APPENDIX Y PREVIOUSLY SUBMITTED REPORTS (CD)

DRAFT OFFSITE VAPOR SAMPLING AND MITIGATION PLAN FOR ATLAS PARK SITE – PARCEL B GLENDALE, QUEENS BCA Index No. W2-1070-05-06

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1.0 INTRODUCTION

1.1 GENERAL

Atlas Park LLC (Atlas), entered into a Brownfield Cleanup Program (BCP) Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in January 2004, to investigate and, where necessary, remediate a 12-acre, subdivided portion of a larger 80-year old, 20-acre industrial park, Atlas Terminals, located in Glendale, Queens, New York. A United States Geological Survey (USGS) topographical quadrangle map (Figure 1) shows the site location.

The BCA originally covered the entire 12-acre parcel. However, the 12-acre parcel was separated into two distinct areas: Parcel A (formerly known as the "Interim Remedial Measure [IRM] Area") and Parcel B (formerly known as the "Remedial Investigation [RI] Area"). Parcel A consists of an 8.474-acre portion of the 12-acre parcel, and Parcel B consists of the remaining 3.531-acre portion. With concurrence from NYSDEC during a meeting on April 18, 2005, the Developer completed the administrative process of separating Parcels A and B into separate BCAs.

The original BCA was amended to reflect the IRM Area as Parcel A and the RI Area as Parcel B. The Amendment clarifies that the original BCA now relates to Parcel A exclusively. Parcel A received a Certificate of Completion from NYSDEC on December 31, 2005. As of the date of execution, Parcel B (hereafter referred to as the "Site") is subject to a new BCA Index No. W2-1070-05-06 Site No. C241088.

Investigations conducted on Parcel A and the Site identified areas of elevated soil vapors suggesting the presence of source area(s) on the Site. Per the Decision Matrices set forth in the Soil Vapor Intrusion Guidance Document, published by the New York State Department of Health (NYSDOH) on October 2006, these levels of soil vapor require action to mitigate potential soil vapor intrusion into the Site buildings. Soil vapors on the Site are currently being mitigated with sub-slab depressurization (SSD) systems installed in each occupied building on the property. Two air sparge/soil vapor extraction (AS/SVE) treatment systems are being installed (one over the contaminant source area and the other along the southern property boundary, downgradient of contamination under Building 8 and the plume).



Additionally, soil vapor sampling in offsite areas to the south and northwest of the Site has detected low-level vapor concentrations of chlorinated volatile organic compounds (cVOCs), including trichloroethene (TCE) and tetrachloroethene (PCE) in soil vapor probes installed in the public right-of-ways (ROW). This Offsite Vapor Sampling and Mitigation Plan (OVSMP) describes the proposed sampling inside two blocks of 10 attached neighboring residences along 77th Avenue, (a total of 20 residences south of the Site), in which a minimum of three sample sets will be taken in each block of homes. In addition, approximately 9 residences along 80th Street and around the corner on Cooper Avenue (northwest of the Site) are included in this Plan. Additional soil vapor sampling in areas to the southeast and northwest of the Site will also be performed (See Figure 2). Pursuant to NYSDOH and NYSDEC review of the Supplemental Remedial Investigation (SRI) Report, dated September 2006, three rounds of offsite soil vapor sampling have been completed to date. This OVSMP describes the fourth round of offsite vapor sampling work to be performed, and the proposed monitoring and/or mitigation measures to be implemented if the sub-slab vapor and indoor air sampling results, collected in the residences, exceeds the NYSDOH Decision Matrix concentrations for No Further Action, and it is confirmed that the vapor is in fact emanating off the Atlas Park Site.

1.2 SITE DESCRIPTION

The Site is located in the Borough of Queens, New York City, New York and is identified as Tax Block 3810 and Lot 350. The Site is bounded by 80th Street to the west, Cooper Avenue to the north, the Long Island Rail Road (LIRR) Right-of-Way to the south, and Parcel A to the east. The Site was originally occupied by several former manufacturing buildings.

1.3 ADJOINING PROPERTY DESCRIPTION

The areas surrounding Atlas Park are zoned mixed residential and manufacturing. Atlas Park is located directly south of St. John's Cemetery. The area west of the Site, across 80th Street, is predominantly light manufacturing, with a discrete block of nine private residences surrounded by these sites. The LIRR easement lies to the south of the Site; the areas immediately south of the LIRR easement are primarily residential, although directly west of these residences lie former and present manufacturing facilities including a former dry cleaner and a NYS Superfund Site known as the Kliegman Brothers Site which was a chlorinated solvent distribution site. To



the southeast of the Site are additional present and former manufacturing facilities. Parcel A, which has been remediated to Track 1 cleanup standards, lies due east of the Site.

In addition, there are a number of documented petroleum spills in the immediate vicinity of the Site along 80th and Cooper Avenue, and the USGS has documented the presence of area-wide, low level contamination of the aquifers under most of Queens by chlorinated solvents (including PCE and TCE). A number of other suspect brownfield sites are also located in close proximity to the Site based on visual observations.

1.4 ATLAS PARK - PARCEL B SITE HISTORY

The Site history was compiled and presented in a Phase I Environmental Site Assessment (Phase I ESA), completed by Ambient Group, Inc. (Ambient) in March 2001. The report was provided as an attachment in the BCP Application submitted on December 11, 2003 to NYSDEC. According to the report, in 1867, the Site was owned by the Folk family and consisted primarily of farmland. Based on a review of Sanborn maps as part of the Ambient report, several buildings occupied the Site prior to 1922, although their usage was unknown. In 1922, the property was sold to the Hemmerdinger Corporation, and the Site became Atlas Terminals. The Hemmerdinger Corporation leased portions of the Site to various manufacturing and processing companies during the period of usage and continues to remain a tenant at the Atlas Terminals portion of the property in the textile industry. In 2002, the 12-acre portion of the property was transferred to Atlas Park LLC.

1.5 PREVIOUS INVESTIGATIONS

In January and February 2006, at the request of NYSDEC and NYSDOH, perimeter and offsite soil vapor sampling was conducted along the west and east sides of 80th Street, just south of Cooper Avenue. As requested by NYSDEC and NYSDOH during a meeting on August 3, 2006, a supplemental offsite soil vapor investigation was conducted on August 9, 2006 at areas to the west of the Site. Based on the soil vapor results of the investigation and subsequent NYSDEC and NYSDOH requests, additional soil vapor samples were collected on September 28, October 4, and October 13, 2006 at the LIRR easement, residential areas to the south of the Site, and



residential areas to the northwest of the Site, respectively. cVOCs were detected in the soil vapor in the public ROWs at the majority of these areas.

1.6 SUMMARY OF IDENTIFIED SOURCE AREAS OF CONTAMINATION

1.6.1 Onsite Source Areas of Contamination

The following sources of contamination were identified on the property (See Figures 3a and 3b for reference):

- South Half of Building 3 (VOCs) In the 1980s, a former tenant at the north half of former Building 28 (south half of new Building 3) apparently used PCE and/or TCE and poured such substances down drains, into a piping network later discovered to be cracked which served as a conduit for the substances to migrate to the groundwater 60-feet below the surface. Soil contamination was excavated during the pipe network removal. Soil vapor impacts we also encountered under this building.
- <u>Building 7 (VOCs)</u> Former operations in the south half of Building 28 (new Building 7) resulted in an isolated VOC hot spot area in soil at a depth of 9 feet below ground surface (bgs). Based on the low level sub-slab soil vapor concentrations encountered under the building, it is evident that the vapors are not migrating or contributing to Sitewide vapor contamination issues.
- Building 8 (VOCs) Soil vapor concentrations suggest former operations in the east side
 of former Building 1 (new Building 8) also apparently used PCE and/or TCE, resulting in a
 soil vapor problem. However, no source was discovered under Building 8 as
 demonstrated by the results from the 28 soil samples collected in and around this
 building.

1.6.2 Potential Offsite Sources

The following sources were identified as potential sources contributing to local groundwater and soil vapor contamination:

 A t-shirt manufacturing plant is currently located to the east of the Site, approximately 200 feet from the Site and Residential Blocks B, C, and D. Former uses in this building included the assembly of Christmas novelties, the same use at the same time as the source identified in Building 3 on the Site.



- A former historic dry cleaning establishment was located just southwest of Building 8 on the west side of 80th Street, less than 200 feet from the Site.
- Kliegman Brothers Superfund Site High concentration PCE contamination is migrating offsite in groundwater and soil vapor at this New York State Superfund Site located approximately 1,200 feet west of Building 8 of the Atlas Park Site. Releases of cVOCs have resulted in groundwater impacts and vapor intrusion into nearby residences. Even though preliminary data does not indicate that a plume of vapor is moving in the direction of the Atlas Site, the State's investigation of the site is not yet complete.
- Active NYSDEC Petroleum Spills Petroleum contamination from five documented spills in the immediate vicinity of the Site less than 0.2 mile north and west of the Site.
- Other suspect former industrial brownfield sites are present in the immediate vicinity of the Site.

1.7 ACTION PLAN

Based on the soil vapor samples collected from onsite and offsite and based on direction received from NYSDEC and NYSDOH, we will conduct a limited sub-slab soil vapor and indoor air survey of the specific 29 residences (Blocks A, B and C, as indicated on Figure 2) in close proximity to the Site to determine the levels of sub-slab soil vapor under these residences. To satisfy the NYSDEC and NYSDOH requirement that there is no vapor further east along 77th Avenue beyond the southeast corner of the Site, and to demonstrate if the silk screening facility to the east of the Site is contributing to offsite vapors. Soil vapor sampling will be performed in front of a third row of houses (Residential Block D). All samples will be collected in accordance with the *NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* document (October 2006). In the event that the results from the survey indicate that offsite sub-slab soil vapor samples contain levels exceeding the NYSDOH No Further Action criteria, vapor monitoring and/or mitigation will be implemented in accordance with the plan described herein.



2.0 SOIL VAPOR SAMPLING

Soil vapor sampling will be conducted for two purposes; to delineate the extent of the presence of TCE and PCE in soil vapor to the south east of Parcel B and to determine if monitoring or mitigation is required in the residences to the south and to the northwest of Parcel B.

2.1 Soil Vapor Survey

To delineate vapor contamination in the targeted residences and to determine whether offsite sources are contributing to the vapor plume, additional soil vapor samples will be collected near the east/southeast boundary of the Site and beyond the northwest boundary of the Site along Valentine Place and Cooper Avenue. Two soil vapor samples will be collected in the LIRR easement and two soil vapor samples will be collected along the northern sidewalk of 77th Avenue, on the south side of Residential Block D (see Figure 2). Northwest of Parcel B, we will collect four additional soil vapor samples on Valentine Place and Cooper Avenue.

One outdoor air sample will be collected concurrent with soil vapor sampling activities to assess ambient concentrations. All soil vapor and outdoor air sampling will be conducted in accordance with the October 2006 NYSDOH Guidance document. The appropriate LIRR and sidewalk permits will be obtained prior to soil vapor sampling activities.

2.1.1 Soil Vapor Sampling Procedures

Soil vapor probes will be constructed according to the following:

- Either a track-mounted Geoprobe rig equipped with Direct Push equipment, or hand tools will be used to advance a stainless steel soil vapor probe to 4 feet bgs;
- Tygon[™] or Teflon[™] tubing will be attached to the probe, running to the surface;
- The boring will be then backfilled with porous, inert backfill material (e.g., glass beads, washed #1 crushed stone, etc.) to approximately 3 feet bgs;
- The remainder of the borehole will be backfilled and sealed with a bentonite slurry; and
- A flush-mounted, protective casing will be set around the top of the probe.



Soil vapor samples will be collected approximately 24 hours after the soil vapor probes are installed. Samples will be collected as follows:

- A helium tracer gas test, per NYSDOH guidance, will be conducted first to ensure the vapor probe has a competent seal;
- One to three volumes of air (the equivalent of the sample probe and tubing) will be purged through the system (maximum of 200-milliliters [ml] per minute);
- After purging, the tubing will be connected to a 3 or 6-liter (L) Summa Canister (supplied by the laboratory). Samples will be collected at a rate not to exceed 200-ml per minute (a lab certified flow controller will be used to regulate the airflow);
- The vapor flow into the Summa Canister will continue until the pressure gauge indicates that the pressure in the canister is 4 to 8 inches of mercury; and
- All canisters will be appropriately labeled to indicate the sample locations.

2.1.2 Outdoor Air Sampling Procedure

Outdoor air samples will be collected using a 3- or 6-L Summa Canister and a lab certified flow controller to regulate the airflow (samples will be collected at a rate not to exceed 200-ml per minute). The vapor flow into the Summa Canister will continue until the pressure gauge indicates that the pressure in the canister is 4 to 8 inches of mercury. All canisters will be appropriately labeled to indicate the sample locations.

2.2 Sub-Slab Soil Vapor and Indoor Air Survey

2.2.1 Scope of Survey

The focus of this OVSMP will be a residential area to the northwest of the Site (denoted as Residential Block A), two residential areas immediately south of the LIRR easement (Residential Blocks B and C), and the residential area to the southeast of the Site (Residential Block D), as illustrated on Figure 2. Residential Block A is cross-gradient of the Site, and contains detections of PCE and TCE in soil vapor samples collected in the sidewalks to the north, east, and west of the residences. Residential Blocks B and C are believed to be downgradient of the potential vapor plume. Soil vapor samples previously collected in the



sidewalk to the south of these residences, resulted in detections of PCE. An evaluation of the offsite vapor data, strongly suggests the presence of multiple vapor sources contributing to these conditions offsite. Residential Block D is believed to be outside of the vapor plume; however, soil vapor sampling will be conducted on the north and south sides of the block in an attempt to delineate the soil vapor.

2.2.2 Pre-Survey Evaluation

Running concurrently with the survey, sub-slab conditions of the residential structures that Langan has been permitted to enter will be assessed by Langan personnel. The floor plan, footing locations, presence of grade beams, floor drains, sumps, cleanouts, potential sample locations, and any other related information will be noted to the extent visible.

In addition to a visual survey of the structural elements, to the extent possible, solvent containing products within the residences will be noted.

The number of sub-slab soil vapor samples to be collected will depend on the evaluation of sub-slab conditions. Assuming access to the residential structures has been granted, a minimum of one sub-slab soil vapor sample will be collected at each residential structure with continuous sub-slab conditions at Residential Block A. Similarly, assuming access has been granted and continuous sub-slab conditions are evident, a minimum of three sub-slab soil vapor samples will be collected at each of Residential Blocks B and C.

If there are basements, the number of indoor air basement samples collected will correspond to the number of sub-slab soil vapor samples collected. Indoor air samples to be collected in occupied residential spaces (on the first floor or, if there is no basement, the first and second floors) will be collected in every residence that requests it within Residential Blocks A, B, and C. One outdoor air sample will be collected at each Residential Block. Sub-slab soil vapor, indoor air, and outdoor air sampling will be conducted concurrently.

In the event that no homeowners in any one Residential Block agree to sampling, the OVSMP will be deemed implemented with respect to that Residential Block.

All sub-slab soil vapor, indoor air, and outdoor air sampling will be conducted in accordance with the October 2006 NYSDOH Guidance document. General sub-slab soil vapor and indoor air



sampling procedures are detailed below. General outdoor air sampling procedure is detailed in Section 2.1.2 above.

2.2.3 Sub-slab Vapor Sampling Procedure

The basement sub-slab vapor sample will be taken either from a location near a suspected vapor intrusion opening in the floor or from the center of the room. The sample will not be collected near any building footing.

The sub-slab vapor sampling procedure will follow the NYSDOH Soil Vapor Intrusion Guidance document (October 2006) and include the following:

- Time and temperature will be noted at the beginning and end of each sampling event;
- A 3/8 inch diameter hole will be advanced through the concrete slab using a hammer drill, to a depth of 3 inches into the sub-slab material;
- Tygon[™] or Teflon[™] tubing will be inserted into the hole and the hole will be sealed with clay to isolate the sub-slab environment and ensure representative sampling;
- The sample will be taken from the soil or aggregate material directly below the basement slab or below the slab on grade; the sampling tube should not extend further than 2 inches into the sub-slab material;
- The sampling tube should not touch groundwater. If water is found in the soil below the slab, then the sub-slab sample cannot be taken from that spot;
- After placement of the tubing, one to three volumes of air (the equivalent of the sample probe and tubing) will be purged through the system using a low flow rate vacuum pump (maximum of 200-ml per minute);
- The purge rate should be equal to the sampling rate;
- After purging, the tubing will be connected to a 3- or 6-L Summa Canister (supplied by the laboratory). Samples will be collected at a rate not to exceed 200-ml per minute. A lab certified flow controller will be used to regulate the airflow;
- The Summa Canister will be placed as close to the sub-slab opening as possible;



- The vapor flow into the Summa Canister will continue until the pressure gauge indicates that the pressure in the canister is 4 to 8 inches of mercury;
- All canisters will be appropriately labeled to indicate the sample locations;
- After sampling, the tubing will be removed and the slab openings will be sealed with a concrete patch to restore the integrity of the basement floor.

Details noted during the sampling events will include the use of heating or air conditioning systems, floor plan, sample locations, compass orientation, footing locations, outdoor weather conditions, ventilation conditions, and any other related information.

2.2.4 Indoor Air Sampling Procedure

For indoor air samples, similar guidelines will be followed, with some additional considerations:

- Two indoor air samples will be collected: one in the basement and one on the first floor living space;
- The basement air sample will be collected in the same general location as the sub-slab vapor sample;
- Samples will be taken from about 3 feet above the ground;
- Sampling time will be for a period of approximately 24 hours;

2.2.5 Outdoor Air Sampling Procedure

Outdoor air samples will be collected using a 3- or 6-L Summa Canister and a lab certified flow controller to regulate the airflow (samples will be collected at a rate not to exceed 200-ml per minute). The vapor flow into the Summa Canister will continue until the pressure gauge indicates that the pressure in the canister is 4 to 8 inches of mercury. All canisters will be appropriately labeled to indicate the sample locations.

2.3 Laboratory Analyses

Soil vapor, sub-slab, indoor air, and outdoor air samples will be analyzed by USEPA method TO-15 in accordance with the October 2006 NYSDOH Guidance document. Samples will be analyzed by an ELAP certified laboratory.



2.4 Evaluation of Air Monitoring Sampling

Sub-slab soil vapor and indoor air results will be compared to the Decision Matrices for TCE, PCE, carbon tetrachloride (CCl4), and 1,1,1-trichloroethane (1,1,1-TCA), as specified in Section 3.4 of the NYSDOH Guidance document. The Decision Matrices for TCE, PCE, CCl4, and 1,1,1-TCA, as written in the NYSDOH Guidance documents are reproduced in Tables 1 and 2 that follow.

Table 1 - Soil Vapor/Indoor Air Matrix 1

	Indoor Air Concentration (ug/m³)¹			
Sub-Slab Vapor Concentration (ug/m³)	< 0.25	0.25 to <1.0	1.0 to < 5.0	> 5.0
< 5.0	No further action	Some action	Some action	Some action
5 to < 50	No further action	Monitor	Monitor	Mitigate
50 to < 250	Monitor	Monitor/Mitigate	Mitigate	Mitigate
> 250	Mitigate	Mitigate	Mitigate	Mitigate

¹ ug/m³ = microgram per cubic meter

Table 2 – Soil Vapor/Indoor Air Matrix 2

	Indoor Air Concentration (ug/m³) ¹				
Sub-Slab Vapor Concentration (ug/m³)	< 3.0	3.0 to < 30	30 to < 100	> 100	
< 100	No further action	Some action	Some action	Some action	
100 to < 1000	Monitor	Monitor/Mitigate	Mitigate	Mitigate	
> 1000	Mitigate	Mitigate	Mitigate	Mitigate	

¹ ug/m³ = microgram per cubic meter

Matrix 1 will be used to evaluate the necessary action level if CCl4 and TCE are present in the sub-slab soil vapor and indoor air. If PCE or 1,1,1-TCA are present, Decision Matrix 2 will be used.

If the results indicate there are no exceedances of the Decision Matrices, no further action will be taken. In the event the data indicates monitoring and/or mitigation is required, the steps outlined in Section 2.6 will be followed.

3.0 Monitoring and Mitigation Plan

One, or a combination, of four actions may be taken, depending on the soil vapor and indoor air sampling results. These are summarized in Table 3.

Table 3. Description of Recommended Actions

Action	Description
1. No further action	No additional sampling or mitigation actions will be required.
2. Some action	A potential indoor or outdoor source is affecting the indoor air. Recommendations will be provided to the homeowner for actions such as patching openings in the floor slab, sealing windows properly, tightly closing containers, and storing household chemical products in
3. Monitoring	an outside shed. Monitoring is recommended to determine whether concentrations in
	indoor air or sub-slab vapor are changing over time and may result in future implementation of mitigation measures.
4. Mitigation	As an intermediate measure to address soil vapor intrusion into buildings, mitigation is a relatively simple technique used to reduce exposure to harmful subsurface contaminants.

3.1 Monitoring

Following the sampling protocol outlined above in Section 2.2.4, two indoor air samples will be taken in each building. One sample will be from the basement and the other from the first floor.

Sampling event frequency will be annually during the heating season for the first two years and the frequency thereafter will be negotiated with the NYSDEC and NYSDOH. Samples will be analyzed by an ELAP certified laboratory and evaluated against the standards outlined in the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York document (October 2006). Monitoring will continue until indoor air concentrations fall below levels specified in the Decision Matrices.

3.2 Mitigation Measures

The Mitigation Measure implemented will depend on the structure and foundation of the building. Mitigation Measures will be implemented according to the building foundation structures as described below. Mitigation Measures may include one or more different designs, as dictated by the structural features of the residence.

3.2.1 Buildings with Basement Slabs or Slab-On-Grade

A Sub-Slab Depressurization (SSD) system will be installed. If testing indicates that a passive system will not provide sufficient suction, the SSD system will be fitted with an active fan unit that will draw air from below the building slab and discharge the air to the atmosphere.

3.2.2 Buildings with Crawl Space Foundation

A ventilation fan will be installed to provide one air exchange per hour in the crawl space. The ventilation fan will operate continuously.

3.2.3 Buildings with Dirt Floors

A concrete slab or a soil vapor retarder (Sub-Membrane Depressurization [SMD] system) will be installed. An SMD system will be comprised of a synthetic membrane that is placed on the crawl space floor. A passive fan will draw air from below the membrane and discharge the air



to the atmosphere. The SMD system, similar to the SSD system, vents soil vapor to the atmosphere.

3.2.4 Installation of Mitigation Systems

We anticipate that SSD and/or SMD systems will be installed if the data results indicate that Mitigation is required. These systems will be designed and installed in accordance with the protocols recommended in the NYSDOH Guidance document (October 2006). The following details describe how each system will be implemented.

Sealing

If openings exist on the basement floor an appropriate material will be used to seal these openings. Recommended materials include:

- Elastometric joint sealant
- Caulking
- Non-shrink mortar
- Grout

- Expanding foam
- "Dranjer" drain seals
- Airtight gaskets

The sealant will be applied to the opening, following the manufacturer's instructions. Once the material has dried, a simple leak test will be conducted to determine if vapors are penetrating the sealed area. If no outside air is found to be entering the room, the seal is considered to be properly applied and monitoring activities as outlined earlier will be followed. If outside air is found to be entering the room, through the seal, the seal will be re-applied. Also, additional openings, which may be the source of contaminated air in the area, will be isolated and sealed. The leak test will be repeated to determine the quality of the seal.

Installation of Soil Vapor Retarder (Membrane)

Soil vapor retarders (membranes) will be installed according to the following protocol:

 Lay an appropriately sized 6-mil (or 3-mil cross-laminated) sheet of polyethylene along the floor. Several sheets may be needed to ensure that the entire floor area is covered.
 Ensure that there is 12-inch overlap between the sheets.



- Ensure that proper seals have been made with the sheet overlap areas, along the perimeter of interior piers and along the foundation walls. Allow sufficient extra length so that when the vacuum starts, the sheeting is not pulled from these areas.
- If the area may experience significant foot traffic, a layer of fine sand should be placed over the sheeting to protect it from damage.

Installation of Depressurization Systems

SSD and SMD systems will be installed according to the following protocol:

- 1. Piping will be inserted through the floor slab or through the membrane. Places in which this may be done are:
 - Drain Tile Suction pit drain tiles or perforated pipe used to direct water away from the house may be used as suction points for the depressurization system.
 - Sump Hole Suction pit sump holes may be covered and used as suction points for SSD systems. However, if they are not used, they should be sealed, but still allowed to collect and drain water.
 - Block Wall Suction pit if the house has hollow foundation walls, depressurization may be achieved by pumping air from the walls and venting outside.
 - If necessary, a new pit may have to be drilled into the basement slab. If so, all
 penetrations into the basement slab will be checked and properly sealed with
 material that prevents air leakage.
- 2. A ventilation fan and connecting piping will be installed that will:
 - Release the air above the highest eave of the building, at least 12 inches above the roof surface:
 - Be at least 10 feet above ground level;
 - Be at least 10 feet away from any opening that is less than two feet below the discharge point;
 - Be at least 10 feet from any adjoining or adjacent buildings or any heating, ventilation, and air conditioning (HVAC) intakes or supply registers.



- Install a rain cap over the outlet vent, to reduce the possibility of contaminated vapors re-entering the building.
- Be clearly labeled.
- Be equipped with a warning device, acceptable to the owner, to inform building occupants when the system has stopped working. Some warning systems are liquid gauge, light indicator, sound alarm or a dial/needle gauge.

3. Test for effectiveness (manometer test):

- Ensure that there are at least two sub-slab holes at (1) an intermediate distance from the suction pit and (2) near the foundation wall, furthest from the suction pit. If necessary, these holes may have to be created.
- Place a manometer vacuum gauge in the test hole and note vacuum reading in inches of H₂O (inches of water column).
- If a vacuum is observed, the suction is sufficient to depressurize the building.
- If a vacuum is not observed, then another suction pit may be needed to increase the effective treatment zone of the depressurization system.

3.2.5 Post Mitigation and Confirmation Testing

After installation of any of the mitigation measures outlined above, the system will be checked for leaks. Any leaks found will be sealed. The differential pressure will be measured to confirm that the system is operating effectively. If other venting systems exist in the area where the depressurization system was installed (such as venting for fireplaces wood stoves) or vented appliances (such as clothes dryers and water heaters) are nearby, appropriate action will be taken to check and, if necessary, corrected for potential backdrafting.

Once the system has been operating for a period of 30 days, a confirmatory indoor air sample will be taken from the basement floor (or the first level, if there is no basement) of the building. The sample will be taken in accordance with the October 2006 NYSDOH Guidance document and analyzed by USEPA Method TO-15.



If the test results indicate that indoor air conditions are unchanged, we will conclude that subslab vapor is not the cause of indoor air conditions.

3.2.6 Operation, Maintenance and Monitoring

If monitoring or mitigation systems are necessary, the protocols specified in the Operations, Maintenance and Monitoring Plan (OMMP), within the Site Management Plan (SMP) for Atlas Park Parcel B, will be followed. These actions will be conducted by the party that placed the mitigation system in service. A few basic and specific operations and maintenance procedures for the mitigation systems are given below.

Inspection of SSD, SMD, and other mitigation systems will be made on an annual basis during the heating season. The inspection will include the following details:

- Visual inspection of the system components;
- Identification and repair of any leaks; and
- Inspection of the exhaust or discharge points to ensure that no air intakes are nearby.

Periodic maintenance will be conducted as necessary based on the results of the inspection, equipment manufacturer's recommendations, communication with individual residence owners, and the age of the system.

As the information packet provided to the building owners includes information on the system, the building owners or tenants may also periodically check that the system is functioning properly.

3.2.7 Termination of Mitigation System Operations

After each certified inspection of the offsite mitigation measures, there will be an evaluation of the success of the systems and a determination of whether or not the mitigation should continue. Some of the factors that will affect this decision will be:

- Sub-slab vapor and indoor air concentrations, measured when mitigation systems are inactive, have been reduced such that comparison with the matrix indicates that monitoring or mitigation is no longer required.
- No rebound effect is found when the mitigations have been ceased for one year.



An inspection report will be submitted to the NYSDEC and NYSDOH for review. The report may include a request to cease the mitigation activities, if the monitoring test results indicate that sub-surface contamination has been mitigated to "no further action" levels. Only if the NYSDEC or NYSDOH approve this request can the installed mitigations be removed. In addition, the building owner should be informed of the possibility of rebounded residual contamination and of the operations and maintenance of the installed mitigation. The property owner may reject the offer to keep the system in place and (s)he may request that the system be turned off and removed.

4.0 CITIZEN PARTICIPATION PLAN

This section presents a description of the proposed community outreach to be conducted at the offsite areas in Residential Blocks A, B, C.

4.1 Community Outreach

Community outreach efforts will be targeted to the occupants of Residential Blocks A, B, and C as well as elected officials and Community Board 5-Queens. The elected officials and Community Board will be informed of planned community outreach efforts prior to public notifications. Community outreach will be achieved by the methods outlined in Sections 4.1.1 through 2.1.4 below.

4.1.1 Door-to-Door Visits

Door-to-door visits will be conducted prior to, or at the time, fact sheets for activities described in this OVSMP are released to the general public. Door-to-door visits will be conducted at Residential Blocks A, B, and C by a designated representative of Atlas Park, LLC. If the visits by Atlas Park, LLC are unsuccessful, NYSDOH staff will be provided with documentation that homeowners refused sampling. Staff conducting the door-to-door visits will:

- Wear or carry identification;
- Inform residents why they are conducting the visits;
- Present information consistently at all addresses called upon;



- Distribute the fact sheets and "request for permission to access" letters at all addresses visited; and
- Note all information provided by residents.

Requests to access the residential structures to conduct the sampling activities discussed in this OVSMP at the time of the door-to-door visits or at a mutually convenient date. Residents will be informed of their right to decline sampling, but encouraged to proceed with the sampling.

4.1.2 Fact Sheets and Letters

A request for permission to access the residences, in the above referenced blocks, will be prepared by representatives of Atlas Park, LLC and distributed at the time of the door-to-door visits.

The Fact sheets developed by NYSDEC will be distributed at the time of the door-to-door visits, and will also be kept in the document repositories for the Site. The Fact sheet will include the following information:

- A brief history of the Site and why it is being investigated or remediated;
- A brief summary of offsite soil vapor investigations;
- Announcement of a proposed soil vapor intrusion investigation in the area;
- A summary of anticipated next steps in the process as described in this Work Plan;
- Additional information on topics associated with soil vapor intrusion, such as specific air guidelines for volatile chemicals; and
- Staff contacts and ways for the public to obtain additional information.

If additional Fact Sheets are necessary, these Fact Sheets will be developed in conjunction with NYSDEC and NYSDOH.

4.1.3 Public Meeting

If the results of this sampling Plan warrants holding a public meeting, such meeting will be held, to discuss the soil vapor investigation in the area. The public meeting will be led by a



panel including representatives of Atlas Park LLC, NYSDEC, and NYSDOH. At a minimum, elected officials, the Community Board, and the impacted residents will be invited to the public meeting, which will be open to the public and Brownfield Site Contact List.

4.1.4 Document Repositories

A publicly accessible repository of documents and other information developed during the investigation and remediation of the Site as well as information pertaining to the offsite soil vapor investigation will be maintained at:

Community Board 5
 61-23 Myrtle Avenue
 Glendale, New York 11385

and

Glendale Public Library
 78-60 73rd Place
 Glendale, New York 11385

The document repository will include:

- Documents about which the state is seeking public comment;
- Studies:
- Reports;
- Released Fact Sheets: and
- Other relevant information.

5.0 PRE-MITIGATION SUBMITTALS

In the event mitigation systems are deemed necessary, the Contractor and Remediation Engineer, using the guidance provided in this OSVSMP, will prepare and submit detailed plans and other documents to NYSDEC and NYSDOH as required. All plans and documents will be



submitted to NYSDEC before the start of the activity covered in the plans. Submittals will include records/record drawings.

6.0 HEALTH AND SAFETY

The health and safety plan (HASP) establishes safe working conditions at the Site and protection for the community during remedy implementation. The HASP previously prepared for the Site (March 2006) will be used for all offsite activities described in this Work Plan. The site-specific HASP, at a minimum, meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65).

Each party performing work will comply with the overall site-specific HASP and may, at its discretion, prepare its own task-specific HASP for its organization, which will be consistent with the overall site-specific HASP. Each task-specific HASP must meet the minimum requirements established in the site-specific HASP and 29 CFR 1910 and 1926. Each party will also agree in writing to abide by requirements set forth in the site-specific HASP.

7.0 SCHEDULE

The sub-slab soil vapor and indoor air sampling event will be conducted between November and December 2006, within the heating season, which is now. Monitoring and/or mitigation activities, if needed, will begin shortly thereafter.

8.0 REPORTING

Activities outlined in this OVSMP will be documented in an addendum to the final engineering report (FER) for Atlas Park – Parcel B. The final engineering report addendum will include:

- A description of the remedial actions performed;
- A description of the changes to the remedial design;
- Sampling and monitoring results;

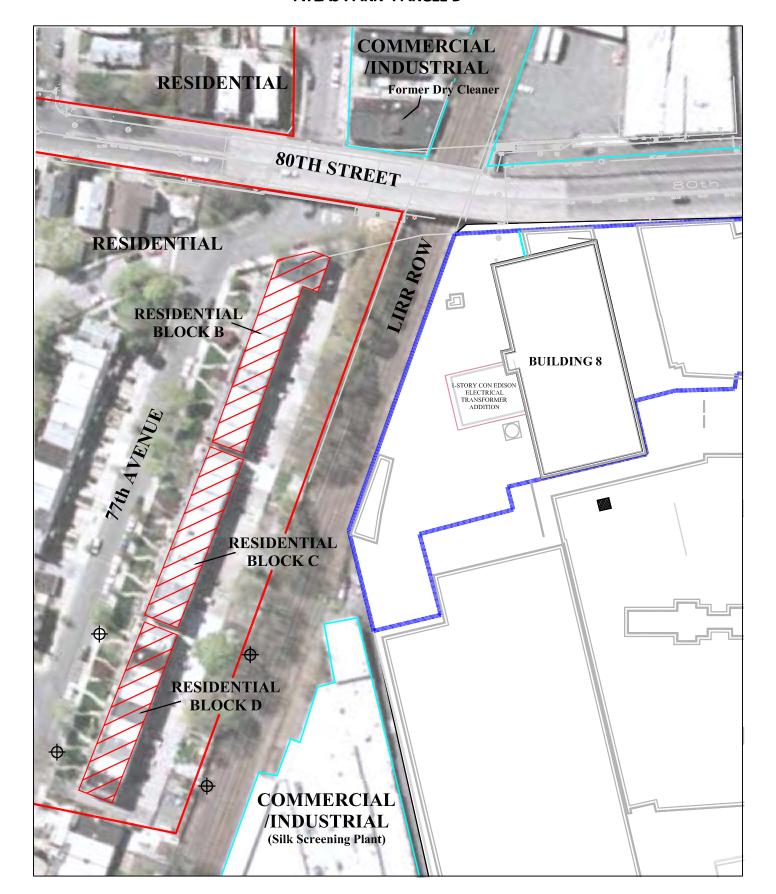


- A copy of the applicable Construction Manager records and "as-built" drawings showing changes made during construction (if mitigation systems are deemed necessary and are constructed); and
- Test results demonstrating that all mitigation systems are functioning properly (if mitigation systems are deemed necessary and are constructed).

A Professional Engineer licensed in New York State will certify in The Final Engineering Report that the construction (if mitigation systems are deemed necessary and are constructed) was completed in substantial conformance with the approved plan, and/or approved field changes.

U:\Data1\5555113\Office Data\Offsite Soil Vapor\Offsite Execution Work Plan\Atlas - Offsite Vapor Sampling and Mitigation Plan\Offsite Vapor_Work Plan_110706_Final.doc

RESIDENCES TO THE SOUTH OF ATLAS PARK -PARCEL B



RESIDENCES TO THE NORTHWEST OF ATLAS PARK -PARCEL B



LEGEND



PROPOSED OFFSITE SOIL VAPOR SAMPLING LOCATION



ATLAS PARK - PARCEL B BOUNDARY



RESIDENTIAL PROPERTIES



DESIGNATED "RESIDENTIAL BLOCKS"



COMMERCIAL/INDUSTRIAL PROPERTIES



1) BASEMAP WAS REFERENCED FROM GOOGLE EARTH (TM)





ATLAS PARK SITE-PARCEL B PROPOSED OFFSITE SUB-SLAB VAPOR AND INDOOR AIR SAMPLING PLAN

Project No. 5555113	Drawing No.
Date 11/01/06] _
Scale 1 °=160 °	2
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Lost Revised	1 Of 1

