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October 18, 2012

Dana Kaplan
Environmental Engineer
New York State Department of Environmental Conservation
Division of Environmental Remediation
47-40 21st Street
Long Island City, NY 11101-5401

Re: Revised IRM
127-13 Merrick Blvd.
Queens, New York 11413
Site Code 241128

Dear Ms. Kaplan:

J.R. Holzmacher P.E. LLC (JRH) has prepared this Interim Remediation Measure (IRM) Work Plan and appended Health & Safety Plan (HASP) for the above referenced property. The scope of work presented in this plan is based on the Site Characterization results summarized in the report to you dated November 30, 2011.

INTRODUCTION

This soil and vapor remediation IRM Work Plan identifies the activities and tasks associated with the excavation of contaminated soil in the 127-13 basement and installation of a sub-slab depressurization system (SSDS) within the entire strip of businesses. Figure 1 shows the location of the Site and Figure 2 shows the layout of the property and site characterization sample locations.

This IRM Work Plan has been developed based upon information that is currently available and may be amended if other conditions become evident. To date, the dry cleaning solvent perchloroethylene (perc) and daughter products have been detected in soil samples at concentrations exceeding 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs). These affected soil samples are associated with a former floor drain. Perc and daughter compounds have also been detected in sub-slab soil vapor and exceed NYSDOH guidelines.

The site characterization data indicate that excavation and removal of contaminated soil is protective of human health and the environment through physical recovery of contaminant mass and elimination and control of potential exposure. The installation of a SSDS will capture fugitive vapors. The effectiveness of the IRM will be assessed through collection of confirmation soil samples in conformance with NYSDEC DER-10 and comparison of the post-remediation sampling results with pre-remediation sampling results. Work performed, results, and

conclusions from the IRM effort will be summarized and presented in an IRM Construction Completion Report that will be submitted to the NYSDEC for review.

ENGINEERING EVALUATION

This IRM involves excavation of affected soil containing compounds of potential concern at concentrations above applicable SCOs as defined in 6 NYCRR Part 375-6.8. The SCOs are intended to be applied to soils above the water table. The current and continued use for the Site is commercial.

Protection of Human Health and the Environment

The remedy will remove affected soil and vapors that could represent a potential source of exposure to building occupants. Removal of soil contamination will inhibit leaching to ground water and eliminate the generation of vapors. During the excavation of contaminated soil and installation of the SSDS, air monitoring for dust and volatile organic compounds (VOCs) will be performed. Therefore, the IRM is protective of human health and the environment.

Standards, Criteria, & Guidance

As discussed above, the remedy will remove soil in excess of applicable SCOs and vapors in excess of NYSDOH standards as determined through consideration of the current, intended, or reasonably anticipated use of the Site.

Short-term Effectiveness & Impacts

During the excavation, air monitoring will be conducted as documented in the Health & Safety Plan (Appendix A) to prevent Site workers and the surrounding area from exposure to dust and VOCs. The excavation will be conducted over a period of one week. During this period, it is anticipated that there will be a slight increase in truck traffic associated with transportation of excavated soil from the Site. Therefore, the short-term impacts associated with this project are acceptable.

Long-term Effectiveness & Permanence

Excavation will permanently remove affected soil from the Site. The SSDS will permanently eliminate residual contaminated vapor initially generated by the contaminated soil.

Reduction of Toxicity, Mobility, or Volume

Soil containing compounds of potential concern above applicable SCOs will be permanently removed from the Site. Contaminated vapors will also be permanently removed.

Implementability

No approvals are required from other agencies, and the equipment is readily available to perform the excavation and install the SSDS. Therefore, the IRM is readily implementable.

PREVIOUS INVESTIGATIONS

As part of a potential property transaction, JRH was retained by the previous owner to determine if the former dry cleaning operation affected the environmental integrity of the property. JRH initially inspected the site on September 12, 2006. A tattoo and body piercing business occupied the building at the time. The basement, however, was empty and unoccupied and a floor drain was identified. The floor drain was stuffed with rags and other debris. When these items were removed a strong perchloroethylene (perc) -odor was evident.

In September 2006 soil samples were collected inside the floor drain using a hand auger with extensions. Soil samples were collected at 1.5, 4.0 and 6.0 feet below grade (defined as the top of the basement slab). The 1.5-foot sample consisted of a heterogeneous mix of rags, plastic, glass and sand with a strong perc odor. This fill was underlain by brown, medium to coarse-grained sand with sub rounded quartz pebbles and rock fragments. The sand unit was encountered at approximately 1.9 feet below grade with groundwater observed at 4.3 feet below grade. There was a strong perc-odor in the 4.0 and 6.0-foot samples collected in the native sand deposits. The 6.0-foot sample was collected from the saturated zone.

Because of the shallow water table, a two-inch diameter monitoring well was installed in the floor drain and a groundwater sample collected. Due to low clearance, the four- foot long stainless steel well point (.010 slots) was placed in the hand auger boring and driven to a depth of nine feet below the top of the basement slab. The well was finished with two-inch diameter black steel riser; cemented in place with a locking cap and protective curb box. The entire floor drain is now sealed around the top of the well casing.

Perc a/k/a tetrachloroethene was detected at 26,200 mg/kg or parts per million (ppm) in the 1.5-foot soil sample; 3,098 ppm in the 4.0-foot sample: and 4,737 ppm in the 6.0-foot sample. The NYSDEC Recommended Soil Clean-up Objective (RSCO) for the compound is 1.4 ppm, therefore, the detected soil concentrations are high. Please note that because concentrations were high the method detection limits for all analyzed compounds were raised so it is not clear whether other compounds are present in the soil (particularly daughter or degradation products of perchloroethylene).

The groundwater sample indicated 30,827 ug/l or parts per billion (ppb) of perc. The New York State Groundwater Standard is 5 ppb. There were no other compounds detected in the water sample.

Site Characterization was performed under a Consent Order in the fall of 2011. The work consisted of the collection of soil, groundwater, and sub-slab vapor samples in the basement of 127-13 Merrick Boulevard. Two soil borings were drilled outside of the basement and monitoring wells installed in those borings and sampled. A Site Characterization Report (SCR) was forwarded to the NYSDEC on November 30, 2011. Following is a brief summary of the Site Characterization data and results.

Soil Analytical Results-

The analytical results for soil samples collected around the floor drain and outside of the basement are summarized in the SCR. Soil analytical results were compared to 6 NYCRR Part 375-6.8 Restricted Commercial Soil Cleanup Levels (SCOs).

No VOCs were detected above SCOs. There were trace detections of several VOCs in the three basement soil samples. Perchloroethylene was detected at a laboratory estimated concentration of 2.4 ug/l in the sample from boring MW-4 and at 35 ug/l in the sample from boring MW-3.

No SVOCs were detected in the three basement boring samples and metals concentrations did not exceed SCOs.

There were no detections of VOCs and SVOCs in the soil sample collected from the deep outside monitoring well boring, MW-5. Metals concentrations did not exceed SCOs in this sample.

Groundwater Analytical Results-

The SCR summarizes the laboratory data for the six groundwater samples. Groundwater analytical results were compared to the New York State Groundwater Standards specified in the NYSDEC Addendum to June 1998 Division of Water Technical and Operational Guidance Series (TOGS) No. 1.1.1.

Tetrachloroethene (also known as perchloroethylene or perc) was detected in five of the six groundwater samples. Perc was detected in the samples collected from all four basement monitoring wells as follows: MW-1 (41 ug/l); MW-2 (1.9 ug/l); MW-3 (190 ug/l); and MW-4 (35 ug/l). Perc was detected at a laboratory estimated concentration of 0.67 ug/l in the deep outside monitoring well but was not detected in the sample from the shallow outside well.

There were minor detections of VOCs and SVOCs (petroleum constituents) in some of the monitoring well samples but all at concentrations below their respective Groundwater Standards. Total concentrations for some metals were detected above their respective New York State Groundwater Standards in all six samples, however, dissolved concentrations were significantly lower.

Soil Vapor Results-

Table 1 summarizes the laboratory data for the sub-slab vapor samples. The concentrations of perchloroethlene were extremely high in the sub-slab samples collected from VP-1 and VP-2 and the laboratory had to dilute the samples. Perc was detected undiluted at a concentration over 500,000 ug/m^3 in the sample from VP-1 and at a concentration of over 270,000 ug/m^3 in the sample from VP-2. Perc was also elevated in the sample from VP-3 (over 13,000 ug/m^3). High concentrations of two perchloroethylene daughter products, cis-1, 2-dichloroethene and trichloroethene, were also detected. A petroleum compound, 2, 2, 4 trimethylpentane, was detected in VP-2 at an elevated concentration.

The NYSDOH recommends that the average air concentration in a *residential* community not exceed 100 ug/m^3 of perc, considering *continuous lifetime* exposure and sensitive people. Similarly, the NYSDOH set a guideline of 5 ug/m^3 for trichloroethylene in air.

Additional sub-slab and indoor air sampling was conducted in the two adjacent basements on June 5, 2012. Elevated concentrations of perc were detected in these samples.

Summary-

Because of the high perchloroethylene concentrations in sub slab vapor and basement air samples as well as documented soil contamination under the basement slab in the area of the former floor drain, interim remedial action is recommended. This remedial action would include the removal and proper disposal of contaminated soil, installation of a vapor barrier, and the installation of a sub-slab depressurization system and confirmatory vapor, soil and groundwater sampling.

SCOPE OF WORK

Removal of Perc- Contaminated Soil

The contaminated floor drain is roughly in the center of the 127-13 basement. To remove the contaminated soil around the drain, the contractor under JRH oversight will excavate and remove a volume of soil 6 feet by 6 feet by 6 feet deep. This volume was selected based on the site characterization data and may be adjusted based on field observations and soil screening data.

A vactor unit (a/k/a Supersucker Vacuum Unit) operated by an OSHA HAZWOPER-trained field crew will be used to remove the contaminated soil. The vactor truck will be parked outside of the building on Merrick Boulevard with vacuum hose and hard pipe running into the side walk basement entrance-the shortest distance to the work area. The perc- contaminated soil and debris will be removed by the vactor through the hose and directly into the vactor tank. Vactor exhaust will be HEPA filtered.

An opening will also be created in the north wall of the basement by digging down in the back of the store and knocking out a cinder block. The opening will be needed in order to provide adequate ventilation during the remediation. The opening will be fitted with an 8-inch diameter pipe and secured when not in use. The air from the pipe will be filtered using carbon so as not to inadvertently discharge contaminated vapors into the surrounding area. In addition, the ceiling of the basement will be lined with polyethylene sheeting to prevent the migration of vapors upwards into the store above.

The concrete slab around the floor drain will be broken up and removed for disposal. Excavation with the vactor will remove contaminated soil in and around the floor drain. Once the vactor is full the hosing will be disconnected and the load will be shipped to the disposal facility.

As the excavation is deepened, groundwater will be encountered at approximately 5 feet below grade. Soil straddling the water table will be removed to the extent possible by the vactor and

water may accumulate in the excavation. If so, this water will be removed as contaminated to further assist with the remediation of the site. When sufficient soil and water have been removed, as determined by JRH, backfill will be delivered, placed and compacted in the excavation. Crushed concrete will be used below the water table and RCA blend will be used above it. This backfill material will be in compliance with DER 10 Section 5.4(e) 5. The excavation will be returned to grade level.

The soil, concrete, and any groundwater removed from the floor drain area will be considered a RCRA hazardous waste due to the documented perchloroethylene concentrations. The shipment will be documented by a hazardous waste manifest and an EPA I.D. number will be required. A copy of the signed manifest and weigh ticket will be presented in the IRM completion report.

Only transporters which are licensed and permitted by the USEPA, USDOT, and the State of New York will be used for the transport of any hazardous soils. Documentation of the required licenses for the vactor operator will be obtained prior to any waste being shipped. The vactor will be in compliance with applicable state and federal hazardous waste transportation requirements (i.e., 40 CFR Part 263 and 6 NYCRR Part 364). If hazardous soils are disposed outside of New York State, the vactor operator will be required to be licensed in the appropriate state(s) or provinces as well as comply with other applicable federal laws, including USDOT requirements.

Collection of Endpoint Samples

Excavation will continue horizontally and vertically to below the water table until contaminated soil has been removed. Confirmatory endpoint soil samples will be collected by JRH. The number of soil samples to be collected will be based on field observations, PID readings, and will adhere to NYSDEC DER-10. Methods of collection will follow the Quality Assurance Plan attached to the approved Site Characterization Work Plan. EPA Method 8260 will be used to analyze these samples for the complete TCL VOCs.

Installation of a Sub-slab Depressurization System (SSDS)

The SSDS will consist of two intersecting trenches with a pit centered on the floor drain in the 127-13 basement. One trench will run the length of the 127-13 basement while the other will run the full width of the basements parallel to Merrick Boulevard. The SSDS design, which DEC and DOH have already reviewed, is included as Attachment A to this plan.

Each trench will be cut using an electric powered saw and will be 18-inches wide and 2 feet deep. Each trench will have 4-inch diameter perforated pipe running through it and surrounded by gravel. The piping will be connected to a vertical riser which will extend up through the building to the roof and may have an in-line fan to pull air through the system.

The remaining lengths of trench (in store units outside of 127-13) will be excavated and removed by hand, and the soil will be disposed of as non-hazardous, as long as PID readings are less than 10 ppm. This excavation will also be filled with gravel and will have piping running through it.

All of the trenches will be topped off with polyethylene sheeting and concrete to match the existing floor slab.

The requirements for the SSDS consist of an initial start up testing, routine maintenance and monitoring activities, and non-routine maintenance activities. Each is described in Attachment A to this plan- the *SSDS Operation and Maintenance Plan.*

Because we are dealing with an existing building we cannot test the system in advance of operation. However, this design is based on our experience in other situations. Upon system installation, testing for the presence of a negative pressure can be accomplished and if the results are not satisfactory, the fan can be "sized up" to be able to draw more volume post-installation. Monitoring points will be installed at each corner of the building to assist with the testing.

HEALTH AND SAFETY

A site-specific Health and Safety Plan (HASP) is presented in Attachment B. The procedures set forth in the HASP are designed to minimize the risk of exposure to chemical substances and physical hazards that may be present at the Site. These procedures generally conform to applicable federal, state and local regulations, including Occupational Safety and Health Administration (OSHA) requirements governing activities at hazardous waste sites and the requirements in 29 CFR 1910.120 (Hazardous Waste Operations) and 29 CFR 1926.650 (Excavations and Trenching).

Specific practices and procedures, including the level of personal protective equipment (PPE), are based on a review of currently available information for the Site.

Every potential safety hazard associated with this IRM may not be predicted. This HASP does not attempt to establish rules to cover every contingency that may arise, but it does provide a basic framework for the safe completion of field activities and plans for reasonable contingencies.

JRH will conduct on-Site air monitoring consistent with the requirements of a generic Community Air Monitoring Program (CAMP) described in the following section.

COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) in the work area and at the downwind perimeter of the work area when certain activities are in progress at potentially contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the community (i.e., including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities.

The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

To satisfy the requirements of the CAMP, the following monitoring equipment will be used.

- A Dusttrak Model 8520 meter or equivalent will be used to measure and record the amount of dust in the air.
- A portable photoionization detector with a 10.6 eV lamp will be used for organic vapors.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) are chemicals present in dry cleaning solvents. There is no evidence that these chemicals are present beyond the identified floor drain, however, because vapors are a potential human health concern, their presence/absence will be continuously monitored.

VOCs will be monitored in the basement area and outside (in the area of the Merrick Boulevard side walk and back alleyway) during all activities. 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 will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below. All readings will be recorded and be available for review.

- If the ambient air concentration of total organic vapors in the basement (and when outside at the downwind perimeter of the work area) 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 can resume with continued monitoring. If total organic vapor levels in the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 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 in the work area, activities will be shut down.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored in the basement, the back alleyway and the Merrick Boulevard side walk at temporary particulate monitoring stations. The particulate monitoring

will be performed using the Dustrak 8520 which is 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 basement PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed.

- Work may continue with dust suppression techniques provided that basement PM-10 particulate levels do not exceed 150 mcg/m^3 above the outside level and provided that no visible dust is migrating from the work area.

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

Data Presentation

All readings will be recorded on a form, scanned in PDF format, placed on a data disc, and be made available for regulatory personnel to review. In addition, data will be downloaded from instruments (where appropriate) and made available on disk for distribution.

REPORT

After endpoint sample laboratory reports are received, JRH will prepare a detailed IRM Construction Completion Report documenting remediation activities and evaluating results. The report will include the following:

- a synopsis of IRM work performed, the extent of waste removed from the Site, problems encountered, and changes from the original work plan;
- results of all sampling and analyses including QA/QC data and chain-of-custody records;
- lists of all laboratories, transporters, and disposal or recycling firms used during the IRM;
- copies of all manifests and bills of lading generated in connection with the transportation of materials off-site;
- as-built drawings showing final extent of excavation, sampling locations and the SSDS; and
- the SOP for SSDS maintenance and operation.

Endpoint soil sample analytical results will be compared to 6 NYCRR Part 375-6.8 restricted commercial Soil Cleanup Levels (SCLs) and the soil vapor analytical results to the NYSDOH perchloroethylene guidance to determine if additional investigation is warranted.

Please call if you have any questions or would like to discuss the project further. We are prepared to begin work within one month of your approval.

CERTIFICATION

I, J. Robert Holzmacher P.E. certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measure Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Very Truly Yours,
J.R. Holzmacher P.E. LLC

James Robert Holzmacher P.E.
Name

66054
NYS PE License Number

Signature

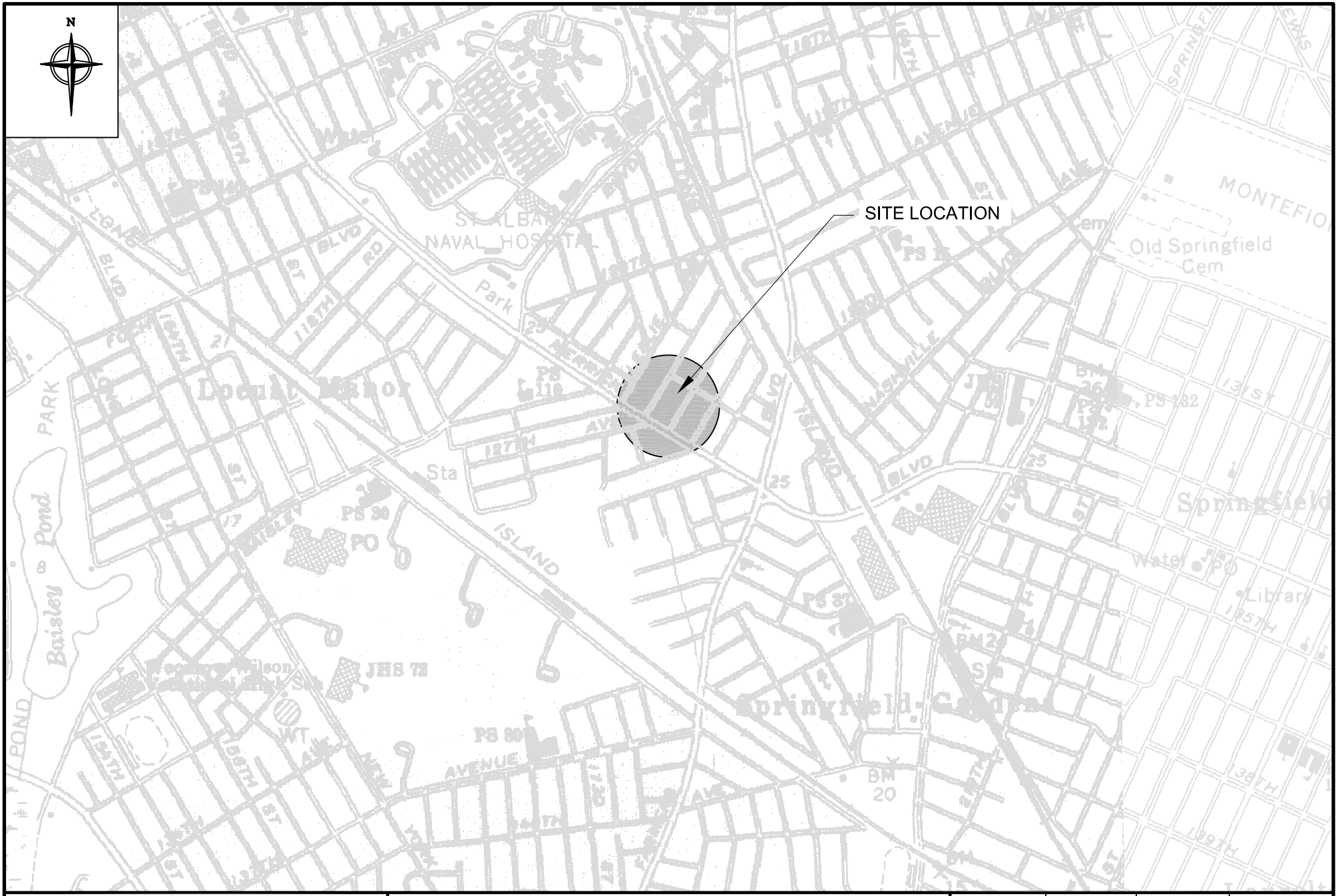
James M. DeMartinis
QEP Name

QEP Signature

Cc: David Koptiev

JMD/jd

Figures



PREPARED BY:

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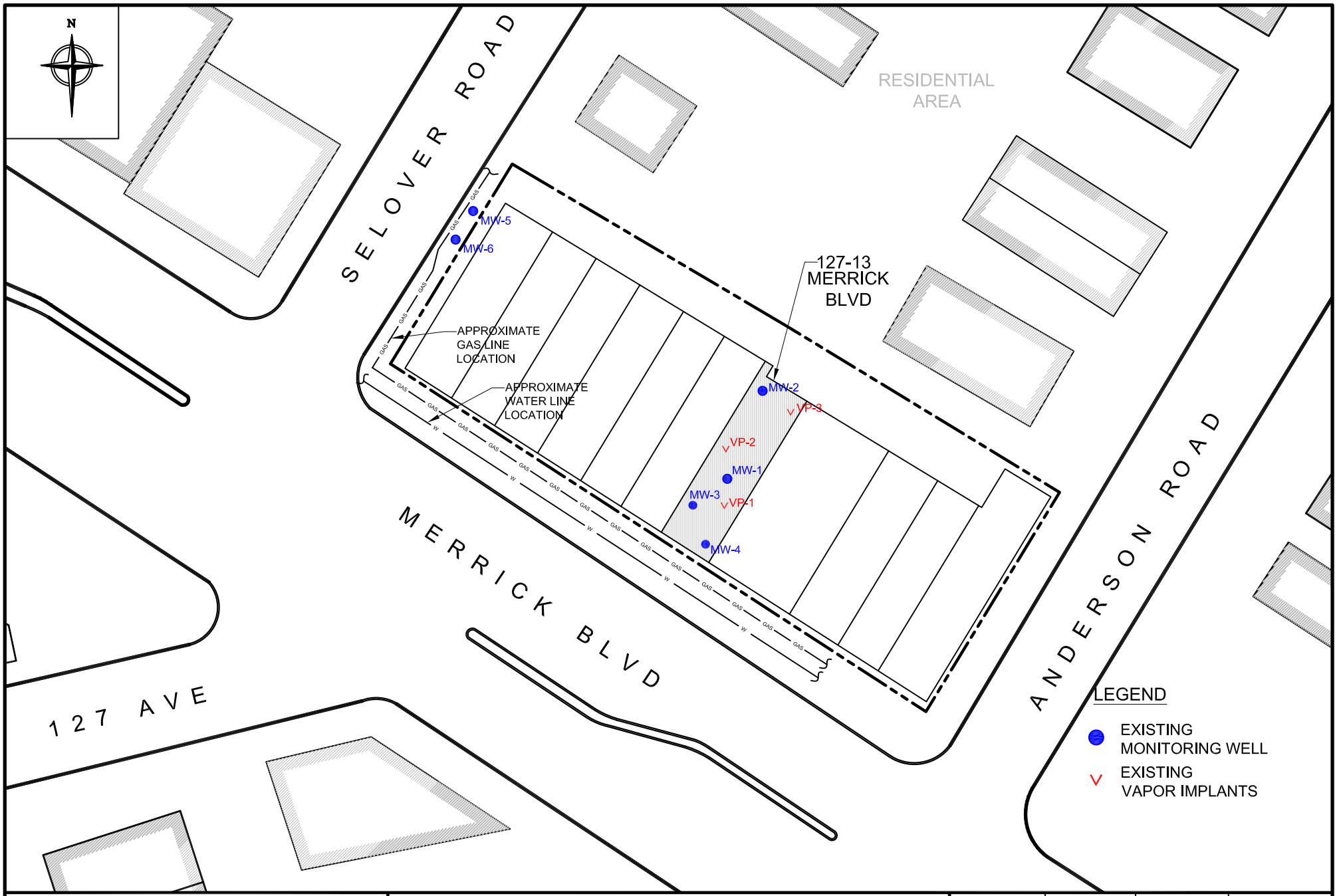
TITLE:

SITE LOCATION MAP

127-13 MERRICK BLVD.
JAMAICA NY, 11434

DWN:	SCALE:	DATE:	PROJECT NO.:
DGH	1" = 1200'	3-16-2011	KoptD 11-02
CHKD:	APPD:	REV.:	NOTES:
JMD	JMD	-	-

FIGURE NO.: 1



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TITLE:

LOCATION OF EXISTING MONITORING WELLS

127-13 MERRICK BLVD. (SITE CODE 241128)
JAMAICA NY, 11434

DWN:	SCALE:	DATE:	PROJECT NO.:
DGH	1" = 40'	11-9-11	KoptD 11-02
CHKD:	APPD:	REV.:	NOTES:
JMD	JMD	-	-

FIGURE NO.: 2

Table

127-13 Merrick Blvd.
Queens, New York 11413
Site Code 241128

Vapor Sampling

Sample ID	VP-4	VP-4DL	VP-4DL2	A-1	A-1DL	A-2	A-2DL	A-3	A-3DL	VP-5	VP-5DL
Sampling Date	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**
Matrix	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**
Dilution Factor	**1**	**10**	**100**	**1**	**10**	**1**	**10**	**1**	**40**	**10**	**1200**
Units	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**
COMPOUND											
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichlorotrifluoroethane	0.46J	ND	ND	0.46J	ND	0.61J	ND	0.46J	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	4.52	ND	ND	0.64	ND	0.69	ND	1.03	ND	41.8	ND
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	1.33	ND	ND	ND	ND	ND	ND	ND	ND	12.3	ND
1,3-Butadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.86	ND	ND	1.26	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	1.68	ND	ND	1.03	ND	ND	ND	5.93	ND	ND	ND
2-Butanone	4.98	5.6D	ND	1.71	3.24D	1.71	ND	2.54	ND	8.26	ND
2-Chlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Ethyltoluene	1.92	ND	ND	ND	ND	ND	ND	ND	ND	19.2	ND
4-Methyl-2-Pentanone	1.8	ND	ND	2.29	ND	3.65	ND	1.43	ND	ND	ND
Acetone	46.3E	52.5D	99.8D	14.1	24.7D	26.4	32.8D	**301E**	**634D**	**100**	ND
Allyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	2.43	ND	ND	0.73	ND	ND	ND	1.44	ND	11.5	ND
Bromodichloromethane	4.69	ND	ND	3.48	ND	ND	ND	ND	ND	ND	ND
Bromoethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	4.27	4.05D	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	0.5	ND	0.44	ND	0.38	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	1.48	ND	ND	0.87	ND	ND	ND	ND	ND	ND	ND
Chloroform	82.5E	85D	73.2D	53.2	86D	ND	ND	8.64	ND	12.2	ND
Chloromethane	3.26	3.72D	ND	1.45	ND	0.64	ND	0.58	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	144	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	1.96	ND	ND	1.45	ND	1.86	ND	1.14	ND	8.95	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	1.78	ND	ND	1.93	ND	1.78	ND	1.73	ND	ND	ND
Dichlorotetrafluoroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl Benzene	3.39	ND	ND	1.26	ND	1.74	ND	3	ND	25.6	ND
Heptane	16	13.9D	ND	17.9	24.2	25.2	20.5D	5.66	ND	38.1	ND
Hexachloro-1,3-Butadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexane	4.76	ND	ND	3.24	ND	ND	ND	ND	ND	16.2	ND
m/p-Xylene	9.86	ND	ND	1.61	ND	1.82	ND	4.04	ND	86.4	ND
Methyl Methacrylate	3.11	ND	ND	1.06	ND	5.57	ND	**273E**	**209D**	ND	ND
Methyl tert-Butyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	31.3	37.9D	ND	9.69	15.6D	0.94	6.6D	7.4	ND	92.1	ND
o-Xylene	3.43	ND	ND	0.56	ND	0.65	ND	1.48	ND	31.3	ND
Styrene	0.85	ND	ND	0.81	ND	0.98	ND	0.98	ND	ND	ND
t-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl alcohol	3.64	3.94D	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PERC)	**3031E**	**5547ED**	**4333**	**533E**	**718D**	1.7	ND	**956E**	**800D**	**118671E**	**1227390**

127-13 Merrick Blvd.
Queens, New York 11413
Site Code 241128

Vapor Sampling

Sample ID	VP-4	VP-4DL	VP-4DL2	A-1	A-1DL	A-2	A-2DL	A-3	A-3DL	VP-5	VP-5DL
Sampling Date	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**	**6/5/2012**
Matrix	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**
Dilution Factor	**1**	**10**	**100**	**1**	**10**	**1**	**10**	**1**	**40**	**10**	**1200**
Units	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**	**Ug/M3**
Tetrahydrofuran	1.92	ND	ND	ND	ND	ND	ND	2.57	ND	8.85	ND
Toluene	59.2E	53.9D	45.2D	81.8E	**113D**	**114**	**100D**	**106E**	90.4D	192	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	25.3	23.1D	ND	0.59	ND	0.38	ND	2.79	ND	**3106E**	**3418E**
Trichlorofluoromethane	1.24	ND	ND	1.24	ND	1.12	ND	1.18	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Qualifiers

U - The compound was not detected at the indicated concentration.
N - Presumptive Evidence of a Compound
J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.
B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.
* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.
E (Organics) - Indicates the analyte ‘s concentration exceeds the calibrated range of the instrument for that specific analysis.
E (Inorganics) - The reported value is estimated because of the presence of interference.
D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.
NR - Not analyzed

Attachment A
SSDS Design

GENERAL NOTES-
SUB-SLAB DEPRESSURIZATION SYSTEM
(Soil Gas Mitigation)

I. PURPOSE

The intent of the Sub-Slab Depressurization System described in this plan is to promote public safety and welfare by controlling soil gas intrusion potentially emanating from beneath the existing building sub grade. The system is not intended to regulate flammable vapors that may originate in and propagate from other sources, which include, but are not limited to, ruptured hazardous material transmission lines, underground atmospheric tanks, or similar installations.

II. GENERAL REQUIREMENTS

CODES:
All work shall be in compliance with the current Building Code and policies of the Department of Building and all applicable County, State, and Federal Codes.

INSPECTION:
All work, requiring inspection by the Department of Building, shall be available to the inspector prior to being covered by subsequent work.

III. MITIGATION REQUIREMENTS

A. MAINTENANCE OF MITIGATION SYSTEMS

All mechanical ventilation systems shall be maintained and serviced in proper working condition and meet all requirements of the Department of Building Electrical and Mechanical Code. The testing, maintenance and service procedure for gas detection and mechanical ventilation systems shall be performed in accordance with the manufacturer's current written instructions and the following:

1. The manufacturer's instructions shall be approved by the Fire Department. A person certified by the Fire Department shall perform testing and servicing of each system.

IV. CONSTRUCTION CRITERIA

A. ACTIVE SYSTEM

The Active System consists of the following; Sub-Slab Vent System and Mechanical Extraction System including controls and alarms.

1. Sub-Slab Vent System

Sub-Slab Vent System shall consist of Perforated Horizontal Pipes, Under portions of existing cellar slabs, Gravel Blanket Around Perforated Horizontal Pipes, and Vent Risers.

a. Perforated Horizontal Pipes:
   i. Perforated Horizontal Pipes shall be listed, minimum Schedule 40, slotted or perforated High Density Polyethylene (HDPE) or Polyvinyl Chloride (PVC) pipe or other materials approved by the Department of Building for the intended use.
   ii. Perforated Horizontal Pipe shall be installed as follows:
   - Spacing and location of Perforated Horizontal Pipes shall be as indicated on the plans.
   - Pipes used only as vents may be installed in the horizontal position.
   - Undulations in the Perforated Horizontal Pipes, which may impede the passage of gas, shall be avoided (e.g. Perforated Horizontal Pipes shall not be deformed to pass below interior footings).

b. Gravel Thickness Around Perforated Horizontal Pipes:
   i. Gravel thickness around Perforated Horizontal Pipes shall be as indicated on the plan details.
   ii. Gravel shall be composed entirely of particles that have no more than one fractured face.
   iii. The gradations of gravel shall conform to Table 1 shown on this sheet.

c. Vent Risers:
   i. Vent Risers shall be connected to Perforated Horizontal Pipes and constructed of cast or ductile iron. Exception:
   ii. Vent Risers shall be spaced and located as per plan layout.
   iii. Vent Riser outlets shall be located at least:
   - 10 feet above grade,
   - 10 feet away from any window, doors, roof hatch, opening or air intake into the building,
   - 3 feet above highest point of roof within a 10' radius of outlet,
   - 3 feet away from any parapet,
   - 4 feet away from the property line and
   - 5 feet away from any electrical device.
   iv. If rain guards are provided, they shall be non-restricting.

2. Seals at Concrete Slab Penetrations:
   a. To retard soil gas entry, all control joints, isolation joints, construction joints, and any other joints in concrete slabs or between slabs and foundation walls shall be sealed. A continuous formed gap (for example, a "tooled edge") which allows the application of a sealant that will provide a continuous, airtight seal shall be created along all joints. When the slab has cured, the gap shall be cleared of loose material and filled with an elastomeric joint sealant, as defined in ASTM C920-97, and applied in accordance with the manufacturer's recommendations.

3. Mechanical Extraction System

The Mechanical Extraction System shall consist of Pressure Sensors in Vent Risers, Control/Alarm Panel and Gas extraction powered devices and shall be constructed for the migration of subsurface gas.

   a. Sensors in Vent Risers
      i. Sensors and associated transmitters shall be listed by a recognized testing laboratory for the intended use.
      ii. Sensors and associated wiring shall be immune to radio frequency and infrared remote-transmitters frequency interference.
      iii. Sensors shall be fitted within the vent pipe so that no gas may leak through the fittings.
      iv. The associated wiring and associated raceways shall be:
      - Mounted to a secure surface independent of sensors and their associated transmitter.
      - Protected from physical damage.
   b. Gas Extraction Powered Devices
      i. Gas extraction powered devices shall consist of fans, blowers, or other powered devices to exhaust the space below the concrete slab and shall be capable of ventilating the Perforated Horizontal Pipes spaces to create a negative pressure below the slabs.

4. Alarm Systems
   a. Alarm Systems shall consist of audible and visual signals to notify buildings Superintendent or occupants of mechanical malfunction or failure of active system components.
   b. Audible alarms shall be at least 15dB above ambient noise level.
   c. Visual alarms shall be a minimum of 15-candela output and be located at each audible device.
   d. The audible signal shall be distinctively different from the fire alarm systems.

5. Control Panel
   a. General Installation
      i. Control Panel shall be listed by a recognized testing laboratory.
      ii. Control Panel shall have the following characteristics:
      - Designed not to override the building fire alarm, smoke control and ventilation systems.
      - A manual shall be provided with the Control Panel describing the installation, wiring, operation, maintenance and testing.
      - Control Panel shall monitor the power to Pressure Sensors, annunciator and associated components.
   b. Power Source
      i. Primary Power Source
      - Control Panel shall be hard wired to the building normal power.
      - The circuits supplying power to the Control Panel shall be lockable in the open position.
      ii. Back-Up Power Supply (for control panel and alarm)
      - Back-Up battery or emergency power shall be rated for a minimum of 24 hours for standby mode plus 5 minutes of alarm under full load condition.
      - This Back-Up power shall be available within 60 seconds of primary power loss.
   c. Panel Operation
      i. Device Activation
      - Control Panel shall recognize alarm conditions, and then activate required audible devices, visual devices and Gas Extraction Powered Devices.

B. MISCELLANEOUS SYSTEMS

1. Wiring

The wiring system shall be in accordance with the NYCDOB Electrical Code, International Building Code, NEC and as required herein, including latest code revisions.

   a. Outdoor Enclosures
   All outdoor enclosures shall be NEMA rated for each particular situation, (wet, submerged or gasous vapors).

   b. Conduit Seal Fittings and Cable Seal Fittings
   Conduit Seal Fittings and Cable Seal Fittings are designed to prevent the passage of gases, vapors, or flames inside the electrical conduits.
      i. Any conduit or cable that penetrates the Concrete Slab shall be provided with a conduit or cable seal.
      ii. Conduit Seal Fittings shall be installed in the vertical portion of conduit where the PVC conduit emerges from a sub-slab location. Rigid material shall be rigid metal that has the same trade size as conduit runs.
   c. Grounding Electrical Systems
   Electrical systems required to be grounded shall be connected to earth using approved methods in accordance with the NYCDOB Electrical Code.

V. SYSTEMS MAINTENANCE

A. PROCEDURES

The test, maintenance and service procedure for the Mechanical Ventilation System shall be performed in accordance with the manufacturer's instructions. Maintenance personnel for the development, shall perform testing and arrange for servicing of the Mechanical Ventilation System, if required.

B. SCHEDULE

Notwithstanding the recommendations of the manufacturer, testing, maintaining and servicing of each system shall be performed in accordance with the stipulations set fourth by the governing regulatory agency, (NYSDEC).

C. REPAIRS

All components required to mitigate soil gases shall be repaired or replaced to the manufacturer's original specification.

D. OCCUPANT NOTIFICATION

A permanent notification shall be provided indicating the presence of the Sub Slab Depressurization System. This notification shall be posted at the entrance to each cellar access, be visible and be legible as approved by the Engineer. See Detail this sheet.

SUB SLAB DEPRESSURIZATION SYSTEM
DO NOT PENETRATE CELLAR
CONCRETE SLAB

Notes:
1. This notification is to be permanently placarded at the cellar access points or other location approved by the Building Inspector at the time of construction.
2. All letters 1/2" (min.) in height.
3. At least one required per individual building unit cellar.
4. This notification shall be posted and maintained.

SSDS Notification Placard

FORM 1 - SUB SLAB DEPRESSURIZATION SYSTEM (SSDS) INSTALLATION CERTIFICATE
***After installation of the SSDS, a copy of this certificate shall be given to the Building Inspector.**

Site Address:_____
Legal Description:
Section:_____Block:_____Lot:_____
Building
Use:_____

Name:

Mailing Address:

Telephone:

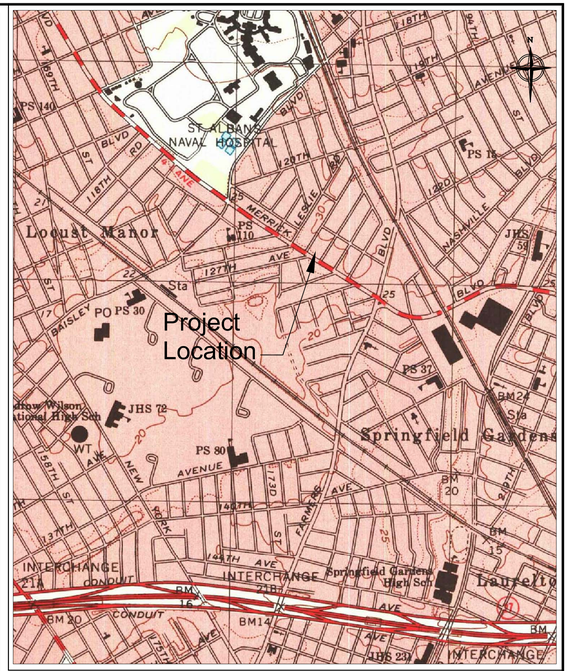
I hereby certify that I have inspected the installation and reviewed the test results of the Sub Slab Depressurization System at the above described property. On the basis of these inspections and tests it is my conclusion that the system was installed in conformity with the recommendations of the manufacturer and the requirements of this Plan. Where the inspection and testing of all or part of the work above is delegated, full responsibility shall be assumed by the Certified Installer whose signature is affixed thereon.

Signed:_____Date:_____

Table 1 - SPECIFICATIONS FOR GRAVEL

SIEVE SIZE	PERCENTAGE PASSING SIEVE	
	3/4" Gravel	3/8" Gravel
1-1/2" (37.5 mm)	100	-
1" (25.0 mm)	90-100	-
3/4" (19.0 mm)	55-85	100
3/8" (9.5 mm)	8-20	85-100
No. 4 (4.75 mm)	0-5	0-30
No. 8 (2.36 mm)	0-5	0-10
No. 200 (75um)	0-2	0-2
ASTM C 131 TEST GRADING	B	C

New York State Dept. of Health Soil Vapor Intrusion Guidance, October 2006.
Once a mitigation system is installed in a building, an information package must be given to the building's owner and tenants, if applicable, to facilitate their understanding of the system's operation, maintenance and monitoring. This package must include the following:
a description of the mitigation system installed and its basic operating principles;
how the owner or tenant can check that the system is operating properly;
how the system will be maintained and monitored and by whom;
a list of appropriate actions for the owner or tenant to take if the system's warning device (e.g., pressure gauge, alarm, etc.) indicates system degradation or failure; and
contact information (e.g., names, telephone numbers, etc.) if the owner or tenant has questions, comments or concerns.
The building's owner should also receive the following information:
any building permits required by local codes;
copies of contracts and warranties; and
a description of the proper operating procedures of any mechanical or electrical system installed, including manufacturer's operation and maintenance instructions and warranties.



Location Map
SCALE: NTS

REV	DATE	CK	DESCRIPTION

REVISIONS

127-13 Merrick Blvd
Queens, New York

SUB-SLAB DEPRESSURIZATION SYSTEM

J.R. HOLZMACHER P.E., LLC
The Third Generation of Excellence
In Water Supply, Water Resources,
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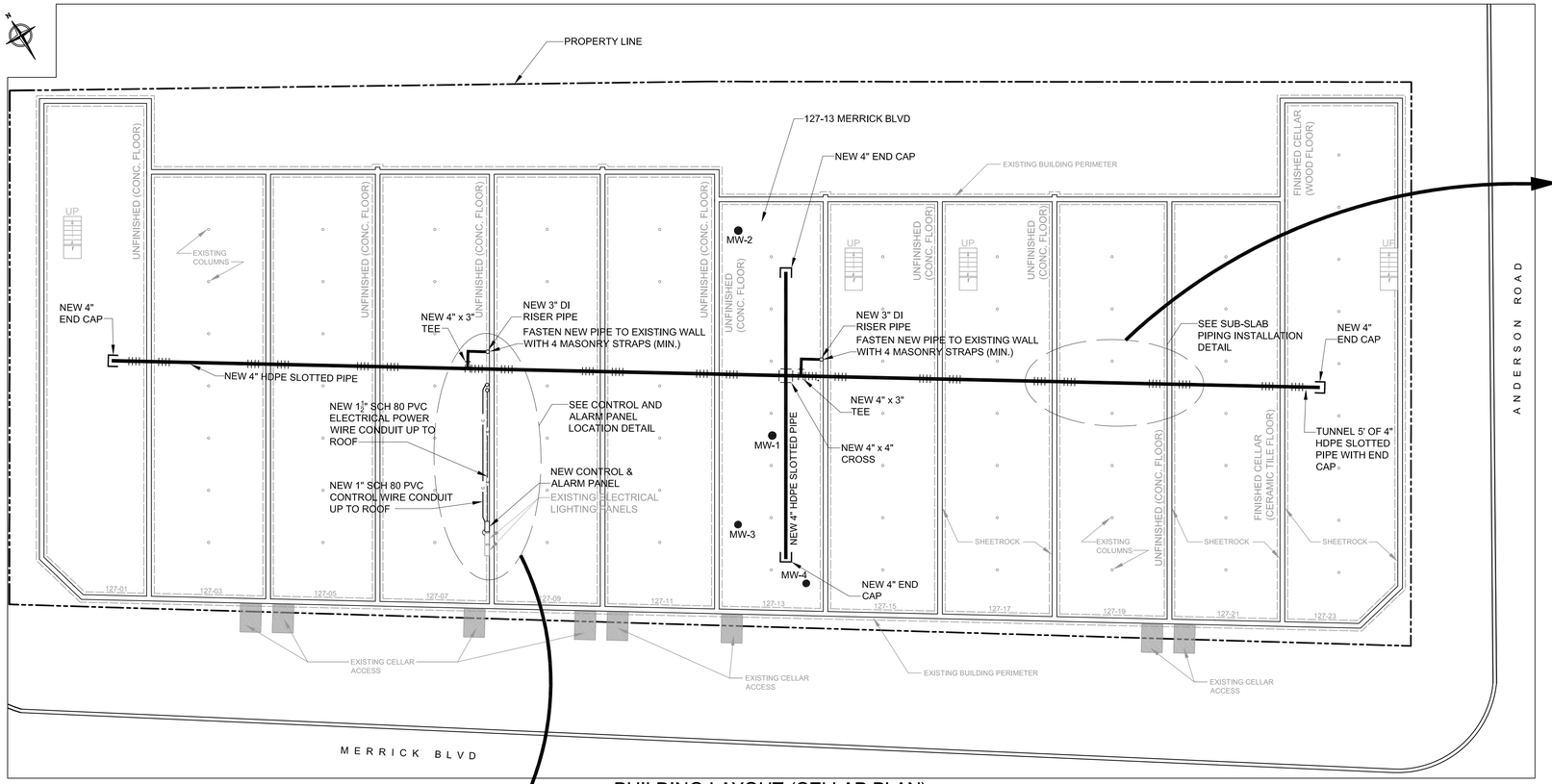
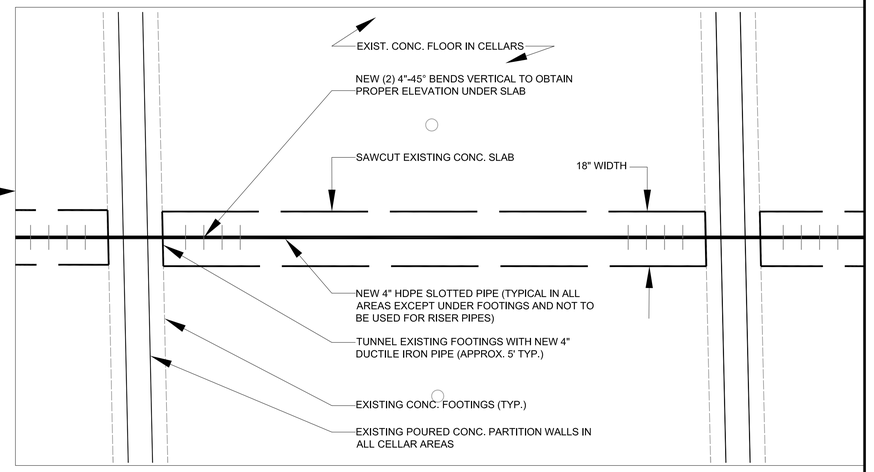
SHEET TITLE:	CONSTRUCTION NOTES		
DESIGNED BY:	AJZ	SCALE:	AS SHOWN
REVIEWED BY:	JRH	DATE:	September 19, 2012
PLAN SHEET BY:	DGH	PROJECT NO:	KoptD 12-01

SHEET 1



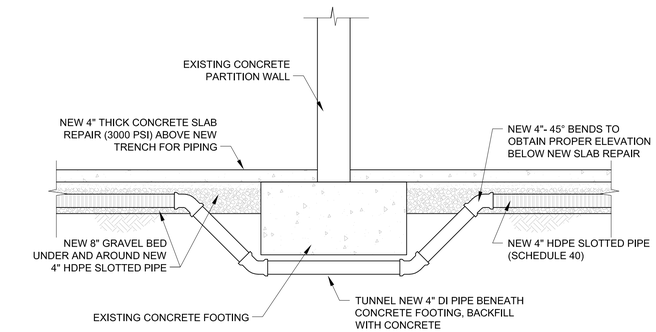
BUILDING LAYOUT (CELLAR PLAN)

SCALE: 1" = 10'



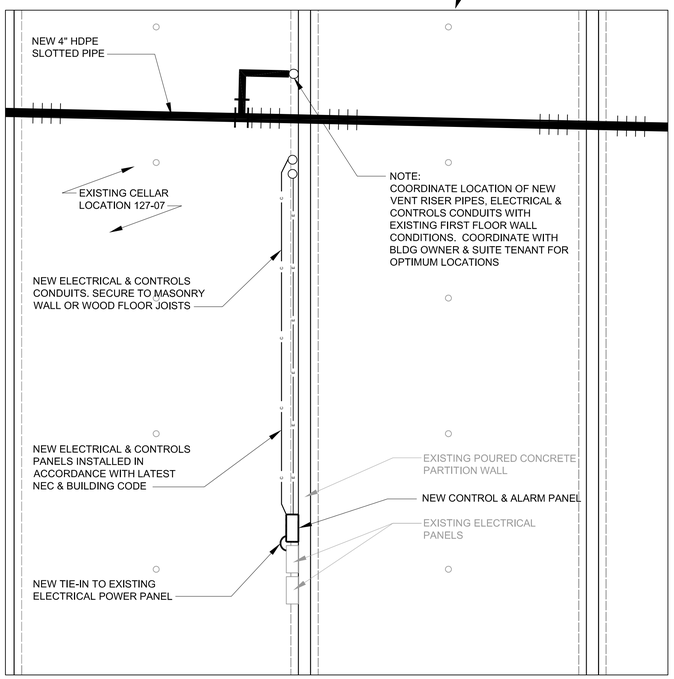
TYPICAL SUB-SLAB PIPING INSTALLATION

SCALE: 1" = 2'



TYPICAL SECTION AT CELLAR SLABS

SCALE: N.T.S.



NEW CONTROL AND ALARM PANEL LOCATION

SCALE: 1" = 4'

REV	DATE	CK	DESCRIPTION

REVISIONS

127-13 Merrick Blvd.

Queens, New York

SUB-SLAB DEPRESSURIZATION SYSTEM

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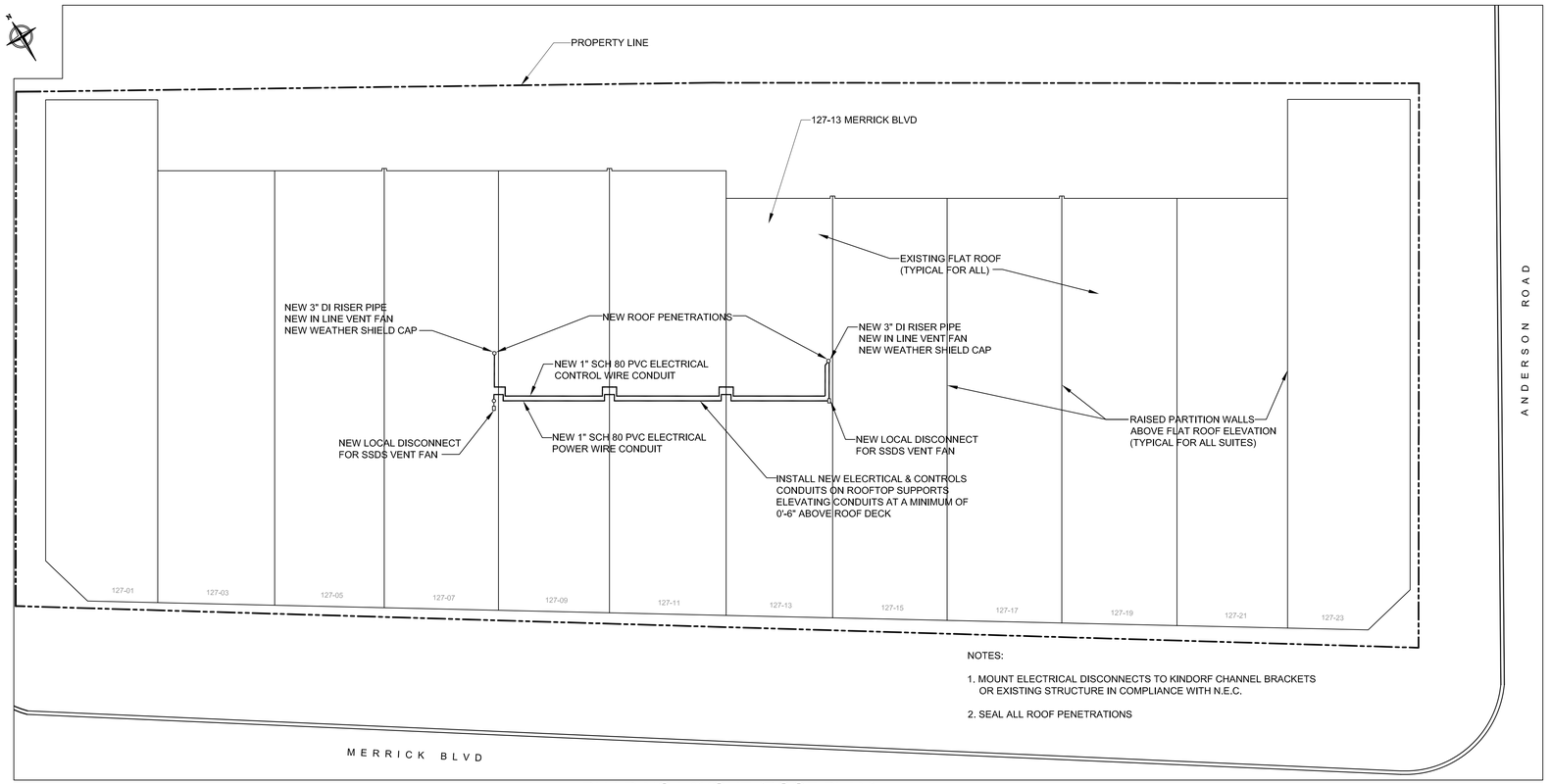
SHEET TITLE:	CELLAR SSDS LAYOUT		
DESIGNED BY:	AJZ	SCALE:	AS SHOWN
REVIEWED BY:	JMD	DATE:	September 19, 2012
PLAN SHEET BY:	DGH	PROJECT NO:	KoptD 12-01

SHEET 2



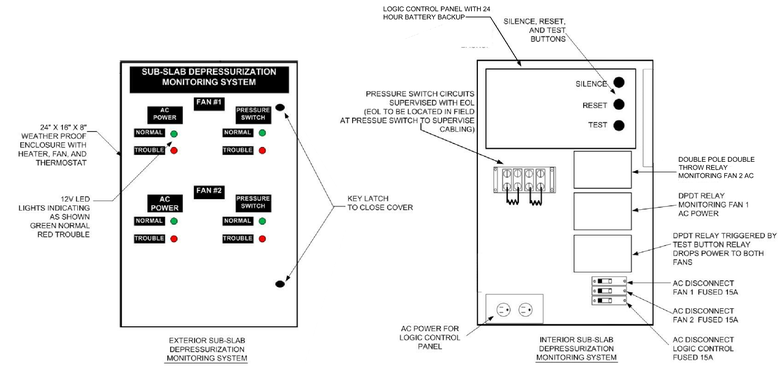
NOTES:

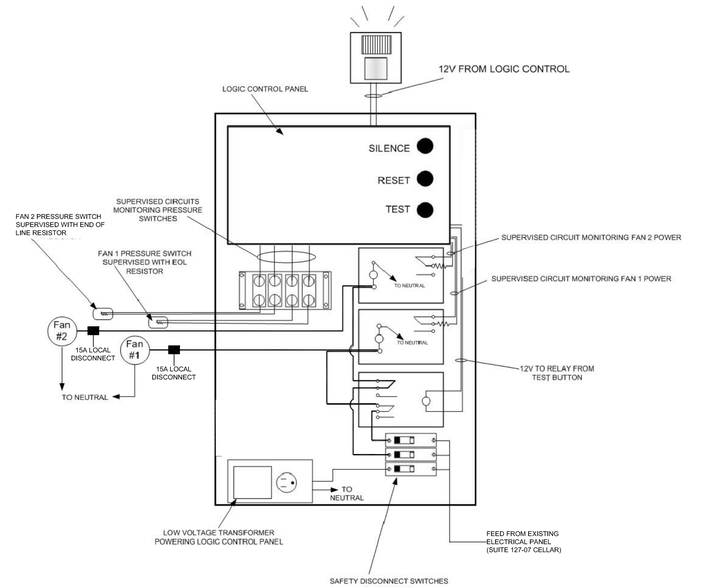
1. MOUNT ELECTRICAL DISCONNECTS TO KINDORF CHANNEL BRACKETS OR EXISTING STRUCTURE IN COMPLIANCE WITH N.E.C.

2. SEAL ALL ROOF PENETRATIONS

BUILDING LAYOUT (ROOF PLAN)

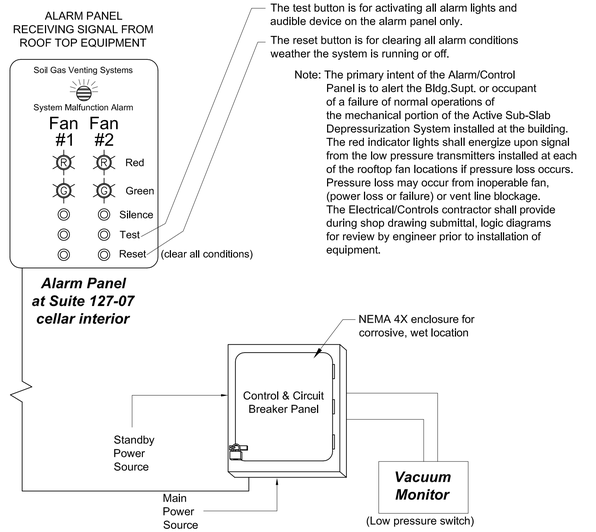
SCALE: 1" = 10'





ELECTRICAL SINGLE LINE DIAGRAM

SCALE: N.T.S.

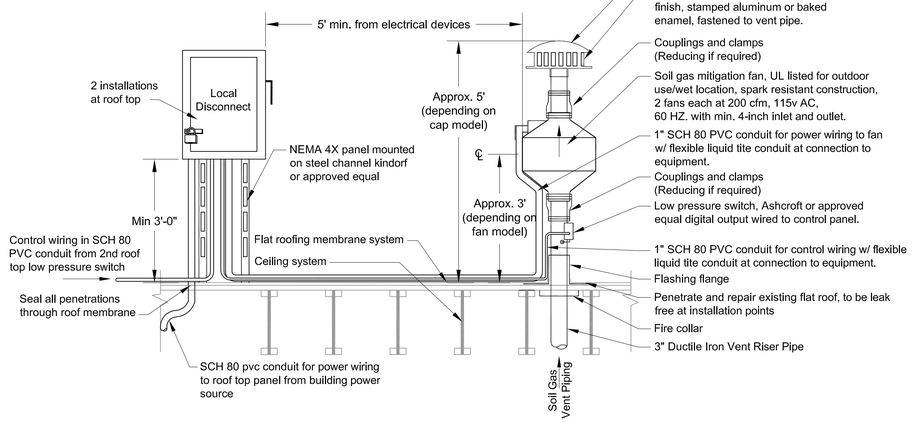


Notes:

1. The Soil Gas Venting System Shall Operate 24 HR./Day Continuously.
2. Building Strobe/Alarms to Sound Simultaneously Upon Any System Malfunction.
3. Standby power shall provide sufficient power to the control panel for 24 hours.

SOIL GAS VENTING SYSTEM ELECTRICAL AND CONTROL PANELS

SCALE: N.T.S.



TYPICAL ROOF TOP EQUIPMENT INSTALLATION

SCALE: N.T.S.

REV	DATE	CK	DESCRIPTION

REVISIONS

127-13 Merrick Blvd.

Queens, New York

SUB-SLAB DEPRESSURIZATION SYSTEM

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SHEET TITLE:	ROOF SSDS LAYOUT		
DESIGNED BY:	AJZ	SCALE:	AS SHOWN
REVIEWED BY:	JMD	DATE:	September 19, 2012
PLAN SHEET BY:	DGH	PROJECT NO:	KoptD 12-01

SHEET 3

drawing location on the server P:\2012\KoptD\12-01 127-13 Merrick Blvd- Brownfields\Task 2 SSDS Design\Cadd\SSDS Plan Sht 2 thru 3 09-19-12.dwg

SSDS OPERATION AND MAINTENANCE PLAN

1 - INTRODUCTION

The Operation and Maintenance Plan describes the measures necessary to operate and maintain the mechanical components of the Sub-Slab Depressurization System (SSDS). This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS;
- Includes an operation and maintenance 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 Operation and Maintenance Plan will be kept at the Site. This Plan is subject to NYSDEC and NYSDOH review and revision.

2 - ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

2.1 Sub-slab Depressurization System

The sub-slab depressurization facilities will be inspected and tested annually (fans, piping, leaks, alarms, and batteries). A monthly check will be made to determine if the fans are operating and the batteries are functioning.

One sub-slab depressurization system is installed in this building. The system consists of 4-inch diameter HDPE horizontal perforated pipe in a 8-inch gravel bed under the entire length of the building with a secondary branch to provide additional coverage. Solid pipe is used when crossing the existing concrete slab. The horizontal perforated pipe is connected to a 3-inch diameter DI/CI non-perforated vertical pipe rising to above the roof upon which is mounted a 200 cfm vent fan that operates continuously (24-hours, 7-days/week) to evacuate to the atmosphere any soil vapors that may be accumulating under the slab. There are monitoring points at both ends of the building at the termination points of the horizontal pipe runs. Control panel is provided that gives a visual and audible alarm signal when the fan is inoperable or if pressure loss occurs (due to power loss, failure, or pipe blockage).

The requirements for the SSDS consist of an initial startup testing, routine maintenance and monitoring activities, and non-routine maintenance activities. Each is described in the following subsections.

2.2 System Start-up and Testing

The goal for successful testing of the SSDS will be to achieve a negative sub-slab pressure. With this goal in mind, the following action will be performed during initial start-up of the SSDS:

1. Prior to operation of the SSDS, representative sub-slab vapor samples will initially be screened for Volatile Organic Compounds (VOCs) by a Photo Ionization Detector (PID) at the monitoring points located at the ends of the building where the pipe terminations are capped for accessibility. If PID readings indicate the presence of VOCs, samples will be taken utilizing SUMMA canisters and analyzing the samples for VOCs via a EPA TO-15 method.

2. Shortly before start-up of the SSDS, one 1/2-inch diameter monitoring hole will be made through the slab on grade at a point furthest away from the sub-slab pipe. 1/8 to 3/8-inch diameter tubing from a hand-held manometer can be connected to below the slab with temporary sealing around the tube to slab.

3. The vent fan is started up and the sub-slab pressure at the monitoring points will be measured utilizing an appropriate hand-held manometer to record a negative pressure under the slab. If negative pressure can not be achieved during manometer testing, then smoke testing must occur to determine if there are any significant air leaks within the slab or end points of the sub-slab piping. Once smoke test results prove to be sufficient, manometer testing can be performed again. If a negative pressure can not be established at the sample point location with the manometer, an additional sample point should be chosen closer to the horizontal sub-slab pipe to confirm the effectiveness of the rooftop fan. If only a minimal negative pressure can be established, an alternate fan may need to be considered for achieving negative sub-slab pressure at extents of building foundation. After manometer testing is complete, sample point holes in concrete must be filled with epoxy mortar or equivalent concrete hole patch.

4. Smoke tests will then be performed to identify any leaks through cracks in the concrete floor and floor joints or pipe penetrations. Identified leaks will be resealed until smoke tests indicate that an appropriate seal of the floor slab has been achieved.

5. The operation of the visual and audible alarm device for the exhaust fan will be confirmed.

6. Test results will be recorded and filed.

If significant changes are made to the system in the course of the system lifetime, the system testing described above will be conducted again prior to placing in operation.

2.3 System Operation - Routine Operation Procedures

On a monthly basis, qualified building personnel will carry out the following:

- Conduct a visual inspection of the rooftop piping, control panel, inline exhaust fan, and electrical components such as visible conduits, boxes and panels.

- Confirm that the exhaust fan and alarm components are properly operating.

- Test the alarm system to determine if it is operable and repair/replace if required. (see Section 2.4 if routine montoring indicates that one or both of these warning devices is not working properly).

- Check whether battery backup for control panel and alarm is functioning and if required, replace battery.

2.4 System Operation - Routine Equipment Maintenance

Routine maintenance and inspection will be conducted to ensure that the SSDS is operating properly. On a monthly basis, qualified building personnel will confirm that the exhaust fan and alarm are working properly and that battery is functioning (see Section 2.5 if routine montoring indicates that one or both of these warning devices is not working properly). Battery will be replaced, if required.

On an annual basis, the following will performed:

- Conduct a visual inspection of all visible system components.

- Inspect fan for bearing failures or signs of other abnormal operations, and repair or replace if required.

- Inspect the discharge location of the vent pipe to ensure that no air intake or operable window has been located nearby.

- Determine, through discussions with building management, if any Heating, Ventilation, and Air Conditioning ("HVAC") system modifications occurred that might effect the performance of the SSDS.

- Inspect the floor slab and foundation walls for evidence of cracks and/or holes, and repair of cracks and/or holes, if required.

- Test the integrity of the riser pipe(s), via smoke tests, and repair the riser pipe, if required.

- Test the alarm system to determine if it is operable and repair, if required.

- Check whether battery is functioning and, if required, replace battery.

2.5 System Operation - Non-Routine Equipment Maintenance

Non-routine maintenance typically occurs when warning devices indicate the system is not working properly, the system becomes damaged, or if the building's HVAC has undergone modifications that may reduce the effectiveness of the system. The scope of non-routine maintenance will vary depending upon the situation. In general, the following actions will be taken as part of non-routine maintenance:

- Examine the building for structural or HVAC system changes, or other changes that may affect the performance of the depressurization system (e.g., new combustion appliances or deterioration of the concrete slab).

- Examine and address the operation of the alarm, vent fan, and battery operation..

- Repair the SSDS as appropriate. If necessary, the SSDS may require redesign and testing prior to being placed back into operation (see Section 2.2 for system start-up).

Attachment B
Health and Safety Plan (HASP)

Health and Safety Plan
For
Property Located at

127-13 Merrick Boulevard
Queens, New York

February 2012

Prepared by
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Consulting Engineers
300 Wheeler Road, Suite 402, Hauppauge, NY 11788

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1.0 INTRODUCTION

This section of the Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs. This plan has been prepared for excavation/remediation activities to be conducted to determine if subsurface contamination is present. Soil sampling activities are estimated to occur during the excavation period for the proposed new building and sub-grade parking structures at the site.

1.1 Scope and Applicability of the Site Health and Safety Plan

The purpose of this HASP is to define the requirements and designate protocols to be followed during the excavation/remediation activities at the site. Applicability extends to all government employees, contractors, subcontractors, and visitors.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards in Table 3.1 and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan, consideration was given to current safety standards as defined by the Environmental Protection Agency (EPA)/Occupational Health and Safety Administration (OSHA)/National Institute of Occupational Safety and Health (NIOSH), health effects and standards for known contaminants, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- USEPA, Office of Emergency and Remedial Response, Emergency Response Team, Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occupational Health and Safety Guidelines
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values

1.2 Visitors

There will be no outside visitors allowed on the site during site characterization activities. Outside visitors are defined as those not directly involved with drilling and sampling activities.

2.0 KEY PERSONNEL/IDENTIFICATION OF HEALTH AND SAFETY

2.1 Key Personnel

The following personnel and organizations are critical to the excavation/remediation efforts at the site estimated to occur during the excavation activities identified in Figure 1.1 – Construction Activities Schedule. The organizational structure will be reviewed and updated periodically by the site supervisor.

Site Characterization Team Representatives:

1. J.R. Holzmacher P.E., LLC
2. Remediation Contractor – To be determined

2.2 Site Specific Health and Safety Personnel

The Site Health & Safety Officer (SHSO) is responsible for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. The SHSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

The SHSO at the site with respect to excavation/construction activities is:

J.R. Holzmacher P.E., LLC
Heather V. Sonnenberg
Project Engineer

Designated alternates include:

TO BE DETERMINED

2.3 Organizational Responsibility

1. The SHSO of the site will conduct site inspections throughout the project making sure the Health and Safety Plan is followed. His main concern is the personal protection of the workers.

3.0 TASK SAFETY AND HEALTH RISK ANALYSIS

3.1 Historical Overview of Site

127-13 Merrick Blvd, Jamaica (Tax Map Block # 12488, Portion 1) is currently occupied by a Wig and Hair business. It is one of eleven stores in a one story retail strip shopping center. A dry cleaner (Parkway Cleaners) operated at this site for at least 25 years (ceasing operations around 2005).

As part of a potential property transaction, JRH inspected the site in September 2006. A tattoo and body piercing business occupied the building at the time. The basement, however, was empty and unoccupied and a floor drain was identified. The floor drain was stuffed with rags and other debris. When these items were removed a strong perchloroethylene (perc) -odor was evident. Based on this observation, JRH recommended that soil and groundwater samples be collected in this area.

In September 2006 soil samples were collected inside the floor drain using a hand auger with extensions. Soil samples were collected at 1.5, 4.0 and 6.0 feet below grade (defined as the top of the basement slab). A two-inch diameter monitoring well point was installed in the floor drain and a groundwater sample collected. The well was finished with two-inch diameter black steel riser; cemented in place with a locking cap and protective curb box. The entire floor drain is now sealed around the top of the well casing. The monitoring well was sampled and there was a chemical sheen and a strong perc-odor observed in the groundwater sample.

Perc a/k/a tetrachloroethene was detected at 26,200 mg/kg or parts per million (ppm) in the 1.5-foot soil sample; 3,098 ppm in the 4.0-foot sample: and 4,737 ppm in the 6.0-foot sample. The NYSDEC Recommended Soil Clean-up Objective (RSCO) for the compound is 1.4 ppm, therefore, the detected soil concentrations are high. The groundwater sample indicated 30,827 ug/l or parts per billion (ppb) of perc. The New York State Groundwater Standard is 5 ppb. There were no other compounds detected in the water sample.

3.2 Task-by-Task Risk Analysis

The evaluation of hazards is based upon the knowledge of the site background presented in Section 3.1 above, and anticipated risks posed by the specific tasks to be performed.

The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those tasks are also identified.

Table 3.1 provides a summary of task analysis and chemical hazards potentially encountered at the Site.

TABLE 3.1 TASK ANALYSIS POTENTIAL CHEMICAL HAZARDS OF CONCERN			
Contaminant	**PEL/TLV**	**LEL (%)**	**IDLH**
VOCs			
Perchloroethylene	100 ppm	N/A	150 ppm
Benzene	1/0.5ppm	1.2	500 ppm
Toluene	200/50 ppm	1.1	500 ppm
Xylenes	100/100 ppm	~1	900 ppm
Ethyl benzene	100/100ppm	0.8	800 ppm
MTBE	NE/50ppm	NE	NE
Diesel Fuel	NE/100mg/m^3		Ca (exhaust)
Gasoline	NE/300	1.4	Ca
Lead	0.05/0.05 mg/m^3	N/A	100 mg/m^3
PCBs	0.5-1 mg/m3	N/A	5 mg/m^3
PAHs	0.2 mg/m³	N/A	1750 mg/m^3
Pesticides	Variable	N/A	N/A
Arsenic	0.01 mg/m^3	N/A	5 mg/m^3
Mercury	0.025 mg/m^3	N/A	10 mg/m^3

NE – not established
N/A-not appropriate
Ca - Cancer
Notes:

1. TLV = Threshold Limit Value
2. IDLH = Immediately Dangerous to Life and Health

3.3 Chemical Hazards

A. Hazard Identification and Prevention

- Safety related work practices would be used to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts. Overhead power lines, buried cables and electrical equipment used on site all pose a danger of shock or electrocution if workers contact or sever them during field operations.

- New York State law requires that a utility mark out to be performed at a site at least 72 hours prior to starting any subsurface work. The tank removal contractor will contact New York City One Call (1-800-272-4480) to request a mark out of underground utilities in the proposed excavation and drilling areas. Work will not begin until the required utility clearances have been completed.

- Public utilities typically do not mark-out utility lines that are located on private property. Therefore, JRH will exercise due diligence and try to identify the location of any private utilities at the site. A private utility contractor will clear on-site subsurface disturbance locations for utilities prior to the commencement of any such work. JRH will also use as-built drawings for the area being investigated, perform a line locating survey, and identify a no-dig/drill zone and hand dig if there is insufficient data to determine the location of utility lines.

- Care must be taken to ensure loose clothing does not get tangled in any moving equipment while borings are being drilled.

- There may be slip or trip hazards associated with rough, slippery or elevated work surfaces at the site. The sampling sites could contain a number of slip, trip and fall hazards for site workers, such as: holes, pits, or ditches; excavation faces and slippery surfaces (steep grades, uneven grades, snow and ice and sharp objects).

- Drilling or excavating is dangerous during electrical storms. All field activity must terminate when thunderstorms are evident. Extreme heat and cold, ice and heavy rain can produce unsafe conditions for drilling work. Such conditions, when present, will be evaluated on a case-by-case basis to determine if work shall terminate.

- The use of an excavator and other equipment that are gasoline or fuel powered presents the possibility of encountering fire and explosion hazards.

- Plants and animals that are known to be hazardous to humans may affect work that takes place. Spiders, bees, wasps, hornets, ticks, poison oak and poison ivy are only some of the hazards that may be encountered. Individuals who may potentially be exposed to these hazards should be made aware of their existence and instructed in their identification. Emergencies resulting from contact with a natural hazard should be handled through the normal medical emergency channels. Individuals who are sensitive to these types of "natural" hazards should indicate their susceptibility to the SHSO.

- Work on-site will involve the use of heavy construction equipment such as an excavator. The unprotected exposure of site workers to this noise during field activities can result in noise induced hearing loss. The SHSO will monitor the noise exposure for the initial trip and determine whether noise protection is warranted for each of the team members. The SHSO will ensure that either ear muffs or disposable foam earplugs are made available to

all personnel and are used by the personnel in the immediate vicinity of the field operation as required.

3.3.1 General Description

There is potential high-level VOC contamination because the site was formerly occupied by a dry cleaner.

Potential chemical hazards below the building slab are evaluated below. It is anticipated that dry cleaning compounds and dust could be of concern. The potential for exposure to vapors, contaminated dusts, and contaminated soil/groundwater is of utmost concern.

3.3.2 Potential Chemical Health Hazards-Perchloroethylene

Perchloroethylene (also called perc) is a colorless, nonflammable liquid. It does not occur naturally but is produced in large amounts (310 million pounds in 1991) in the United States. Demand for perc declined about 35% from 1989 to 1991, and is likely to continue to fall. Solvent recycling and reduced demand for chlorofluorocarbons are major reasons for this trend. The largest user of perc is the dry cleaning industry.

Perc enters the body when breathed in with contaminated air or when consumed with contaminated food or water. It is less likely to be absorbed through skin contact. Once in the body perc can remain, stored in fat tissue. Effects of perchloroethylene on human health and the environment depend on the amount present and the length and frequency of exposure. Effects also depend on the health of a person or the condition of the environment when exposure occurs. Breathing perc for short periods of time can adversely affect the human nervous system. Effects range from dizziness, fatigue, headaches and sweating to loss of coordination and unconsciousness. Contact with perc liquid or vapor irritates the skin, the eyes, the nose, and the throat.

3.3.3 First Aid

If soil comes in contact with the eyes immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Contact lenses should not be worn but can be protected by safety glasses/goggles. If lead contaminated soil comes in contact with the skin, wash the skin with soap and water prior to leaving the site. If a person breathes in large amounts of dust, move the exposed person to fresh air at once. If contaminated soil has been swallowed, get medical attention immediately (NIOSH, 1987).

4.0 PERSONNEL TRAINING REQUIREMENTS

Consistent with OSHA 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel are required to be trained in accordance with the standard. At a minimum, all personnel are required to be trained to recognize the hazards on-site, the provisions of this HASP, and the responsible personnel. The SHSO at the site pre-entry briefing(s) or periodic site briefings will discuss this plan.

5.0 PERSONNEL PROTECTIVE EQUIPMENT TO BE USED

This section describes the general requirements of the EPA designated Levels of Protection (A through D), and the specific levels of protection required for each task at the Site.

5.1 Levels of Protection

Personnel will wear the appropriate protective equipment when response activities involve known or suspected atmospheric contamination, vapors, gases, or particulates may be generated by site activities, or when direct contact with skin-affecting substances may occur. Full facepiece respirators protect lungs, gastrointestinal tract, and eyes against airborne toxicants. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, liquids, or other direct contact with material due to work being done.
- Knowledge of chemicals on-site along with properties such as toxicity, route of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are not known, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

5.2 Level D Personnel Protective Equipment:

- Disposable Tyvek^{R} coveralls (as needed)
- Disposable Nitrile Exam gloves (as needed)
- Disposable Tyvek^{R} booties (as needed)
- Steel-tipped work boots
- Safety glasses
- Hard hat
- 3M N95 Dust Masks with Exhalation Valves (if needed)

5.3 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon changes in site conditions or investigation findings. When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase.
- Change in job tasks during a work phase.
- Change of season/weather
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Change in work scope, which affects the degree of contact with contaminants.

5.4 Work Mission Duration

Before the workers actually begin work in their PPE ensembles, the anticipated duration of the work mission will be established. Several factors limit mission length, including:

- Air supply consumption (SCBA use)-**Not Applicable.**
- Suit/Ensemble permeation and penetration rates for chemicals-**Not Applicable.**
- Ambient temperature and weather conditions (heat stress/cold stress).
- Capacity of personnel to work in PPE.

5.5 Personal Protective Equipment Recommended for Site

The following specific clothing materials are recommended for the site:

A. Soil Sampling – Level D

Site activities will require PPE as follows: hardhat, disposable Tyvek^{R} coveralls (if needed), disposable Tyvek^{R} booties (if needed), safety glasses and chemical resistant gloves. Particulate respirator-3M N95 Dust Masks with exhalation valves will be available.

5.6 SOP for Personal Protective Equipment

Proper inspection of PPE features several sequences of inspection depending upon specific articles of PPE and it's frequency of use. The different levels of inspection are as follows:

- Inspection and operation testing of equipment received from the factory or distributor.
- Inspection of equipment as it is issued to workers.
- Inspection after use or training and prior to maintenance.
- 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.
- The primary inspection of the PPE in use for activities at the Site will occur prior to immediate use and will be conducted by the user. This ensures that the specific device or article has been checked-out by the user and that the user is familiar with its use.

TABLE 5.1
SAMPLE PPE INSPECTION CHECKLIST

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:

- 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.

GLOVES

Before use:

- Visually inspect for:
  - Imperfect seams
  - Tears
  - Non-uniform coating
  - Pressurize glove with air; listen for pinhole leaks.

5.7 Specific Levels of Protection Planned for the Site

The following levels of protection will be utilized during activities at the Site:

- Level D

6.0 FREQUENCY AND TYPES OF AIR MONITORING/SAMPLING

This section explains the general concepts of an air-monitoring program and specifies the surveillance activities that will take place during project completion at the Site.

The purpose of air monitoring is to identify and quantify airborne contaminants in order to verify and determine the level of worker protection needed. Initial screening for identification is often qualitative, i.e., the contaminant, or the class to which it belongs, is demonstrated to be present, but the determination of its concentration (quantification) must await subsequent testing. Two principal approaches are available for identifying and/or quantifying airborne contaminants:

- The on-site use of direct-reading instruments.
- Laboratory analysis of air samples obtained by a gas-sampling bag, collection media (i.e., filter, sorbent) and/or wet-contaminant collection methods.

6.1 Direct-Reading Monitoring Instruments

Unlike air sampling devices, which are used to collect samples for subsequent analysis in a laboratory, direct-reading instruments provide information at the time of sampling, enabling rapid decision-making. Data obtained from the real-time monitors are used to assure proper selection of personnel protection equipment, engineering controls, and work practices. Overall, the instruments provide the user the capability to determine if site personnel are being exposed to concentrations that exceed exposure limits or action levels for specific hazardous materials.

Of significant importance, especially during initial entries, is the potential for IDLH conditions or oxygen deficient atmospheres. Real-time monitors can be useful in identifying any IDLH conditions, toxic levels of airborne contaminants, flammable atmospheres, or radioactive hazards. Periodic monitoring of conditions is critical, especially, as exposures may have increased since initial monitoring or if new site activities have commenced.

6.2 Site Air Monitoring and Sampling Program

A. Air Monitoring Instruments

- **Organic Vapor Monitoring**

Instrument :Photoionization Detector (PID) with for use during all intrusive activities (10.6 Ev lamp).

Instrument: Detector Tubes – for measuring benzene and vinyl chloride concentrations.

Monitoring for organic vapors will be conducted in the breathing zone of employees using a PID during intrusive activities. Refer to Table 6.1 for total volatile organic vapor and benzene action levels.

- **Combustible Gas Monitoring**

  Instrument: Combustible Gas Indicator (CGI)/ Oxygen Meter

  Continuous air monitoring with a CGI/Oxygen meter will be conducted in areas where flammable vapors or gases are suspected. All work activities must stop where the monitor indicates the concentration of flammable vapors exceeds ten percent of the lower flammable limit (LEL) at a location with a potential ignition source. The area must be ventilated to reduce the concentration to below ten percent of the LEL.

- Dust Monitoring

  Instrument: TSI DustTrak Model 8520 (or equivalent)

  Continuous dust monitoring during all site activities will be conducted. Dust mitigation must be employed should readings exceed 10 mg/m^3.

- **Calibration and Record keeping**

  Equipment used will be calibrated in accordance with the manufacturers' specifications. The PID and CGI will be calibration checked before and after use under approximately the same conditions at which the instrument will be used. Calibration information will be kept in the field notebook or instrument log. The date, time, location, instrument serial number, calibration gas and concentration, will be noted.

B. Action Levels

TABLE 6.1

SITE AIR MONITORING AND SAMPLING PROGRAM SUMMARY

Instrument	Action Level	Action
PID (10.6 ev)	Continuous readings to 9ppm	Remain in level D PPE.
PID	Continuous reading of 10 to 100 ppm above background	Level D PPE but screen with Drager detection tube for benzene. If benzene detected >1 ppm upgrade to Level C and wear an organic vapor (OV) cartridge/air-purifying respirator (APR). Investigate source.
PID	Continuous reading over 100 ppm background	Stop Work. Reevaluate work conditions and procedures, Contact SHSO prior to continuing

		for authorization.
Drager Tubes: Benzene	1- 10 ppm	Upgrade PPE to level C with OV/APR.
Drager Tubes: Benzene	>10 ppm	Stop Work . Reevaluate work conditions and procedures. Contact SHSO prior to continuing for authorization.
Combustible Gas Indicator	Continuous reading of 0% to 1% lower explosive level (LEL).	Remain in level D PPE. If no benzene present, assume source is methane. Continuously monitoring LEL.
Combustible Gas Indicator	Continuous reading of 1% to 10% LEL	Level D unless benzene is present. Investigate source and ventilate, if possible. SHSO may require upgrade to Level C PPE.
Combustible Gas Indicator	Continuous reading > 10% LEL	Stop Work. Evacuate work area and ventilate source of combustible gas, if possible, Contact SHSO prior to continuing for authorization.
Dust Monitor	Continuous reading >10.0 mg/m^3	Suppress by spraying the dusty area with water.

Notes: PEL = Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit
REL = National Institute of Occupational Safety and Health (NIOSH) Recommended Exposure Limit
TLV = American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value

C. Reporting Format

- Air Monitoring Log
-

6.3 Site Ambient Air Sampling

A. Sampling Criteria

A site ambient air sampling program will be considered if the following criteria are met:

1. Meteorological conditions
2. Health and safety observations
3. Particulate levels are two to three times above background.
4. Site specific activities
5. Site activity increases airborne contaminant(s) exposure potential.

7.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

7.1 Buddy System

During all Level B, C or D activities or when some conditions present a risk to personnel, the implementation of a buddy system is recommended if not mandatory. A buddy system requires at least two (2) people to work as a team, each looking out for each other. Table 8.1 lists those tasks, which require a buddy system and any additional site control requirements.

TABLE 7.1
PERSONNEL REQUIREMENTS

Task	Control Measures
Soil Sampling	Line of sight, buddy system

7.2 Site Communications Plan

Successful communications between field teams and personnel in the support zone is essential. The following communications systems will be available during activities at the Site.

- Hand Signals
- Direct Vocal Communication
- For hand signal communications, the following definitions will apply during activities at the Site:

TABLE 7.2
HAND SIGNAL DEFINITIONS

Signal	Definition
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I am all right/I understand
Thumbs down	No/Negative
Arms waving upright	Send backup support
Grip partners wrist	Exit area immediately

7.3 Work Zone Definition

The three general work zones established at the Site are the Exclusion Zone, Contamination Reduction Zone, and Support Zone. One of the basic elements of effective site soil remediation activities is the delineation of work zones. The purpose of establishing work zones is to:

• Reduce the accidental spread of hazardous substances by workers or equipment from the contaminated areas to the clean areas;
• Confine work activities to the appropriate areas, thereby minimizing the likelihood of accidental exposures;
• Facilitate the location and evacuation of personnel in case of an emergency; and
• Prevent unauthorized personnel from entering controlled areas.

Although a site may be divided into as many zones as necessary to ensure minimal employee exposure to hazardous substances, this plan uses the three most frequently identified zones in similar projects. These zones are the Exclusion Zone, the Decontamination Zone, and the Support Zone (sometimes referred to by others as the "clean zone"). Movement of personnel and equipment between these zones should be minimized and restricted to specific access control points to minimize the spreading of contamination, if encountered.

7.3.1 Exclusion Zone

The Exclusion Zone is the area where contamination is either known or expected to occur and where the greatest potential for exposure exists. No contamination is actually known to exist on this site. Therefore, the following protective measures will be taken in the Exclusion Zone.

Unprotected onlookers will be restricted from suspicious pre-screened soils requiring sampling such that they are 25 feet upwind or 50 feet downwind of excavation or drilling activities.

Those conducting activities and sampling in the Exclusion Zone will wear the applicable Personal Protective Equipment (PPE). The actions to be taken and PPE to be worn in the Exclusion Zone if VOCs are determined with the PID to be above background are described in Section 6 and Table 6.1.

7.3.2 Decontamination Zone

A Decontamination Zone will be established between the Exclusion Zone and the Support Zone, and will include the personnel, equipment and supplies that are needed to decontaminate equipment and personnel. The size will be selected by the SHSO to be sufficient to conduct the necessary decontamination activities. Personnel and equipment in the Exclusion Zone must pass through this zone before leaving or entering the Support Zone. This zone should always be established and maintained upwind of the Exclusion Zone.

\

7.3.3 Support Zone

The Support Zone will surround the Decontamination Zone and the Exclusion Zone. Break areas, operational direction and support facilities will be located in this area. Eating, smoking and drinking will be allowed only in this area.

7.4 Nearest Medical Assistance

Figure 7.1 shows a map of the route to the Queens Hospital Center (718) 883-3000 which is the nearest hospital that can provide emergency care for individuals who may experience an injury or exposure on site. The route to the hospital will be verified by the SHSO, and will be familiar to all site personnel.

FIGURE 7.1

Directions	Distance
1. Start out going **NORTHWEST** on **MERRICK BLVD** toward **SELOVER RD**.	go 2.0 mi
2. **MERRICK BLVD** becomes **168TH ST**.	go 0.6 mi
3. Turn **LEFT** onto **HILLSIDE AVE / RT-25**.	go 0.2 mi
4. Turn **RIGHT** onto **164TH ST**.	go 0.7 mi
5. Make a **U-TURN** at **82ND DR** onto **164TH ST**.	go 0.0 mi
6. **8268 164TH ST**.	go 0.0 mi

Total Travel Estimate : 3.50 miles - about 12 minutes

Start:

Start at 127-13 MERRICK BLVD, QUEENS New York

End:
QUEENS HOSPITAL CENTER
(718) 883-300082-68 164th Street, NY 11432

7.5 Safe Work Practices

Table 7.3 provides a list of standing orders for the Exclusion Zone.
Table 7.4 provides a list of standing orders for the Decontamination Zone.

7.6 Emergency Alarm Procedures

The warning signals described in Section 9.4 "Evacuation Routes and Procedures," will be deployed in the event of an emergency. Communication signals will also be used according to Section 7.2.

TABLE 7.3
STANDING ORDERS FOR EXCLUSION ZONE

- No smoking, eating, or drinking in this zone.
- No horseplay.
- No matches or lighters in this zone.
- Check-in on entrance to this zone.
- Check-out on exit from this zone.
- Implement the communications system.
- Line of sight must be in position.
- Wear the appropriate level of protection as defined in the HASP.

TABLE 7.4
STANDING ORDERS FOR CONTAMINATION REDUCTION ZONE

- No smoking, eating, or drinking in this zone.
- No horseplay.
- No matches or lighters in this zone.
- Wear the appropriate level of protection.

8.0 DECONTAMINATION PLAN

Consistent with the levels of protection required, the decontamination table(s) provides a step-by-step representation of the personnel decontamination process. These procedures should be modified to suit site conditions and protective ensembles in use.

8.1 Standard Operating Procedures

Decontamination involves the orderly controlled removal of contaminants. Standard decontamination sequences are presented in Table 8.1. All site personnel should minimize contact with contaminants in order to minimize the need for extensive decontamination. Personnel shall clean on-site as much gross contamination from clothing and equipment, as possible.

8.2 Levels of Decontamination Protection Required for Personnel

The levels of protection required for personnel assisting with decontamination will be Level D. The SHSO is responsible for monitoring decontamination procedures and determining their effectiveness.

8.3 Equipment Decontamination

Sampling equipment will be dedicated to each sample as practicable. Appendix A is the decontamination protocol for equipment. After on-site decontamination, non-disposable materials, such as gloves and booties, will be placed in plastic bags and for proper disposal off site.

8.4 Disposition of Decontamination Wastes

Contaminated disposable materials will be left in a secured condition on-site.

TABLE 8.1	
LEVEL D DECONTAMINATION STEPS	
Step 1	Remove outer garments (i.e., coveralls) and boots
Step 2	Remove gloves
Step 3	Wash hands and face

9.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the Site. This plan is compatible with local, state and federal disaster and emergency management plans, as appropriate.

9.1 Pre-Emergency Planning

During the site briefing held periodically/daily, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. Table 9.1 identifies potential hazards associated with site activities, along with the available emergency prevention/control equipment and its location. The plan will be reviewed and revised, if necessary, on a regular basis by the SHSO. This will ensure that the plan is adequate and consistent with prevailing site conditions.

TABLE 9.1
EMERGENCY RECOGNITION/CONTROL MEASURES

HAZARD	PREVENTION/CONTROL	LOCATION
Fire/Explosion	Fire Extinguisher	Site Trailer and Heavy Equipt. mounted
Spill	Sorbent Materials	Not Applicable
Air Release	Evacuation Routes	Not Applicable

9.2 Personnel Roles and Lines of Authority

The Site Supervisor has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified and follow-up reports completed. The SHSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency. The individual contractor organizations are responsible for assisting the

The Site Supervisor is: To be determined.

9.3 Emergency Recognition/Prevention

Table 3.1 provides a listing of chemical and physical hazards on-site. Additional potential hazards associated with site activities are listed in Table 9.1, along with the available emergency prevention/control equipment and its location. Personnel will be familiar with techniques of hazard recognition from preassignment training and site-

specific briefings. The SHSO is responsible for ensuring that prevention devices and equipment are available to personnel.

9.4 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

- Insure that a predetermined location is identified off-site in case of an emergency, so that all personnel can be accounted for.

- Personnel will be expected to proceed to the closest site exit with their buddy, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions.

9.5 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the SHSO and notify the appropriate emergency organization(s). In the event of a fire or spill, the site supervisor will notify the appropriate local, state and federal agencies.

TABLE 9.2
List of Emergency Contacts

Organization	Contact	Telephone
Police	NYCPD	911
Fire	NYCFD	911
Hospital	Flushing Hospital Medical Ctr.	718-670-5000
EPA Emergency Response Team		800-424-8802
NYSDEC	Spill Hotline	800-457-7362
National Response Center		800-424-8802
Center for Disease Control		404-488-4100
Chemtrec		800-424-9555

9.6 Emergency Medical Treatment Procedures

Any person who becomes ill or injured in the Exclusion Zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket.) First

aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the Site Supervisor.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site. This information is included in Table 3.1.

Any vehicle used to transport contaminated personnel will be treated and cleaned as necessary.

9.7 Fires or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the project manager or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on site.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available on site to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials, which may contribute to the fire.

9.8 Spill or Leaks

In the event of a spill or a leak from excavation or drilling equipment, including containers, site personnel will:

- Inform their supervisor immediately;
- Locate the source of the spillage and stop the flow if it can be done safely; and,
- Begin containment and recovery of the spilled materials.

9.9 Emergency Equipment/Facilities

The following emergency equipment/facilities will be utilized on-site.

TABLE 9.3
LIST OF EMERGENCY EQUIPMENT/FACILITIES

List of Emergency Equipment/Facilities	Storage Location
First Aid Kit	Support Zone
Fire Extinguisher	Support Zone
Spill Kits	Support Zone
Berm Materials	Support Zone
Eye Wash	Support Zone
Real Time Air Equipment	Exclusion Zone

10.0 REFERENCES

1. *Aldrich Chemical Book,* RTECS
2. *American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values*
3. *Chemical Protective Clothing Performance Index Book,* Forsburg
4. *Dangerous Properties of Industrial Materials,* SAX and Lewis
5. *Emergency Response Guide Book,* DOT P 5800.5, 1990
6. *EPA 40 CFR 311 Health and Safety Regulations*
7. *EPA/Office of Emergency and Remedial Response/Environmental Response Team Standard Operating Safety Guide*
8. *Extremely Hazardous Substances,* EPA, Noyes
9. *Guide to Occupational Exposure Values* – 1992
10. *Guidelines for the Selection of Chemical Protective Clothing,* Little
11. *Handbook of Toxic and Hazardous Chemicals and Carcinogens,* Sittig, np (Noyes)
12. *Hazardous Chemicals Data Book,* G. Weiss, ndc (Noyes)
13. *Hazardous Chemicals Desk Reference*
14. *NIOSH/OSHA/USCG/EPA Occupational Health and Safety Guidelines*
15. *OHMTADS Database*
16. *OSHA 29 CFR 1910.120 Health and Safety Regulations*
17. *The Merck Index, an Encyclopedia of Chemicals, Drugs, and Biologicals,* Merck & Co., Inc.
18. *Threshold Limit Values and Biological Exposure Indices, ACGIH,* 1991-1992
19. *V.S.L.G. Chris Man*

APPENDIX A

EQUIPMENT CLEANING AND DECONTAMINATION PROCEDURES

APPENDIX A

STANDARD OPERATING PROCEDURES

EQUIPMENT CLEANING AND DECONTAMINATION PROCEDURES

Summary

Equipment, tools, materials, etc. used in the excavation/remediation and collection of samples at the site must be properly prepared and cleaned/decontaminated during and after each sampling event. The degree of cleaning/decontamination will be dependent upon site conditions and the nature and type of contamination, if present, the intent and goal(s) of the remediation, and data quality objectives, as well as other site-specific requirements. The importance of this action must be impressed upon the sampling team and those assisting the team, such as a backhoe or drill rig operator.

Procedure

1. Heavy Equipment Decontamination

All equipment, tools and materials associated with sampling events must be cleaned or decontaminated prior to usage. Items such as drill rigs, auger flights, trackhoes, and backhoes all present potential sources of contamination to environmental samples. Therefore, all heavy equipment utilized at a site must undergo the following decontamination procedures:

- the equipment will first be high pressure, hot washed or steam-cleaned with potable water; and,
- the equipment will be rinsed thoroughly with potable water.

Contain, collect and dispose of all decontamination fluids in accordance with site/project- specific requirements. The bucket of trackhoes and backhoes may be cleaned over the excavation allowing high pressure decontamination washwater to return to the excavation.

2. Cleaning of Field Sampling Equipment

All equipment and tools used to collect samples for chemical analyses, including spatulas, spoons, scoops, trowels, split-spoons, augers, etc. will be decontaminated using the following procedures:

- non-phosphate detergent wash;
- potable water or distilled/deionized water rinse; and
- air or oven-dry.

If the equipment, listed above, is to be stored for future use, allow to dry and then wrap in aluminum foil (shiny-side out) or seal in plastic bags. Collect or dispose of all decontamination fluids in accordance with site/project-specific requirements.

3. Personal Clothing Decontamination

All footwear worn in and around a contamination area will be washed down using soap and water to remove any soil or oily residue remnants. If disposable gloves, booties or suits (such as Tyvek® suits) are worn, these suits or booties are to be removed and disposed of in a designated 55-gallon drum on site for future disposal. Any other clothing that comes in contact with contaminated soil should not be worn more than 24-hours and should be washed prior to wearing again.

APPENDIX B

MSDSs