treatment system using vapor phase carbon canisters or drums. Heat rated CPVC pipes will connect the carbon units to an exhaust stack that will most likely be routed up the elevator shaft and out the second floor roof. Height of the exhaust stack on the roof will be above the roof line and at least 10 feet above the nearest structure on the roof or adjoining buildings.

4. HEALTH & SAFETY PLAN

The same Health and Safety Plan applied for the Soil Vapor Intrusion Investigation Work Plan will apply and be followed.

5. SCHEDULE

Task	**Task Duration**	**Total Duration**
NYSDEC & DOH Approval of Work	To be determined by NYSDEC and NYSDOH	To be determined by NYSDEC and NYSDOH
Mobilization	1 Week after approval	1 Week after approval
Implement Field Work	1 to 2 Days after mobilization	1 to 2 Days after mobilization
Draft Report Submittal	1.5 to2 Weeks after completion	1.5 to 2 Weeks after completion

Please review and advise if our proposed pilot testing for a sub-slab depressurization system is approved so we may start to arrange a schedule to perform the work.

6. REFERENCES

Previous Work Plan Site History
Guidance for Evaluating Soil Vapor Intrusion in the State of New York

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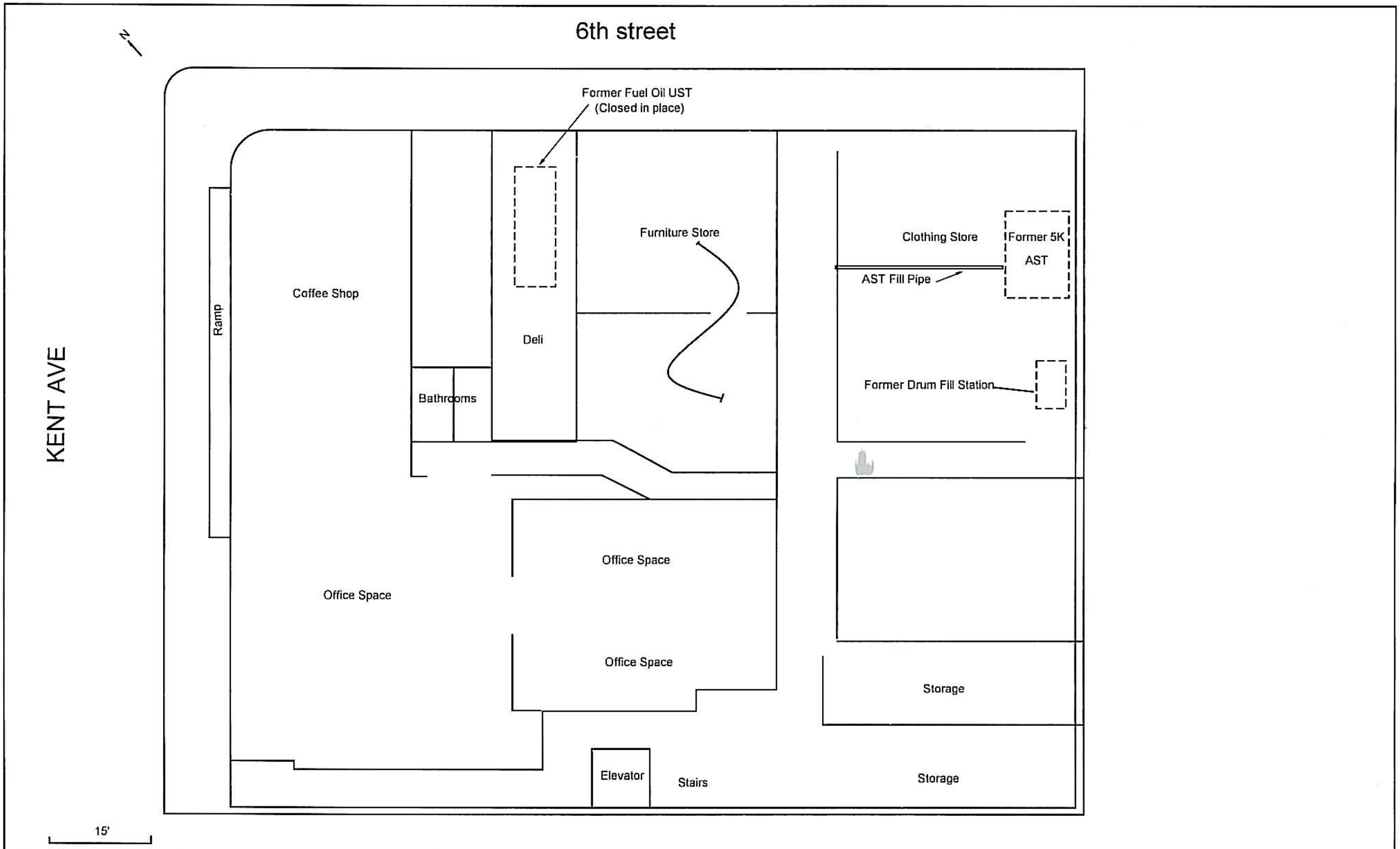
Figure 1.
Site Location Map
135 Kent Avenue
Brooklyn, New York



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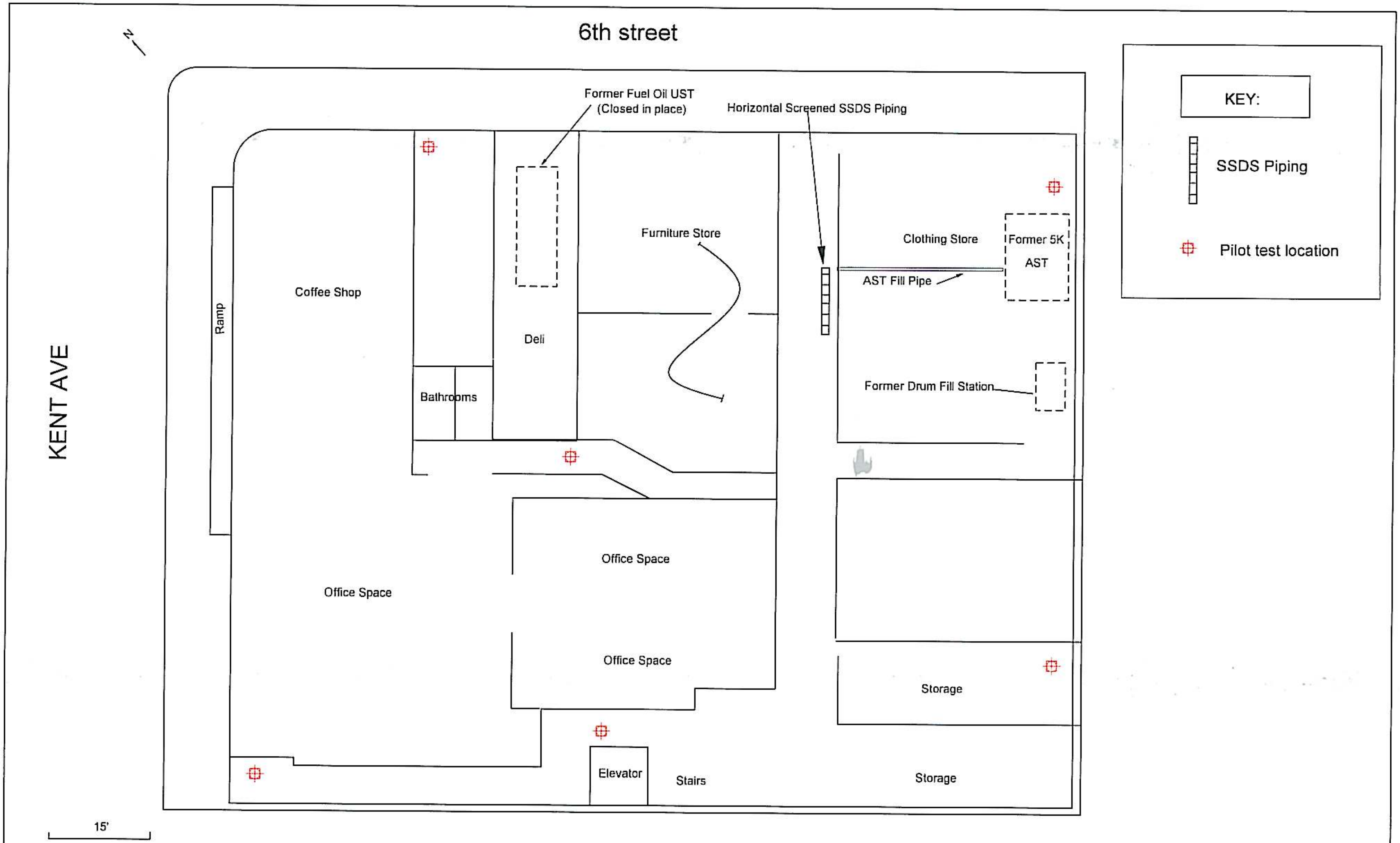
Kent Avenue
135 Kent Avenue
Brooklyn, NY

Figure-2
Site Plan



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Kent Avenue
135 Kent Avenue
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Figure-3
Pilot Test Locations