INTERIM REMEDIAL MEASURES WORK PLAN

FOR

1735 EXPRESS DRIVE NORTH

HAPPAUGE, SUFFOLK COUNTY, NEW YORK

NYSDEC SITE NUMBER: C152238

PREPARED FOR

1735 EXPRESS DRIVE NORTH

FOR SUBMITTAL TO

NYSDEC DIVISION OF ENVIRONMENTAL REMEDIATION
625 BROADWAY
ALBANY, NEW YORK 12233-7017

PREPARED BY

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MAY 2017

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LIST OF ACRONYMS

Acronym	Definition
1,1,1-TCA	1,1,1- Trichloroethane
CAMP	Community Air Monitoring Plan
cfm	Cubic feet per minute
Cis-1,2 DCE	cis-1,2 Dichloroethene
DUSR	Data Usability Summary Report
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable Unit
PCE	Tetrachloroethylene
PE	Professional Engineer
PID	Photoionization Detector
ppm	parts per million
PVC	polyvinylchloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality assurance/quality control
QEP	Qualified Environmental Professional
RI	Remedial Investigation
SCDHS	Suffolk County Department of Health Services
SCOs	NYSDEC Subpart 375 Soil Cleanup Objectives
Site	1735 Express Drive North, Hauppauge
SMP	Site Management Plan
SSDS	Sub-Slab Depressurization System
SVI	Soil vapor intrusion
TCE	Trichloroethene
TCL	Target Compound List
ug/l	micrograms per liter
VC	Vinyl chloride
VOCs	Volatile Organic Compounds
WP	Work Plan

INTERIM REMEDIAL MEASURES WORK PLAN

Prepared for

Facility: 1735 Express Drive North Site
1735 Express Drive North
Hauppauge, New York
NYSDEC Site # C152238

FPM File No: 894-16-06

CERTIFICATION

I, Kevin F. Loyst, certify that I am currently a NYS registered professional engineer, and that this Interim Remedial Measures 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).

Kevin F. Loyst, P.E.

Signature

Prepared by

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SECTION 1.0
SITE BACKGROUND AND SUMMARY OF CONDITIONS

1.1 Introduction

This Interim Remedial Measures (IRM) Work Plan (WP) has been prepared to provide the necessary procedures and protocols for removal of impacted soil and installation of a soil vapor intrusion (SVI) mitigation well at the 1735 Express Drive North Site located in Hauppauge, Suffolk County, New York (Site). The Site location is shown in Figure 1.1.1.

A Remedial Investigation (RI) was performed at the Site in 2014 and 2015 and included evaluations of groundwater, soil, soil vapor, and indoor air. The RI results have been transmitted to the NYSDEC in interim correspondence, but the RI Report has not yet been completed. Certain soil and soil vapor conditions, described in detail below, are evident for which IRMs are recommended. This IRM Work Plan describes these conditions and the proposed IRMs.

1.2 Site Background

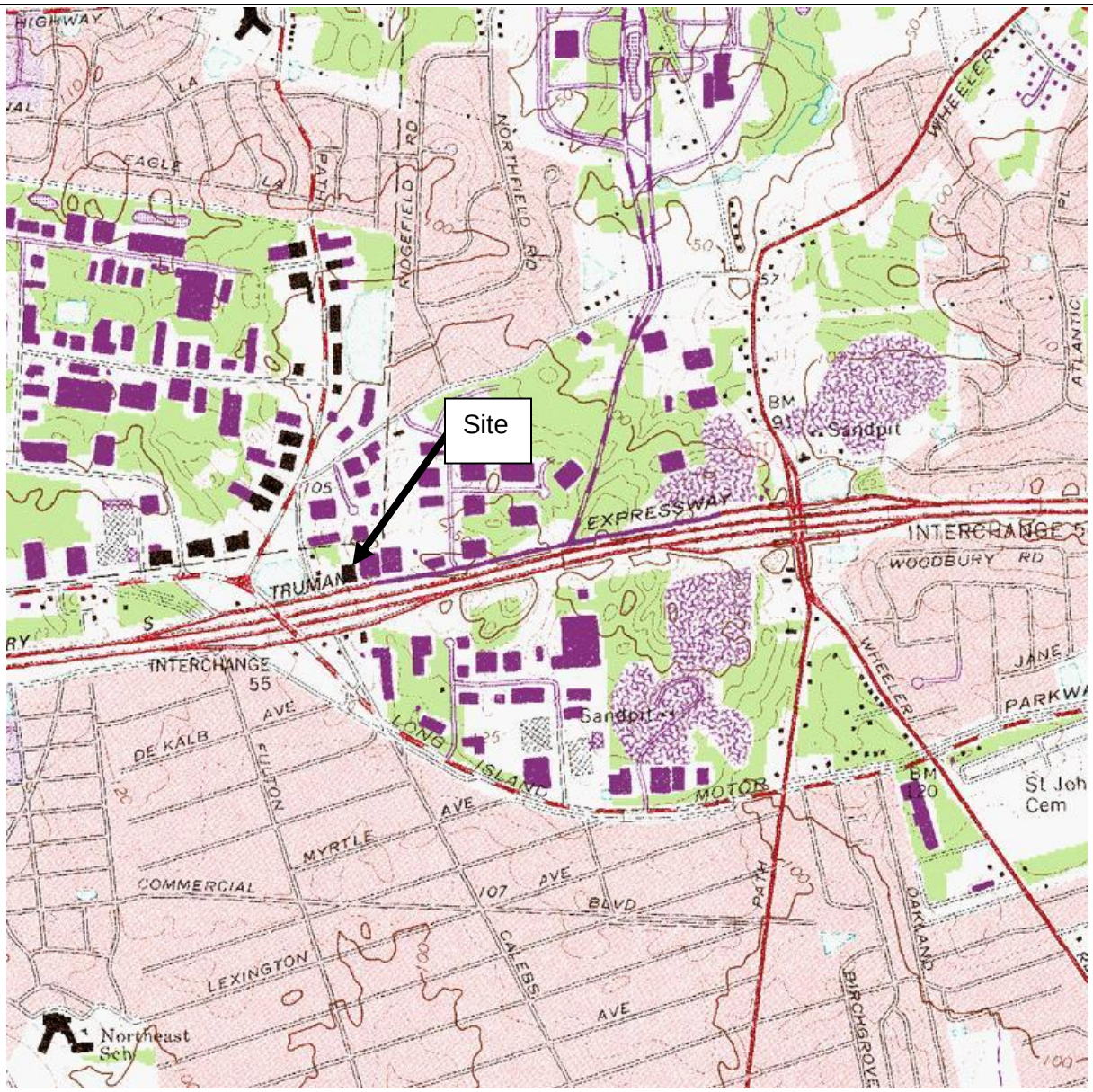
Detailed Site background information was provided in the RI Work Plan. Information pertinent to the proposed IRM activities is summarized herein.

1.2.1 General Site Conditions

The Site is located in a generally commercial and industrial area of Hauppauge, NY. The Long Island Expressway is located just to the south of the Site, two residences are located to the west of the Site, and commercial and industrial buildings generally surround the Site, as shown in Figure 1.2.1.1. The Site includes a 30,000-square-foot concrete block building on a slab foundation with associated paved parking areas and landscaped areas. The Site was initially developed with a 20,000-square-foot building in 1960 and a 10,000-square-foot addition was made to the north side of the building in 1979. The site is currently occupied by Maggio Data Forms and is utilized for printing commercial forms.

The Site was formerly operated by Afta Chemical Corp. (aka Afta Solvents Corp.) until sometime in 1980 for manufacturing, mixing, repackaging, and distribution of chemicals, including chlorinated and non-chlorinated solvents, shampoos, and cleaning fluids. Afta's operations included operation of multiple tanks and drum storage areas, use of piping, floor drains, and trenches, and discharges of industrial waste to onsite leaching facilities without a permit. A site plan showing the property features at the time of Afta's occupancy of the building is presented in Figure 1.2.1.2. The chemical mixing area was located on the north side of the original building and included sinks, piping, a trench, and other equipment associated with chemical mixing operations. Specific locations of these features could not be discerned from the historic records; the general area where chemical mixing was conducted is shown on Figure 1.2.1.2. A catch basin was formerly present on the interior west side of the building and a dry well was reported to have been located exterior to the building in proximity to the catch basin. This reported drywell was not visible at grade. By August 29, 1980 Afta had ceased industrial discharges and had sealed floor trenches and outside piping.

Extensive subsurface investigations performed throughout the Site have documented that volatile organic compounds (VOCs), including trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2 DCE), 1,1,1-trichloroethane (1,1,1-TCA), vinyl chloride (VC), and petroleum-related VOCs related to Afta's former operations were present in several leaching pools, in soil vapor, and in groundwater. Some leaching pool remediation has been conducted under the oversight of the



NORTH ↑

Source: USGS 7.5-Central Islip, NY Quadrangle

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FIGURE 1.1.1
SITE LOCATION MAP

1735 EXPRESS DRIVE NORTH SITE
HAUPPAUGE, NEW YORK

Drawn by: JB	Checked By: SOD	Date: 12/20/1

NORTH ↑

Source: Google Earth

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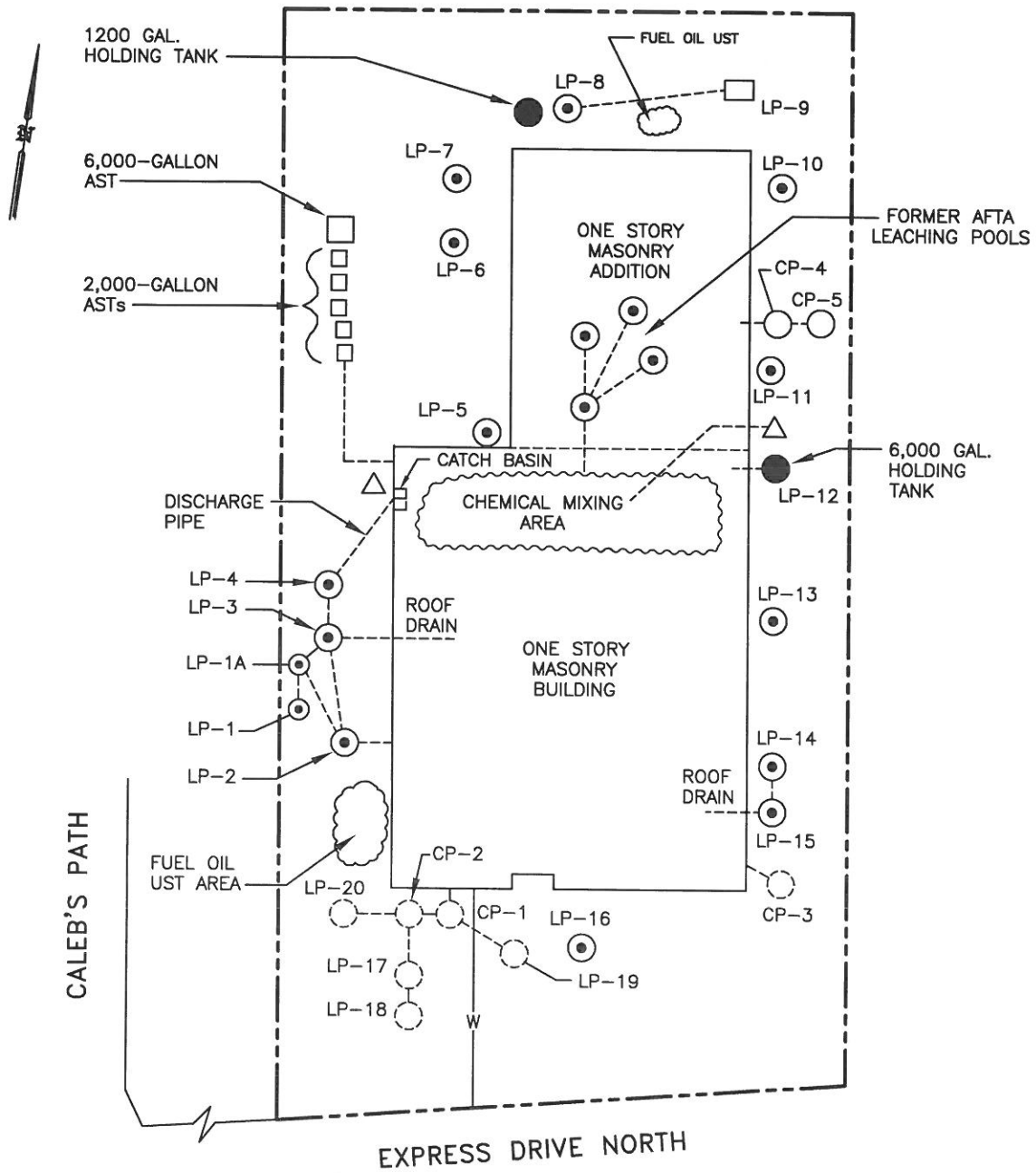
FIGURE 1.2.1.1
SITE VICINITY PLAN

1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Drawn by: JB	Checked By: SOD	Date: 12/20/16



APPROXIMATE SCALE:

0' 30' 60' 120'

LEGEND:

- ○ = CESSPOOL/SEPTIC TANK
- ◌ = SANITARY WASTE LEACHING POOL
- ⊙ = STORMWATER LEACHING POOL
- □ = SOLID-BOTTOM CATCH BASIN
- ● = USTs
- —W— = WATER SERVICE CONNECTION
- △ = POTENTIAL LEACHING POOL

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FIGURE 1.2.1.2

AFTA OPERATIONS SITE PLAN

1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Drawn By: H.C.	Checked By: J.B.	Date: 12/20/16

Suffolk County Department of Health Services (SCDHS). The RI activities have provided additional data concerning these conditions.

1.2.2 Summary of Subsurface Conditions

Subsurface conditions in the contemplated IRM areas based on the RI data are detailed below. A Site plan showing the sampled locations is shown on Figure 1.2.2.1 and the tabulated data are included in Appendix A.

- Soil

During the RI, a former dry well (leaching pool LP-21) was discovered at the location of a reported former Afta dry well on the west side of the building. This leaching pool (see Figure 1.2.1.2 for location) may have formerly been connected to an interior catch basin in the Afta chemical mixing area; LP-21 had not been previously identified as it is a small diameter pool, had been paved over, and a cover was not evident. A soil boring was installed through the center of LP-21. The depth to sediment was measured to be 9 feet below grade. A sample of the near surface soils (top three feet) was retrieved and screened visually and with a photo-ionization detector (PID). The retrieved sample consisted of medium sand with no odors or staining and no organic vapors were detected. Further sampling within LP-21 was not attempted due to the void space beneath the surface and the concern for lost sampling rods or failure of the structure. Therefore, the condition of soils further beneath the structure were assessed by performing soil sampling immediately on the outside wall of the structure, as noted below. The interior of the pool was visually inspected through the borehole opening at grade; the surface sediments appeared to consist of clean sand, which was consistent with the retrieved sample.

Soil sampling was conducted in November and December 2014 in accordance with the NYSDEC-approved RI Work Plan to assess soil conditions at select locations beneath the building slab, in proximity to LP-21, and in several other areas of potential concern. Soil sampling was conducted at eight interior locations (B-1 through B-8), directly adjoining LP-21 (boring B-9), and at five other exterior locations (B-10 through B-14). The tabulated data from this sampling event are included in Appendix A. The results of this sampling were previously reported to the NYSDEC (FPM, June 3, 2015) and are summarized as follows:

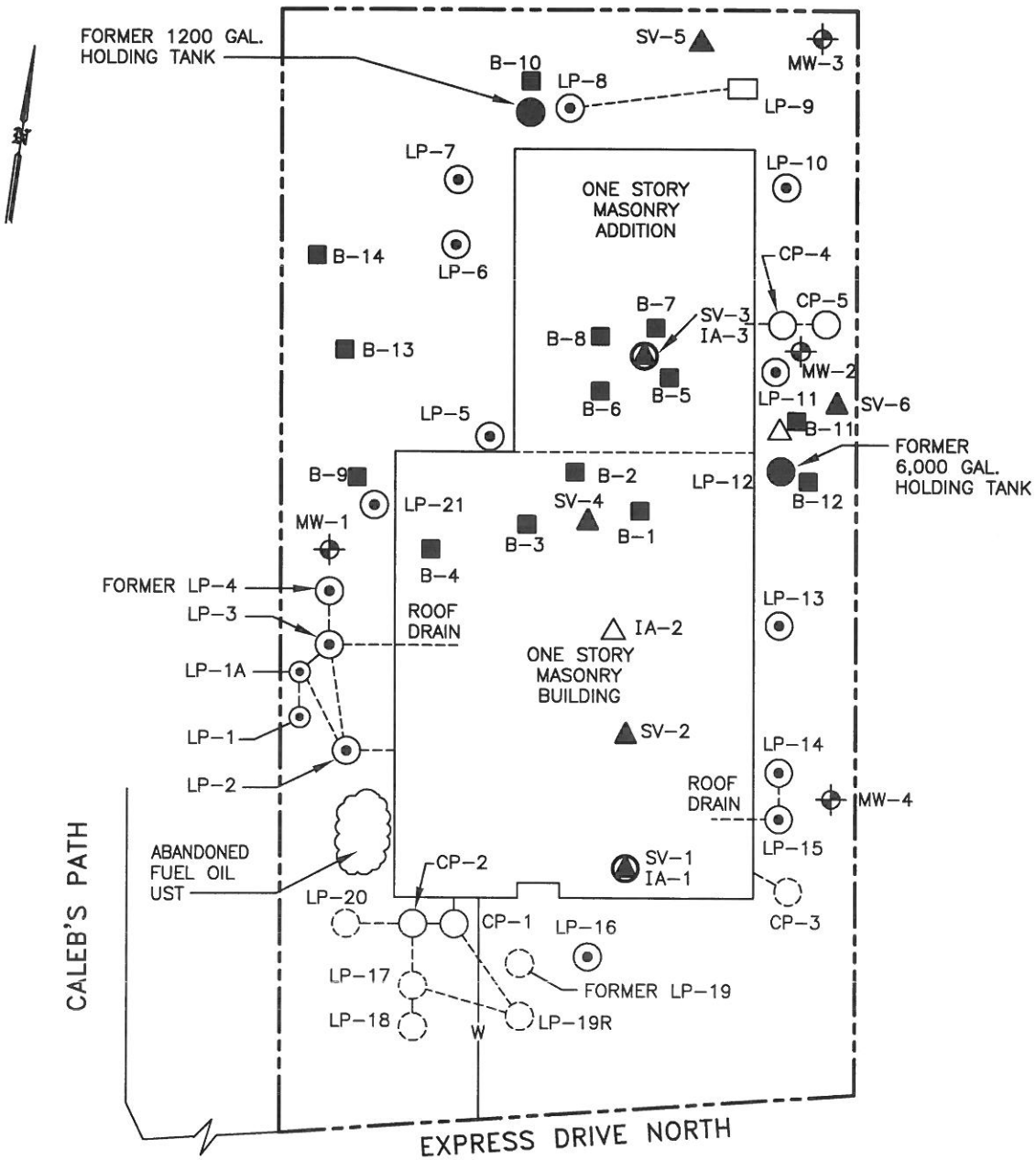
- Soil beneath the building slab in the former Afta chemical mixing area (borings B-1 through B-4) contained chlorinated VOCs, including TCE and tetrachloroethene (PCE), and petroleum-related VOCs (ethylbenzene, xylenes, and dichlorobenzenes) at the B-2 through B-4 locations at levels exceeding the NYSDEC SCOs for unrestricted use, but not exceeding the SCOs for commercial use. The greatest concentrations were seen at B-4 in the 13 to 15-foot interval, with much lower concentrations in the 16 to 18-foot interval;

- Soil in the former Afta leaching pool area beneath the northern portion of the building (borings B-5 through B-8) did not exhibit any exceedances of NYSDEC SCOs for any VOCs. Somewhat elevated concentrations (above the NYSDEC SCOs for unrestricted use) of chromium and/or copper were detected in the two soil samples from the B-5 boring; neither of these detections exceeded the NYSDECs for commercial use. This soil is covered by the building slab;

- Soil at the exterior boring locations B-10 through B-14 did not exhibit any exceedances of the NYSDEC SCOs for unrestricted use. The soil at these locations does not appear to present any concerns; and

- The soil in boring B-9 at both sample depths (13 to 15 feet and 23 to 25 feet) contained chlorinated VOCs, including TCE, 1,1,1-TCA, cis-1,2-DCE, and petroleum-related VOCs

(ethylbenzene, xylenes, toluene, and dichlorobenzenes) at levels exceeding the NYSDEC SCOs for unrestricted use, but not exceeding the SCOs for commercial use. The concentrations of PCE in both samples were noted to exceed the SCO for commercial use, with the highest concentrations detected in the 13 to 15-foot interval and lower concentrations detected in the 23 to 25-foot interval.



LEGEND:

- = GROUNDWATER MONITORING WELL
- = CESSPOOL/SEPTIC TANK
- = SANITARY WASTE LEACHING POOL
- = STORMWATER OR OTHER LEACHING POOL
- = SOLID-BOTTOM CATCH BASIN
- = INDOOR AIR SAMPLE LOCATION
- = FORMER USTs
- —W— = WATER SERVICE CONNECTION
- = SOIL VAPOR SAMPLE LOCATION
- = SUB-SLAB SOIL VAPOR & INDOOR AIR LOCATION
- = SOIL SAMPLE LOCATION

APPROXIMATE SCALE:

0' 30' 60' 120'

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FIGURE 1.2.2.1

SAMPLING LOCATIONS

1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Drawn By: H.C.	Checked By: S.D.	Date: 12/20/16

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Removal and proper offsite disposal of the bulk of the impacted soil in LP-21 is proposed as an IRM.

- Soil Vapor

Soil vapor and sub-slab soil vapor sampling was performed in March 2014 at four interior locations (SV-1 through SV-4) and two exterior locations (SV-5 and SV-6) to evaluate soil vapor conditions beneath the building and along the east side of the building. Three indoor air samples (IA-1 through IA-3) were collected inside the building to evaluate indoor air conditions. Sample locations are shown on Figure 1.2.2.1. Samples were collected and managed in accordance with the procedures in the RI Work Plan and/or directives received from the NYSDEC during a March 18, 2014 site inspection meeting. The summarized data from this sampling event are included in Appendix A. The results of this sampling were reported to the NYSDEC (FPM, October 3, 2014) and are summarized as follows:

- The results for the sub-slab soil vapor sampling indicate elevated levels of PCE, TCE, and 1,1,1-TCA beneath the building. No elevated concentrations of VOCs were detected in either of the soil vapor samples collected from the east side of the building; and

- The indoor air sample results for the VOCs for which the NYSDOH provides guidance were evaluated together with the sub-slab soil vapor results and compared to Matrix 1 and Matrix 2 of the October 2006 NYSDOH Soil Vapor Intrusion Guidance document. The results indicate that based on the current site conditions, mitigation of sub-slab soil vapors would be required.

- The indoor air results indicate that TCE was detected in the indoor air at concentrations ranging between 4.36 and 11.7 micrograms per cubic meter (ug/m^3), which is slightly above the NYSDOH air guideline of 2 ug/m^3.

Mitigation of sub-slab soil vapors is proposed as an IRM. Based on the soil sampling results discussed above, the apparent source for VOCs in soil vapor is the soil beneath the building slab in the former Afta chemical mixing area and the soil at LP-21. Therefore, mitigation of soil vapor conditions is focused on this area.

SECTION 2.0
IRM WORK PLAN

2.1 Introduction

Soil impacted primarily by chlorinated VOCs and, to a lesser extent, by petroleum-related VOCs has been identified within LP-21. Soil vapors beneath the building contain elevated concentrations of VOCs for which mitigation is indicated. This IRM WP has been prepared to provide procedures to address these two issues. This IRM WP will be reviewed and approved by the NYSDEC prior to commencement of IRM activities. The completed IRM work will be documented in an IRM Report.

This IRM WP provides the scope of work and procedures necessary to:

- Conduct removal of impacted soil from within LP-21, including proper offsite transportation and disposal;
- Conduct confirmatory soil sampling to document the condition of the remaining soil in the removal area;
- Provide for backfilling of the completed excavation in the LP-21 area;
- Install a sub-slab vapor mitigation well; and
- Document the completed IRM work.

A Health and Safety Plan (HASP), including a Community Air Monitoring Plan (CAMP), has been prepared for the IRM activities at this Site; a copy is included in Appendix B.

2.2 IRM Procedures

2.2.1 General Procedures

All field activities will be overseen by a Qualified Environmental Professional (QEP) as defined in 6 NYCRR §375-1.2(ak). All field decisions will be made by a QEP.

The designated NYSDEC representative will be notified in advance of any onsite IRM activities and will be promptly notified of any unusual or unanticipated conditions that are observed by the QEP. The NYSDEC will be provided with an opportunity to obtain splits of any confirmatory samples.

2.2.2 Soil Removal and Disposal, Backfilling

Impacted soil is present in former leaching pool LP-21 from approximately 9 feet (top of materials in LP-21 structure) to at least 25 feet (based on the B-9 data). The estimated volume of the impacted material targeted for removal during the IRM is 13 cubic yards. The proposed scope of work is as follows:

- An excavator or backhoe will be used to access LP-21 by removing the cover, which will be staged onsite for later re-use. The impacted material (soil) in LP-21 will be removed from the top of the material (9 feet) to as far as feasible below grade using equipment that can access the LP-21 area (Vactor or Guzzler). The existing concrete rings of LP-21 will be used as shoring, due to the structure's proximity to the adjoining building and associated heavy equipment. Based on the capabilities of the removal equipment and the LP-21 location in proximity to permanent structures, it is anticipated that soil will be removed to a depth of about 20 feet;

- Following removal of the targeted soil, the QEP will examine the remaining soil and screen it for organic vapors. Following field determination by the QEP that further removal is infeasible or unsafe, a confirmation sample will be collected from the remaining soil. Sample collection and management procedures will be in accordance with the NYSDEC-approved Quality Assurance Project Plan (QAPP) for RI activities at this Site. Appropriate quality assurance/quality control (QA/QC) samples will also be collected in accordance with the QAPP. The confirmation sample and associated QA/QC samples will be transmitted to a NYSDOH-certified laboratory under chain of custody procedures and analyzed for TCL VOCs. A Data Usability Summary Report (DUSR) will be prepared for the confirmation sample laboratory test results;
- Immediately following confirmation sampling, the LP-21 excavation will be backfilled to grade with clean backfill material for stabilization purposes. Backfill material is anticipated to be virgin bank run sand meeting the backfill criteria in DER-10; testing of the material in accordance with DER-10 will be performed prior to installation. Following backfill placement, the LP-21 cover will be replaced and the surface will be restored to grade with appropriate sub-base material (gravel/RCA) and asphalt; and
- The removed soil will be temporarily stockpiled onsite in a lined and covered rolloff container. The QEP will sample the stockpiled soil for the waste characterization parameters required by the disposal facility. The NYSDEC will be notified of the volume of material to be disposed, the disposal location, and the waste classification analytical results. Once disposal facility approval is obtained, the soil will be transported offsite and disposed at an approved facility. Waste manifests will be used to document the soil disposal.

2.2.3 Sub-Slab Vapor Mitigation

SVI testing has shown that mitigation of sub-slab soil vapor is needed. The apparent source for VOCs in soil vapor is the soil beneath the building slab in the former Afta chemical mixing area and the soil at LP-21. Therefore, mitigation of soil vapor conditions in this area via a sub-slab depressurization system (SSDS) is proposed as an IRM. A typical layout of an individual SSDS is shown in Figure 2.2.3.1. The following scope of work is proposed to perform depressurization testing from a single location such that the total number of depressurization points can be determined to adequately provide sub-slab depressurization for the building:

- Depressurization point (DP-1) will be installed beneath the building slab near the western end of the former Afta chemical mixing area in the general area of borings B-4 and B-3. The exact location will be determined based on the configuration of the building's structural elements, but will be approximately 30 feet from any of the exterior building walls so as to maximize the extent of sub-slab depressurization;
- The DP-1 point will consist of a 1-foot long slotted 4-inch diameter PVC screen with a slip-on end cap and sufficient solid PVC riser to bring the point to grade. The point will be installed in a suction pit to be excavated below the slab. The pit will be lined with clean virgin gravel and the gravel will be placed around the DP-1 point so as to provide support for the point and good connection between the point and the surrounding sub-slab soil. The top of the gravel will be covered with plastic sheeting. The concrete slab around the DP-1 piping will be restored at grade;

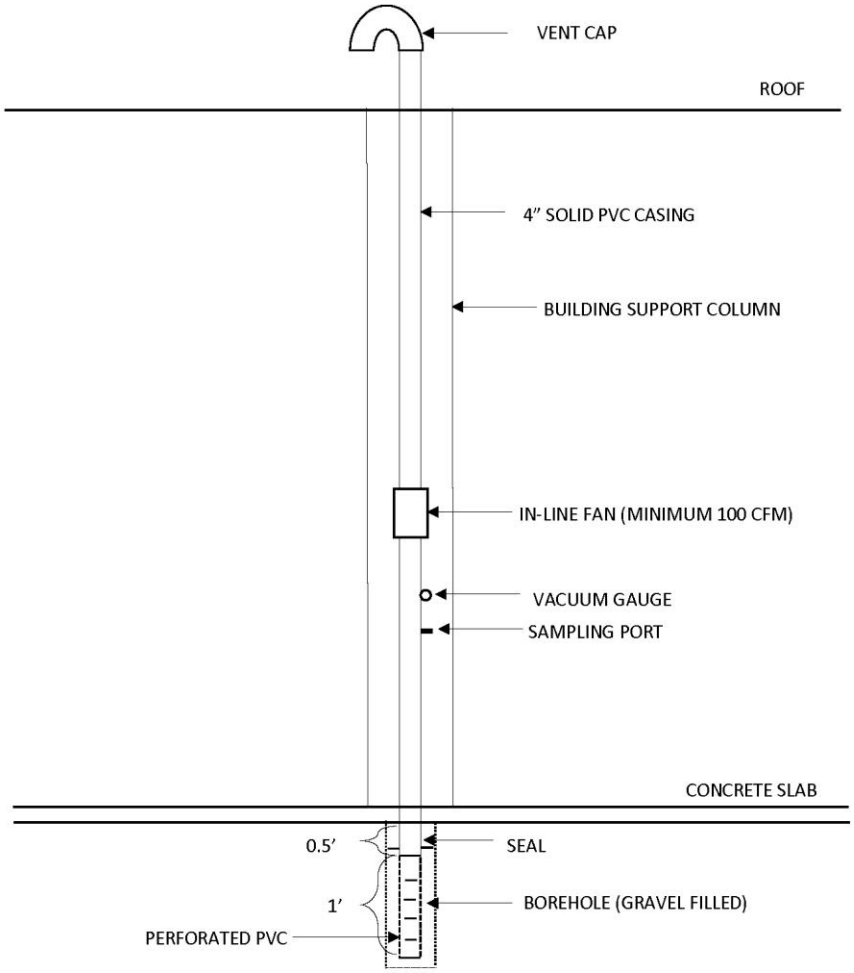

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FIGURE 2.2.3.1 FAN INSTALLATION DIAGRAM 1735 EXPRESS DRIVE NORTH HAUPPAUGE, NEW YORK		
Drawn by: JB	Checked By: BC	Date: 4/2/17

- The DP-1 solid PVC riser (4-inch diameter) will be extended upward and through the building roof as a discharge pipe. The discharge pipe will extend to approximately 5 feet above the roof and will be located at least 10 feet from any operable windows or fresh air intakes. The top of the pipe will be equipped with a gooseneck bend to prevent rain from entering the pipe. All piping joints will be solvent-welded to reduce the potential for air leaks;
- An in-line fan (Fantech FR160 or comparable) will be installed in the run of solid PVC piping above the top of the DP-1 point. A vacuum gauge and sampling port will be installed in the PVC riser between the concrete slab and the fan to confirm performance of the fan. Power will be provided by an electrical connection in proximity to the fan and the fan will be operated continuously. The technical details of the fan to be utilized for the testing are included in Appendix C;
- Sub-slab monitoring points will be installed in proximity to the DP-1 for monitoring of sub-slab pressure and vapor. The monitoring point locations will be placed at distances of approximately 10, 20, 30 and 60 feet from the DP-1 location and generally in a southerly or easterly direction away from DP-1 (away from the building's exterior walls). At each monitoring point location, the building slab will be penetrated using a rotary hammer drill and a monitoring point will be constructed and installed in accordance with the NYSDOH Guidance for Evaluation Soil Vapor Intrusion in New York State (October 2006). Each monitoring point will be sealed below the slab and protected by a flush-to grade cover;
- Excess soil generated from construction of the vapor mitigation IRM will be stockpiled, characterized, transported and properly disposed offsite with manifesting;
- Following the completion of construction, the DP-1 fan will be operated and the pressure at each monitoring point will be measured relative to the pressure within the building. This information will be used to confirm that a downward vertical pressure gradient is established and to assess the radial extent of depressurization. A minimum vacuum influence of 0.004 Inches of water (NJDEP Vapor Intrusion Technical Guidance January 2012) will be utilized to determine the maximum radial extent of depressurization and how many additional depressurization points are needed for complete building coverage. These recommendations will be included in the IRM report as noted below. Additionally required depressurization wells will be installed in the same manner as DP-1 unless other installation methods are proposed and approved by the NYSDEC.
- The effluent vapor from DP-1 will be gauged with a calibrated photo-ionization detector (PID) immediately after fan startup and also on a quarterly basis until a Site Management Plan (SMP) is finalized. Any additional depressurization points that are installed in the future will also be monitored on a quarterly basis until an approved Site Management Plan (SMP) is in place. Monitoring data will be included in the monthly reports.
- Once a final depressurization system is installed, post-remediation indoor air sampling will be performed no sooner than 30 days following the installation of the system. Sampling will be performed in accordance with NYSDOH guidance and will include the collection of one indoor air sample from the office area, one indoor air sample from the operations area, one air sample from the warehouse area, one ambient air sample from the upwind side of the property, one trip blank sample, and one duplicate sample.

2.2.4 Data Evaluation and IRM Reporting

The results of the LP-21 confirmatory sampling will be evaluated to assess the condition of the remaining soil. The pressure monitoring data will be evaluated to confirm that a downward vertical pressure gradient is established in the DP-1 area and to assess the extent of depressurization.

The IRM activities will be documented in an IRM Report certified by a NYS PE in accordance with DER-10 1.5(b)3. This report will document the IRM work performed and will also summarize prior investigation findings, copies of monitoring and sampling data, daily field logs, copies of waste disposal manifests, copies of laboratory reports and associated DUSRs, and any conclusions or recommendations resulting from the work. The report will also summarize all sampling activities completed to date. As required, the laboratory data will be uploaded to the NYSDEC in the current electronic data deliverable format. The IRM Report will be submitted to the NYSDEC for review and comment; any NYSDEC and/or NYSDOH comments will be addressed.

2.2.5 Schedule

An estimated schedule for IRM activities is provided in Appendix C. It should be noted that this schedule may vary somewhat based on several factors, including access to the work areas, weather conditions, contractor availability, and other factors that are not controlled.

2.3 Health and Safety and Community Monitoring

A site-specific HASP, including a CAMP, has been established. IRM activities will be conducted in accordance with the HASP and CAMP provided in Appendix B.

APPENDIX A

PERTINENT SUBSURFACE DATA

FPM

TABLE 1
SOIL CHEMICAL ANALYTICAL RESULTS
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Sample Location	B-1		B-2		B-3	B-4			B-5		6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives	6 NYCRR Part 375 Industrial Use Soil Cleanup Objectives
Sample Depth (feet)	0-2	3-5	0-2	3-5	0-2	0-2	13-15	16-18	0-2	20-22		
Sample Date	11/9/14											
TCL Volatile Organic Compounds in micrograms per kilogram												
1,1,1-Trichloroethane	6.3	0.98	26 J	1.4	73 J	71 J	240 J	38 J	ND	ND	680	1,000,000
1,2,4-Trichlorobenzene	0.42 J	ND	ND	0.56 J	240	140	ND	ND	ND	ND	3,600	-
1,2-Dichlorobenzene	7.1	1.2	29 J	0.47 J	**1,400**	**1,200**	**2,200**	35 J	0.55 J	0.58 J	1,100	1,000,000
1,3-Dichlorobenzene	3.2	0.33 J	25 J	0.32 J	230	31 J	ND	ND	ND	ND	2,400	560,000
1,4-Dichlorobenzene	2.2	0.68 J	44 J	1.1	**2,300**	230	470	ND	0.57 J	0.56 J	1,800	250,000
cis-1,2-Dichloroethene	2.8	0.32 J	44 J	3.4	51 J	83 J	ND	110	0.22 J	0.28 J	250	1,000,000
Acetone	**110 B**	24 B	ND	20 B	ND	ND	ND	ND	23 B	49 B	50	1,000,000
Carbon disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.51 J	-	-
Carbon tetrachloride	ND	ND	17 J	ND	ND	ND	ND	ND	ND	ND	760	44,000
Chloroform	0.84 J		55 J	0.67 J	20 J	21 J	ND	ND	ND	ND	370	700,000
Ethylbenzene	ND	ND	ND	ND	19 J	88 J	**4,900**	25 J	0.19 J	0.25 J	1,000	780,000
Isopropylbenzene	ND	ND	ND	ND	ND	45 J	780	ND	ND	ND	-	-
Methylcyclohexane	ND	ND	ND	ND	ND	ND	380	ND	ND	ND	-	-
Naphthalene	ND	ND	ND	ND	ND	18 J	ND	ND	ND	ND	12,000	1,000,000
Tetrachloroethene	470	42	**1,600**	39	**5,700**	**5,800**	**100,000**	1,300	38	52	1,300	300,000
Toluene	ND	ND	ND	ND	ND	ND	670	53 J	ND	ND	700	1,000,000
Trichloroethene	110	8.5	**680**	16	**1,400**	**1,200**	**6,800**	**680**	12	13	470	400,000
Xylenes	ND	ND	ND	ND	220	**1,240**	**34,000**	102 J	1.21 J	1.82 J	260	1,000,000
TCL Semivolatile Organic Compounds in micrograms per kilogram												
Benzo[a]anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	1,000	11,000
Benzo[a]pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	58	1,000	1,100
Benzo[b]fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	1,000	11,000
Benzo[g,h,i]perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	62 J	100,000	1,000,000
Benzo[k]fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	56	800	110,000
Fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	370	100,000	1,000,000
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	410	100,000	1,000,000
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	340	100,000	1,000,000
TAL Metals in milligrams per kilogram												
Aluminum	5,430	NA	11,400	NA	6,130	5,540	NA	NA	3,990	1,950	-	-
Arsenic	1.0 J	NA	1.9 J	NA	1.6 J	1.2 J	NA	NA	1.9 J	2.1 J	13	16
Barium	12.5 J	NA	25.5 J	NA	12.0 J	10.9 J	NA	NA	37.9 J	30.2 J	350	10,000
Cadmium	ND	NA	ND	NA	ND	ND	NA	NA	0.28 J	ND	2.5	60.0
Calcium	103 J	NA	82.2 J	NA	109 J	123 J	NA	NA	463 J	358 J	-	-
Chromium	5.5	NA	10.6	NA	6.4	5.7	NA	NA	**50.1**	5.1	30	800
Cobalt	1.5 J	NA	1.7 J	NA	1.7 J	2.1 J	NA	NA	3.0 J	1.1 J	-	-
Copper	1.8 J	NA	2.7 J	NA	2.4 J	2.0 J	NA	NA	15.1	**230**	50	10,000
Iron	5740	NA	10,500	NA	6,620	5,890	NA	NA	10,300	3,490	-	-
Lead	3.0	NA	6.6	NA	4.2	3.3	NA	NA	3.0	3.0	63	3,900
Magnesium	459 J	NA	732 J	NA	548 J	477 J	NA	NA	931 J	518 J	-	-
Manganese	51.1	NA	47.2	NA	41.5	46.9	NA	NA	180	63.7	1,600	10,000
Mercury	ND	NA	0.019	NA	0.012 J	0.014 J	NA	NA	ND	0.017	0.18	5.7
Nickel	3.3 J	NA	5.4 J	NA	3.9 J	4.1 J	NA	NA	9.1	3.3 J	30	10,000
Potassium	219 J	NA	222 J	NA	212 J	242 J	NA	NA	427 J	376 J	-	-
Vanadium	8.6 J	NA	17.0	NA	10.1	9.0 J	NA	NA	8.0 J	5.5 J	-	-
Zinc	9.4	NA	12.7	NA	9.4	9.4	NA	NA	11.3	14.4	109	10,000
Pesticides in micrograms per kilogram												
	ND	NA	ND	NA	ND	ND	NA	NA	ND	ND	-	-
Polychlorinated Biphenyls in micrograms per kilogram												
	ND	NA	ND	NA	ND	ND	NA	NA	ND	ND	100	25,000

Notes:

Only analytes detected in one or more samples are included herein.

J = Estimated concentration below the Reporting Limit but exceeding the Method Detection Limit.

NA= Not analyzed.

ND = Not detected at or above the method detection limit.

- = Not established

FPM

TABLE 1 (CONT)
SOIL CHEMICAL ANALYTICAL RESULTS
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Sample Location	B-6	B-7		B-8			B-9		B-10	6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives	6 NYCRR Part 375 Industrial Use Soil Cleanup Objectives
Sample Depth (feet)	0-2	0-2	13-15	0-2	18-20	34-35	13-15	23-25	23-25		
Sample Date	11/9/14	11/9/14	12/29/14	11/9/14	12/29/14	12/29/14	12/29/14	12/29/14	12/29/14		
TCL Volatile Organic Compounds in micrograms per kilogram											
1,1,1-Trichloroethane	ND	ND	0.28 J	ND	0.27 J	ND	**4,800**	**3,900**	0.19 J	680	1,000,000
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	150 J	ND	330	1,000,000
1,2-Dichlorobenzene	0.12 J	ND	ND	ND	0.16 J	ND	**2,700**	**1,900**	ND	1,100	1,000,000
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	760 J	400 J	ND	1,800	250,000
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	**550 J**	**310 J**	ND	250	1,000,000
1,4-Diethylbenzene	ND	ND	ND	ND	0.66 J	ND	ND	ND	ND	-	-
Acetone	22 B	11 B	19 B	15 B	20 B	21 B	ND	ND	ND	50	1,000,000
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	140 J	ND	760	44,000
Ethylbenzene	ND	ND	ND	ND	ND	ND	**21,000**	**16,000**	ND	1,000	780,000
Isopropylbenzene	ND	ND	ND	ND	ND	ND	1,500 J	610 J	ND	-	-
Methylcyclohexane	ND	ND	ND	ND	ND	ND	3,100	2,200	ND	-	-
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	170 J	ND	ND	-	-
Tetrachloroethene	11	6.0	1.3	31	110	2.8	**760,000**	**240,000**	5.2	1,300	300,000
Toluene	ND	ND	ND	ND	ND	ND	**1,500 J**	**40,000**	ND	700	1,000,000
Trichlorofluoromethane	ND	ND	0.28 J	ND	0.24 J	ND	ND	110,000	ND	-	-
Trichloroethene	3.6	0.28 J	2.1	0.78 J	2.7	1.2	**130,000**	ND	5.4	470	400,000
Xylenes	ND	ND	ND	ND	ND	ND	**42,000**	**71,000**	ND	260	1,000,000
TCL Semivolatile Organic Compounds in micrograms per kilogram											
Benzo[a]pyrene	ND	17 J	NA	ND	NA	NA	ND	NA	NA	1,000	1,100
Benzo[b]fluoranthene	ND	18 J	NA	ND	NA	NA	ND	NA	NA	1,000	11,000
Benzo[k]fluoranthene	ND	16 J	NA	ND	NA	NA	ND	NA	NA	800	110,000
Bis(2-ethylhexyl) phthalate	ND	18 J	NA	ND	NA	NA	1,000	NA	NA	-	-
Butyl benzyl phthalate	ND	15 J	NA	ND	NA	NA	210 J	NA	NA	-	-
Carbazole	ND	9.9 J	NA	ND	NA	NA	ND	NA	NA	-	-
Di-n-butyl phthalate	ND	11 J	NA	ND	NA	NA	21 J	NA	NA	-	-
Fluoranthene	ND	12 J	NA	ND	NA	NA	ND	NA	NA	100,000	1,000,000
Naphthalene	ND	ND	NA	ND	NA	NA	91 J	NA	NA	12,000	1,000,000
TAL Metals in milligrams per kilogram											
Aluminum	2,230	3,430	NA	2,200	NA	NA	5,470	NA	NA	-	-
Arsenic	ND	1.5 J	NA	ND	NA	NA	1.5 J	NA	NA	13	16
Barium	7.1 J	30.0 J	NA	13.5 J	NA	NA	27.9 J	NA	NA	350	10,000
Calcium	375 J	198 J	NA	404 J	NA	NA	208 J	NA	NA	-	-
Chromium	3.2	5.5	NA	3.5	NA	NA	8.9	NA	NA	30	800
Cobalt	1.2 J	3.0 J	NA	1.6 J	NA	NA	3.1 J	NA	NA	-	-
Copper	ND	20.2	NA	3.8 J	NA	NA	7.2	NA	NA	50	10,000
Iron	3,020	6,730	NA	3,790	NA	NA	9,220	NA	NA	-	-
Lead	1.8 J	8.6	NA	1.8 J	NA	NA	4.4	NA	NA	63	3,900
Magnesium	374 J	796 J	NA	540 J	NA	NA	1,440	NA	NA	-	-
Manganese	72.5	160	NA	69.0	NA	NA	149	NA	NA	1,600	10,000
Mercury	0.011 J	ND	NA	ND	NA	NA	0.025	NA	NA	0.18	5.7
Nickel	3.1 J	5.3 J	NA	2.9 J	NA	NA	6.7 J	NA	NA	30	10,000
Potassium	162 J	405 J	NA	193 J	NA	NA	722 J	NA	NA	-	-
Vanadium	4.5 J	7.9 J	NA	5.3 J	NA	NA	11.0	NA	NA	-	-
Zinc	7.6	14.5	NA	6.9	NA	NA	19.0	NA	NA	109	10,000
Pesticides in micrograms per kilogram											
	ND	ND	NA	ND	NA	NA	ND	NA	NA	-	-
Polychlorinated Biphenyls in micrograms per kilogram											
	ND	ND	NA	ND	NA	NA	ND	NA	NA	100	25,000

Notes:

Only analytes detected in one or more samples are included herein.

J = Estimated concentration below the Reporting Limit but exceeding the Method Detection Limit.

Bold values exceed NYSDEC Unrestricted Use Soil Cleanup Objectives

Bold shaded values exceed NYSDEC Industrial Use Soil Cleanup Objectives

ND = Not detected at or above the method detection limit.

NA = Not analyzed.

- = Not established

FPM

TABLE 1 (CONT)
SOIL CHEMICAL ANALYTICAL RESULTS
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Sample Location	B-11		B-12		B-13		B-14		6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives	6 NYCRR Part 375 Industrial Use Soil Cleanup Objectives
Sample Depth (feet)	0-2	18-20	13-15	20-22	0-2	4-5	0-2	4-5		
Sample Date	12/29/14									
TCL Volatile Organic Compounds in micrograms per kilogram										
1,1,1-Trichloroethane	0.25 J	ND	0.60 J	ND	0.20 J	ND	0.51 J	ND	680	1,000,000
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	0.41 J	ND	270	780,000
1,1-Dichloroethene	0.62 J	ND	ND	ND	0.40 J	ND	ND	ND	330	1,000,000
Acetone	ND	ND	ND	ND	ND	ND	3.2 JB	19 B	50	1,000,000
Dichlorodifluoromethane	ND	ND	0.41 J	ND	1.3	ND	ND	0.27 J	-	-
Methylene Chloride	1.1 B	ND	ND	ND	ND	ND	ND	ND	50	1,000,000
Tetrachloroethene	1.8	1.6	5.1	0.90 J	2.6	1.4	11	0.75 J	1,300	300,000
Trichloroethene	1.5	1.2	3.9	0.93	1.2	0.50 J	3.5	0.70 J	470	400,000
Trichlorofluoromethane	0.43 J	0.25 J	0.52 J	ND	1.1	ND	ND	0.28 J	-	-
Xylenes	ND	ND	0.22 J	ND	ND	ND	ND	ND	260	1,000,000
TCL Semivolatile Organic Compounds in micrograms per kilogram										
Acenaphthene	ND	NA	21 J	NA	ND	NA	NA	NA	20,000	1,000,000
Anthracene	ND	NA	55 J	NA	ND	NA	NA	NA	100,000	1,000,000
Benzo[a]anthracene	ND	NA	430	NA	ND	NA	NA	NA	1,000	11,000
Benzo[a]pyrene	ND	NA	420	NA	ND	NA	NA	NA	1,000	1,100
Benzo[b]fluoranthene	ND	NA	640	NA	ND	NA	NA	NA	1,000	11,000
Benzo[g,h,i]perylene	ND	NA	240 J	NA	ND	NA	NA	NA	100,000	1,000,000
Benzo[k]fluoranthene	ND	NA	260	NA	ND	NA	NA	NA	800	110,000
Bis(2-ethylhexyl) phthalate	ND	NA	97 J	NA	36 J	NA	NA	NA	-	-
Carbazole	ND	NA	93 J	NA	ND	NA	NA	NA	-	-
Chrysene	ND	NA	530	NA	ND	NA	NA	NA	1,000	110,000
Dibenz(a,h)anthracene	ND	NA	68	NA	ND	NA	NA	NA	330	1,100
Fluoranthene	19 J	NA	1,000	NA	ND	NA	NA	NA	100,000	1,000,000
Fluorene	ND	NA	22 J	NA	ND	NA	NA	NA	30,000	1,000,000
Indeno[1,2,3-cd]pyrene	ND	NA	270	NA	ND	NA	NA	NA	500	11,000
Isophorone	ND	NA	28 J	NA	ND	NA	NA	NA	-	-
Phenanthrene	16 J	NA	410	NA	ND	NA	NA	NA	100,000	1,000,000
Pyrene	22 J	NA	720	NA	ND	NA	NA	NA	100,000	1,000,000
TAL Metals in milligrams per kilogram										
Aluminum	2,780	NA	1,510	NA	2,420	NA	4,050	NA	-	-
Arsenic	ND	NA	0.99 J	NA	1.0 J	NA	1.4 J	NA	13	16
Barium	14.5 J	NA	10.6 J	NA	10.5 J	NA	10.2 J	NA	350	10,000
Calcium	265 J	NA	441 J	NA	171 J	NA	294 J	NA	-	-
Chromium	13.2	NA	3.2	NA	3.8	NA	4.8	NA	30	800
Cobalt	2.4 J	NA	3.1 J	NA	1.7 J	NA	1.9 J	NA	-	-
Copper	6.1	NA	3.4 J	NA	2.9 J	NA	2.7 J	NA	50	10,000
Iron	7,050	NA	4,730	NA	4,090	NA	5,520	NA	-	-
Lead	2.3	NA	1.4 J	NA	4.5	NA	4.4	NA	63	3,900
Magnesium	705 J	NA	451 J	NA	554 J	NA	750 J	NA	-	-
Manganese	236	NA	175	NA	56.8	NA	74.2	NA	1,600	10,000
Nickel	5.1 J	NA	3.1 J	NA	3.5 J	NA	4.0 J	NA	30	10,000
Potassium	348 J	NA	219 J	NA	241 J	NA	279 J	NA	-	-
Vanadium	8.5 J	NA	5.6 J	NA	5.0 J	NA	7.7 J	NA	-	-
Zinc	12.1	NA	6.6	NA	24.4	NA	9.3	NA	109	10,000
Pesticides in micrograms per kilogram										
	ND	NA	ND	NA	ND	NA	ND	NA	-	-
Polychlorinated Biphenyls in micrograms per kilogram										
	ND	NA	ND	NA	ND	NA	ND	NA	100	25,000

Notes:

Only analytes detected in one or more samples are included herein.

J = Estimated concentration below the Reporting Limit but exceeding the Method Detection Limit.

ND = Not detected at or above the method detection limit.

NA = Not analyzed.

- = Not established

FPM

TABLE 2
SOIL VAPOR AND INDOOR AIR SAMPLING RESULTS
1735 EXPRESS DRIVE NORTH, HAUPPAUGE, NEW YORK

Sample No.	SV-1	IA-1	Applicable response based on NYSDOH vapor intrusion guidance	SV-2	SV-4	IA-2	Applicable response based on NYSDOH vapor intrusion guidance	SV-3	IA-3	IA-3D	Applicable response based on NYSDOH vapor intrusion guidance	SV-5	SV-6	AMBIENT
Sample Location	**Offices**			**Production Area**				**Building Addition**				**Building Exterior**		
Sample Type	**Sub-slab Soil Vapor**	**Indoor Air**		**Sub-slab Soil Vapor**	**Sub-slab Soil Vapor**	**Indoor Air**		**Sub-slab Soil Vapor**	**Indoor Air**	**Indoor Air Duplicate sample**		**Soil Vapor**	**Soil Vapor**	**Ambient Air**
Volatile Organic Compounds in ug/m^3														
1,1,1-Trichloroethane	1,370	2.21	MITIGATE	27,800	2,020	2.47	MITIGATE	112,000	0.769	1.07	MITIGATE	7.69	ND	ND
1,1-Dichloroethane	ND	ND	NA	ND	ND	ND	NA	963	ND	ND	NA	ND	ND	ND
1,1-Dichloroethene	ND	ND	NO FURTHER ACTION	821	ND	ND	MONITOR	995	ND	ND	MONITOR	ND	ND	ND
1,2,4-Trimethylbenzene	ND	51.1	NA	ND	ND	18.7	NA	ND	7.82	11.1	NA	ND	2.74	ND
1,2-Dichloroethane	ND	ND	NA	ND	ND	ND	NA	231	ND	ND	NA	ND	ND	ND
1,3,5-Trimethylbenzene	ND	14.1	NA	ND	ND	4.74	NA	ND	1.89	3.00	NA	ND	ND	ND
1,3-Butadiene	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	4.51	1.90	ND
1,4-Dichlorobenzene	58.0	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	19.7	12.9	ND
2,2,4-Trimethylpentane	ND	ND	NA	ND	ND	ND	NA	ND	ND	1.77	NA	4.45	4.36	1.01
4-Ethyltoluene	ND	14.7	NA	ND	ND	4.92	NA	ND	1.85	3.06	NA	ND	ND	ND
Acetone	3,280	102	NA	4,230	1,740	59.6	NA	862	43.9	53.9	NA	23.8	16.8	9.17
Benzene	18.3	0.882	NA	ND	ND	0.738	NA	ND	0.703	1.37	NA	8.43	6.26	1.25
Carbon disulfide	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	1.34	0.810	ND
Carbon tetrachloride	ND	0.610	*	ND	ND	0.560	*	1,490	0.554	0.591	MITIGATE	ND	ND	0.566
Chloroform	262	ND	NA	2,190	220	ND	NA	13,200	ND	ND	NA	ND	ND	ND
Chloromethane	ND	1.15	NA	ND	ND	1.30	NA	ND	1.38	1.25	NA	ND	0.871	1.28
cis-1,2-Dichloroethene	ND	1.13	NO FURTHER ACTION	5,070	952	1.25	MITIGATE	45,200	0.456	0.567	MITIGATE	ND	ND	ND
Cyclohexane	ND	ND	NA	ND	ND	ND	NA	ND	ND	0.912	NA	3.25	2.33	ND
Ethanol	298	17.1	NA	ND	ND	9.23	NA	ND	12.3	11.5	NA	58.8	118	20.0
Ethyl acetate	ND	3.01	NA	ND	ND	ND	NA	ND	ND	2.05	NA	ND	ND	ND
Ethylbenzene	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	3.74	4.22	ND
Trichlorofluoromethane (Freon 11)	ND	1.31	NA	ND	ND	1.39	NA	ND	1.44	1.35	NA	1.35	1.36	1.35
Dichlorodifluoromethane (Freon 12)	ND	1.94	NA	ND	ND	2.42	NA	ND	2.71	2.71	NA	2.63	2.72	2.68
Heptane	ND	1.12	NA	ND	ND	ND	NA	ND	ND	1.23	NA	8.89	4.96	ND
n-Hexane	157	2.86	NA	ND	ND	1.25	NA	ND	1.20	3.15	NA	16.2	9.97	1.69
Isopropanol	1,020	13,100	NA	9,340	8,580	7,520	NA	5,260	3,590	5,260	NA	23.3	32.9	11.2
m,p -Xylenes	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	4.43	9.99	ND
2-Butanone (methyl ethyl ketone)	59.6	2.67	NA	ND	ND	1.38	NA	ND	1.12	1.28	NA	6.37	3.30	1.17
Methyl isobutyl ketone	42.2	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Methylene chloride	ND	ND	NA	ND	ND	ND	NA	ND	8.30	ND	NA	ND	7.68	3.75
o-Xylene	ND	1.44	NA	ND	ND	ND	NA	ND	ND	ND	NA	1.27	3.32	ND
Tetrachloroethene	13,000	11.3	MITIGATE	140,000	15,100	11.7	MITIGATE	362,000	4.36	6.57	MITIGATE	125	30.0	0.298
Tertiary butyl alcohol	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	2.62	ND	ND
Toluene	21.3	7.57	NA	ND	ND	4.30	NA	ND	5.35	9.65	NA	8.29	15.7	2.65
trans-1,2-Dichloroethene	ND	ND	NA	384	84.1	ND	NA	1,760	ND	ND	NA	ND	ND	ND
Trichloroethene	1,680	10.4	MITIGATE	210,000	11,600	10.7	MITIGATE	704,000	3.98	4.93	MITIGATE	11.2	2.73	0.172

Notes:
All samples were collected on March 29, 2014 and analyzed using Method TO-15
Only detected compounds are shown on this table; see laboratory report for complete results.
NYSDOH guidance is provided for shaded compounds.
ug/m^3 = micrograms per cubic meter
ND = Analyte not detected.
NA = Not applicable
* = No further action required based on corresponding ambient air sampling data

APPENDIX B

HEALTH AND SAFETY PLAN
INCLUDING
COMMUNITY AIR MONITORING PLAN

FPM

APPENDIX B
HEALTH AND SAFETY PLAN

This worker Health and Safety Plan (HASP) has been prepared by FPM Group (FPM) for New York State Department of Environmental Conservation (NYSDEC) Brownfield Program Site #C152238, identified as 1735 Express Drive North located in Hauppauge, New York (Site). This HASP is part of the Interim Remedial Measures (IRM) Work Plan and includes measures for the protection of worker health and safety during IRM activities. A Community Air Monitoring Plan (CAMP) is also included to address potential issues that may affect the Site community.

B.1 Worker Health and Safety Plan

B.1.1 Introduction

This HASP has been written for compliance with "OSHA Hazardous Waste Operations Standards (29 CFR 1910.120)", the guidance documents, "Standard Operating Safety Guidelines (Office of Solid Waste and Emergency Response, 1992)" and the "Occupational Safety and Health Guidance Manual for Hazardous Waste Activities" (U.S. Department of Health and Human Services, 1985).

B.1.2 Scope and Applicability of the HASP

This HASP is designed to be applicable to locations where soil remediation, mitigation well installation, and sampling are performed at the Site by all parties that either perform or witness the activities. This HASP may also be modified or amended to meet specific needs of the proposed work.

This HASP will detail the Site safety procedures, Site background, and safety monitoring. Contractors will be required to adopt this HASP in full or to follow an FPM-approved HASP. The Health and Safety Officer (HSO) will be present at the Site to inspect the implementation of the HASP; however, it is the sole responsibility of the contractor(s) to comply with the HASP.

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

B.1.3 Site Work Zone and Visitors

The Site work zone (a.k.a. exclusion zone) during the performance of soil remediation, mitigation well installation, and sampling activities will be a 20-foot radius about the work location. This work zone may be extended if, in the judgment of the HSO, Site conditions warrant a larger work zone.

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

All Site workers, including the contractors, will be required to have 40-hour hazardous material training (eight-hour refresher courses annually), respirator fit test certification, and current medical surveillance as stated in 29 CFR 1910.120.

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

Emergency telephone numbers and directions to the nearest hospital are shown in Table B.1.3.1 and will be kept at the Site in the possession of the HSO and will be available to all Site workers and visitors.

B.1.4 Key Personnel/Alternates

The project coordinator and Quality Assurance Officer (QAO) for this project is Stephanie Davis. The project manager will be John Bukoski. Mr. Bukoski will also act as the HSO. An assistant project manager and assistant health and safety officer may be designated for the field activities.

B.1.5 Site Background

Based on the Site history and previous analyses of samples, the known chemicals present at the Site include volatile organic compounds (VOCs). These chemicals are present in soil, groundwater, and soil vapor at the Site. Subsurface IRM activities may include collection of soil and/or soil vapor samples.

B.1.6 Task/Operation Health and Safety Analysis

This section presents health and safety analyses for the intrusive IRM tasks. In general, FPM will employ one to two persons at the Site. No soil remediation, well installation, or other Site operations will be conducted by contractors without the presence of an FPM representative on Site. In the event that the HSO is not present on the Site, the Assistant HSO will implement the HASP. Levels of personal protection mentioned in this section are defined in Section B.1.9.

Soil Remediation and Mitigation Well Installation Safety Analysis

Soil remediation and mitigation well installation will be performed by personnel from a qualified remediation company and by qualified FPM personnel. FPM personnel will be present to observe any IRM activities, to conduct appropriate monitoring, and to coordinate IRM activities with ongoing onsite activities and personnel.

IRM activities may be undertaken during normal operations at the Site; precautions will be taken to protect Site employees from equipment use and Site contamination. An attempt will be made to perform work at night or on weekends when Site activities and the number of onsite employees are minimal. No employees will be allowed within the investigation work zones and intrusive work will be scheduled within each area of the building in a manner so as to reduce or eliminate the potential for employees to be present in that area.

Exhaust from powered equipment will be ducted to the outside of the building and additional ventilation (fans) will be used if necessary to further reduce exhaust or vapors. Monitoring will be conducted, as described below, and steps will be taken to ensure that any emissions are reduced to acceptable levels. IRM areas within the building with intrusive activities will be covered with plastic during intrusive activities so as to contain soil and keep the work areas clean. All soil will be contained and managed as described in the IRM Work Plan.

TABLE B.1.3.1
EMERGENCY TELEPHONE NUMBERS AND
DIRECTIONS TO ST CATHERINE OF SIENA HOSPITAL

Police..... 911
Ambulance..... 911
Poison Control Center..... 800-222-1222
St Catherine of Siena Hospital (Emergency Room) 631-862-3000

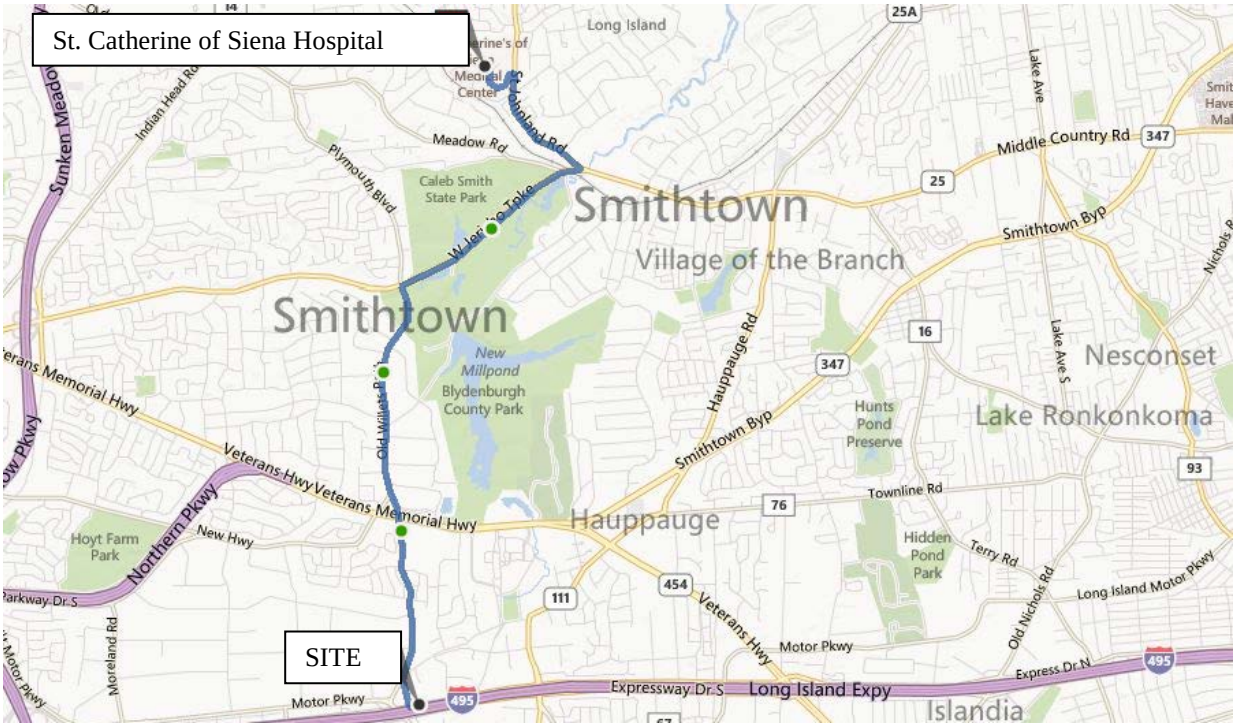
FPM Contact Personnel (631-737-6200)

Dr. Kevin J. Phillips, P.E. ..... Cell # 631-374-6066
Stephanie Davis, Project Manager..... Cell # 516-381-3400
John Bukoski ..... Cell # 516-381-3535

Directions to St Catherine of Siena Hospital

50 Route 25A
Smithtown, NY 11787
Tel: 631-862-3000

Exit the Site and turn right onto Express Drive North. Turn right onto Caleb's Path. Turn right onto Old Willets Path and continue for 2.7 miles. Turn right onto Route 25 Jericho Turnpike and continue for 1.4 miles. Turn left on Route 25A St Johnland Road and continue for approximately one mile. The Hospital is on the left; follow the signs to the Emergency Room.



A decontaminated hand auger and manually-operated digging equipment will be advanced into soils beneath the building slab to install a vapor mitigation well and monitoring points. A Guzzler will be utilized to remediate soils within an exterior leaching pool. To minimize the potential for dust inhalation during these activities, interior locations will be covered with plastic. For exterior locations, the HSO will assess wind and soil moisture conditions and, if it is deemed necessary by the HSO, the affected area will be wetted with potable water. If this measure is determined to be ineffective in exterior locations, the HSO may decide to upgrade personal protection to Level C respiratory protection to include respirators with dust cartridges. If extremely windy and dusty conditions exist that cannot be successfully controlled by dust suppression with potable water, then the HSO may choose to postpone remediation until such time as conditions improve.

Organic vapor concentrations will be monitored in the work zone by utilizing a Photovac MicroTIP PID. The PID will be "zeroed" by exposing the PID to ambient air prior to drilling and the upper range of calibration will be established by calibrating at 98 to 100 parts per million (ppm) of isobutylene. Background organic vapor concentrations will then be established in the work zone prior to well installation and recorded in the HSO field book. Upon commencement of work, PID readings will be obtained in the workers' breathing zone. Readings will be obtained following the onset of work activities and periodically after (typically every 15 minutes). At the discretion of the HSO, PID readings may be obtained more frequently. PID air monitoring will be conducted by FPM personnel. Steady-state PID readings greater than five ppm in the worker's breathing zone will require upgrading to Level C personal protective equipment. Steady-state readings, for this purpose, will be defined as readings exceeding five ppm above background for a minimum of ten seconds at points approximately one foot above and then around the borehole opening. These points will define the worker's breathing zone. Level C personal protection will be implemented including full-face air-purifying respirators with dust and organic vapor cartridges (personal protective equipment will be described in greater detail in Section B.1.9). All FPM personnel and contractors must be properly trained and fit tested prior to donning respirators.

If PID readings exceed steady-state levels greater than 50 ppm above background or any conditions exist for which the HSO determines require Level B personal protective equipment, all work at the Site will cease immediately and all personnel will evacuate the work zone. Evacuation will occur in the upwind direction if discernable. Specific evacuation routes will be discussed prior to commencement of work at each location based on work location and wind direction and an evacuation meeting place will be determined. Wind-direction telltales will be placed in the work zone to monitor wind direction. Level B conditions are not anticipated to be encountered; however, if level B conditions arise, no Site work will be performed by FPM or contractors and a complete evaluation of the operation will be performed and this HASP will be modified.

All personnel will be required to wear chemical-resistant nitrile gloves when the potential for dermal contact with the soil or groundwater is possible. This will include handling rods or augers retrieved from the borehole. Dermal contact with soil and equipment that has been in contact with soil will be avoided.

Soil Sampling Safety Analysis

Soil sampling will be performed by FPM personnel using a decontaminated stainless steel hand auger.

As noted above, intrusive sampling activities may be undertaken during normal operations at the Site; precautions will be taken to protect Site employees from sampling equipment use and Site contamination. No employees will be allowed within the work zones. Monitoring will be conducted, as described below, and steps will be taken to ensure that any vapor issues are reduced to acceptable levels.

Standard work gloves will be used by sampling personnel during handling of all sampling equipment. The HSO will monitor the work zone and ensure proper glove protection is in place.

During intrusive sampling activities organic vapor concentrations will be monitored in the work zone by utilizing a Photovac MicroTIP (or equivalent) PID. The PID will be "zeroed" by exposing the PID to ambient air prior to sampling and the upper range of calibration will be established by calibrating at 98 to 100 parts per million (ppm) of isobutylene. Background organic vapor concentrations will then be established in the work zone prior to intrusive activities. Upon commencement of subsurface sampling activities, PID readings will be periodically obtained in the workers' breathing zone. PID air monitoring will be conducted by FPM personnel. Steady-state PID readings greater than five ppm in the worker's breathing zone will require upgrading to Level C personal protective equipment. Steady-state readings, for this purpose, will be defined as readings exceeding five ppm above background for a minimum of ten seconds at points approximately one foot above and then around the borehole opening. These points will define the worker's breathing zone. Level C personal protection will be implemented including full-face air-purifying respirators with dust and organic vapor cartridges (personal protective equipment will be described in greater detail in Section B.1.9). All FPM personnel and contractors must be properly trained and fit tested prior to donning respirators.

If PID readings exceed steady-state levels greater than 50 ppm above background or any conditions exist for which the HSO determines require Level B personal protective equipment, all work at the Site will cease immediately and all personnel will evacuate the work zone. Evacuation will occur in the upwind direction if discernible. Specific evacuation routes will be discussed prior to commencement of work at each location based on work location and wind direction and an evacuation meeting place will be determined. Level B conditions are not anticipated to be encountered; however, if level B conditions arise, no Site work will be performed by FPM or contractors and a complete evaluation of the operation will be performed and this HASP will be modified.

Other Safety Considerations

- Noise

During operations that may generate potentially harmful levels of noise, the HSO will monitor noise levels with a Realistic^{tm} hand-held sound level meter. Noise levels will be monitored in decibels (dBs) in the A-weighted, slow-response mode. Noise level readings which exceed the 29 CFR 1910.95 permissible noise exposure limits will require hearing protection (see Table B.1.6.1 for Permissible Noise Exposures).

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

TABLE B.1.6.1
PERMISSIBLE NOISE EXPOSURES*

Duration Per Day Hours	Sound Level dBA Slow Response
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
½	110

Notes:

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

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

*Standards derived from 29 CFR 1910.95

- Slip/Trip/Fall Preventative Measures

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

- Insects

Potential insect problems include, but are not limited to stinging insects such as bees, wasps, and hornets. Prior to commencement of work, each work area will be surveyed for nests and hives to reduce the possibility of disturbing stinging insects. In addition, each Site worker will be asked to disclose any allergies related to insect stings or bites. The worker will be requested to keep his or her anti-allergy medicine on Site.

- Potential Electrical and Other Utility Hazards

Potential electric hazards consist mainly of overhead and underground power lines. Other site utilities that may present hazards include telephone lines, gas lines, sewer lines, water lines, and other overhead or underground utilities. Prior to commencement of work at the Site, all soil borings and well installation locations will be inspected with respect to overhead lines. Soil borings and well installation work involving heavy equipment will not be performed when the horizontal distance between the equipment and overhead wires is less than 30 feet.

Underground potential utility hazards will be minimized by contacting the One-Call service to provide markouts of the utilities beneath adjoining public streets.

- Heat/Cold Stress

Heat stress may become a concern especially if protective clothing is donned that will decrease natural ventilation. To assist in reducing heat stress, an adequate supply of water or other liquids will be staged on the Site and personnel will be encouraged to rehydrate at least every two hours even if not thirsty. In addition, a shady rest area will be designated to provide shelter during sunny or warm days and Site workers will break for at least 10 minutes every two hours in the rest area, and, in very hot weather, workers wearing protective clothing may be rotated.

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

Heat-related problems are:

- Heat rash: caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat.

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

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

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

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

- All personnel will be required to wear adequate and appropriate clothing. This will include head gear to prevent the high percentage loss of heat that occurs in this area (thermal liners for hard hats if hard hats are required).

- A readily-available warm shelter will be identified near the work zone.

- Work and rest periods will be scheduled to account for the current temperature and wind velocity conditions.

- Work patterns and the physical condition of workers will be monitored and personnel will be rotated, as necessary.

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

Cold exposure-related problems are:

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

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

The Buddy System

All activities in contaminated or potentially contaminated areas will be conducted by pairing off the Site workers in groups of two (or three if necessary). Each person (buddy) will be able to provide his or her partner with assistance, observe his or her partner for signs of chemical, cold, or heat exposure, periodically check the integrity of his or her partner's protective clothing, and notify the HSO or others if emergency help is needed. The buddy system will be instituted at the beginning of each work day. If new workers arrive on Site, a buddy will be chosen prior to the new worker entering the work zone.

Site Communications

Two sets of communication systems will be established at the Site: internal communication among personnel on-Site, and external communication between on-Site and off-Site personnel. Internal communication will be used to alert team members to emergencies, pass along safety information such as heat stress check, protective clothing check, etc, communicate changes in the work to be accomplished, and maintain Site control.

An external communication system between on-Site and off-Site personnel will be established to coordinate emergency response, report to the Project Manager, and maintain contact with essential off-Site personnel. A field telephone will be available at all times in the HSO's vehicle. In addition, a backup telephone will be identified prior to the commencement of Site operations and this location will be relayed to all Site workers.

General Safe Work Practices

Standing orders applicable during Site operations are as follows:

- No smoking, eating, drinking, or application of cosmetics in the work zone.

- No matches or lighters in the work zone.

- All Site workers will enter/exit work zone through the Site access point.

- Any signs of contamination, radioactivity, explosivity, or unusual conditions will require evacuating the Site immediately and reporting the information to the HSO.

- Loose-fitting clothing and loose long hair will be prohibited in the work zone during heavy equipment operations.

- A signal person will direct the backing of work vehicles.

- Equipment operators will be instructed to check equipment for abnormalities such as oozing liquids, frayed cables, unusual odors, etc.

B.1.7 Personnel Training Requirements

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

Prior to Site field work, the HSO will conduct an in-house review of the project with respect to health and safety with all FPM personnel who will be involved with field work at the Site. The review will include discussions of signs and symptoms of chemical exposure and heat/cold stress that indicate potential medical emergencies. In addition, review of PPE will be conducted to include the proper use of air-purifying respirators.

B.1.8 Medical Surveillance Program

All workers at the Site must participate in a medical surveillance program in accordance with 29 CFR 1910.120. A medical examination and consultation must have been performed within the last twelve months to be eligible for field work.

The content of the examination and consultation will include a medical and work history with special emphasis on symptoms related to the handling of hazardous substances, health hazards, and fitness for duty including the ability to wear required personal protective equipment under conditions (i.e., temperature extremes) that may be expected at the work Site.

All medical examinations and procedures shall be performed by, or under the supervision of, a licensed physician. The Physician shall furnish a written opinion containing:

- The results of the medical examination and tests;

- The physician’s opinion as to whether the employee has any detected medical conditions which would place the worker at increased risk of material impairment of the employee's health from work in hazardous waste operations;

- The physician's recommended limitations upon the worker assigned to the work; and

- A statement that the worker has been informed by the physician of the results of the medical examination and any further examination or treatment.

- An accurate record of the medical surveillance will be retained. The record will consist of at least the following information:

- The name and social security number of the employee;

- The physician's written opinions, recommended limitations, and results of examinations and tests; and

- Any worker medical complaints related to exposure to hazardous substances.

B.1.9 Personal Protective Equipment

General Considerations

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

Potential Site hazards have been discussed previously in Section B.1.6. The duration of Site activities is estimated to be periods of several weeks. All work is expected to be performed during daylight hours and workdays, in general, are expected to be eight to ten hours in duration. Any work performed beyond daylight hours will require the permission of the HSO. This decision will be based on the adequacy of artificial illumination and the type and necessity of the task being performed.

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

Level C Protection

Level C personnel protective equipment includes:

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

- 2-way radio communications (inherently safe)*

(*) optional

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

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

Level D Protection

Personnel protective equipment:

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

(*) optional

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

- No contaminant levels above 5 ppm organic vapors or dusty conditions are present.
- Work functions preclude splashes, immersion, or the reasonable potential for unexpected inhalation of any chemicals above the TLV.

Additional Considerations for Selecting Levels of Protection

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

All chemical protective garments can be a contributing factor to heat stress. Greater susceptibility to heat stress occurs when protective clothing requires the use of a tightly-fitted hood against the respirator face

piece, or when gloves or boots are taped to the suit. As more body area is covered, less cooling takes place, increasing the probability of heat stress.

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

Donning and Doffing Ensembles

- Donning an Ensemble

A routine will be established and practiced periodically for donning a Level C ensemble. Assistance may be provided for donning and doffing since these operations are difficult to perform alone. Table B.1.9.1 lists sample procedures for donning a Level C ensemble. These procedures should be modified depending on the particular type of suit and/or when extra gloves and/or boots are used.

- Doffing an Ensemble

Exact procedures for removing Level C ensembles must be established and followed to prevent contaminant migration from the work area and transfer of contaminants to the wearer's body, the doffing assistant, and others. Doffing procedures are provided in TableBC.1.9.2. These procedures should be performed only after decontamination of the suited worker. They require a suitably attired assistant. Throughout the procedures, both worker and assistant should avoid any direct contact with the outside surface of the suit.

Respirator Fit Testing

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

Inspection

The PPE inspection program will entail five different inspections:

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

TABLE B.1.9.1
SAMPLE LEVEL C DONNING PROCEDURES

1. Inspect the clothing and respiratory equipment before donning (see Inspection in subsection C.1.7).

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

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

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

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

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

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

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

7. Depending on type of suit:

   – Put on inner gloves (surgical gloves).

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

8. Put on hard hat

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

TABLE C.1.9.2
DOFFING PROCEDURES

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

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

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

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

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

The inspection checklist is provided in Table B.1.9.3. Records will be kept of all inspection procedures. Individual identification numbers will be assigned to all reusable pieces of equipment and records should be maintained by that number. At a minimum, each inspection should record the ID number, date, inspector, and any unusual conditions or findings. Periodic review of these records may indicate an item or type of item with excessive maintenance costs or a particularly high level of down-time.

Storage

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

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

- Respirators: After each use air-purifying respirators will be dismantled, washed, and placed in sealed plastic bags.

PPE Maintenance

Specialized PPE maintenance will be performed only by the factory or an authorized repair person. Routine maintenance, such as cleaning, will be performed by the personnel to whom the equipment is assigned. Respirators will be cleaned at the end of each day with alcohol pads or, preferably, by washing with warm soapy water.

TABLE C.1.9.3
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, and/or malfunctioning closures.
- Hold up to light and check for pinholes.
- Flex product and observe for cracks or other signs of deterioration.
- If the product has been used previously, inspect inside and out for signs of chemical attack, including discoloration, swelling, and/or stiffness.

During the work task, periodically inspect for:

- Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.
- Indication of physical damage, including closure failure, tears, punctures, and/or seam discontinuities.

GLOVES

Before use:

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

AIR-PURIFYING RESPIRATORS

- Inspect air-purifying respirators before each use to be sure they have been adequately cleaned.
- Check material conditions for signs of pliability, deterioration, and/or distortion.
- Examine cartridges to ensure that they are the proper type for the intended use, the expiration date has not been passed, and they have not been opened or used previously.
- Check faceshields and lenses for cracks, crazing, and/or fogginess.
- Air-purifying respirators will be stored individually in resealable plastic bags.

Decontamination Methods

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

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

B.2 Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) will be implemented at the Site by FPM during the intrusive IRM activities, including soil removal, mitigation well installation, and sampling. Due to the nature of the contaminants at the Site, there is a potential for organic vapor emissions as these activities occur. In addition, there is the potential for dust to be associated with intrusive activities. To address these concerns, organic vapor monitoring and dust monitoring will be performed. It should be noted that interior mitigation well work will be performed while the facility is closed.

Any CAMP monitoring results that exceed the action levels described below will be reported (or notice provided by another arrangement acceptable to the NYSDEC) when identified if a NYSDEC representative is present at the Site or within two hours by phone call or email to the NYSDEC Project manager when no NYSDEC representative is onsite. Exceedances of the CAMP action levels will also be summarized in the monthly progress reports, including the duration of the exceedance(s) and any response actions taken. Results of CAMP monitoring activities related to the excavation of the drywell will be provided weekly to the NYSDOH.

B.2.1 Organic Vapor Monitoring

Under the CAMP, organic vapor concentrations will be monitored at the boundaries of the work zone. It will be the responsibility of the HSO to implement the plan and to ensure that proper action is taken in the event that any of the established action levels are exceeded.

To monitor organic vapors, a PID capable of calculating 15-minute running average concentrations will be used and maintained in good operating condition. Calibration of the PID will be performed according to manufacturer's instructions. Background levels of organic vapors will be measured at the work zone boundary prior to beginning work and upwind of the work area periodically using a PID. Monitoring may be performed more frequently at the discretion of the HSO. Organic vapors will be monitored continuously at the downwind perimeter of the work area during ground intrusive activities.

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

recorded in the log whenever the level reaches 5 ppm above the background along with the action(s) taken to mitigate the level. If the level of organic vapors exceeds 5 ppm above the background at the downwind perimeter of the work area, work activities will be halted and monitoring continued. The vapor emission response plan will then be implemented.

B.2.1.1 Vapor Emission Response Plan

The vapor emission response plan includes the following trigger levels and responses:

- Odor complaints:

  In the event that odor complaints are received in association with work, the complaint will be included in the daily log and activities will be halted and monitoring continued. If odors decrease, work activities will resume but organic vapor readings will be obtained more frequently as directed by the HSO. If odors persist, work will be halted until site conditions (i.e. wind, decreased odors) allow for work to resume. If odors remain persistent other measures will be applied to reduce odors including the application of odor blocking foam.

- For work conducted inside the building:

  Indoor air will be monitored for organic vapors prior to commencement of work to establish background levels within the facility. These background levels will be utilized for comparison to organic vapor monitoring performed during work activates. If organic vapors inside the building during work activities exceed 1 ppm above background levels, activities will be halted and monitoring continued. If the organic vapor levels decrease to below 1 ppm above background, work activities can resume. If vapors do not decrease then other measures will be applied to reduce odors including the application of active venting ducts to the exterior or vapor barrier around the work area.

- Greater than 5 ppm at exterior perimeter work zone:

  If organic vapors exceed 5 ppm above the background at the downwind perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level then decreases to below 5 ppm above background, work activities can resume but organic vapor readings will be obtained more frequently as directed by the HSO.

- 5 ppm to 25 ppm at perimeter and less than 5 ppm at the exterior work zone boundary:

  If the level of organic vapors is greater than 5 ppm but less than 25 ppm over background at the downwind perimeter of the work area, activities will be halted, the source of the vapors will be identified and corrective actions will be taken. Monitoring will be continued and activities will resume if the organic vapor concentration at half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background. More frequent intervals of monitoring will be performed as directed by the HSO.

- Above 25 ppm at the exterior work perimeter:

  If organic vapors exceed 25 ppm at the perimeter of the work area, activities will be ceased and the downwind area will be continually monitored to confirm that vapor concentrations reduce. If vapor concentrations continue above 25 ppm for 15 minutes, the excavation or slab opening will be covered with plastic to block vapor migration. Downwind air monitoring will continue as

directed by the HSO to confirm that organic vapor concentrations decrease. Actions will be taken to abate the source of vapor emissions and activities will not resume until the source is controlled.

B.2.1.2 Major Vapor Emission Response Plan

The Major Vapor Emission Response Plan shall automatically be placed into effect if:

- Efforts to abate the emission source are unsuccessful and levels above 5 ppm persist for more than 30 minutes in the 20-foot zone; or
- The vapor levels are greater than 10 ppm above background in the 20-foot zone.

Upon activation of the Major Vapor Emission Response Plan, the following activities will be undertaken:

- All emergency response contacts as listed in the HASP will be notified;
- Air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two successive readings below action levels are measured, air monitoring will be halted or modified as directed by the HSO; or
- If air monitoring readings remain above action levels, work will be halted and further measures taken to reduce organic vapors.

If a Major Vapor Emission Response Plan is implemented, the NYSDEC and NYSODH will be contacted within 24 hours.

B.2.2 Dust Monitoring

Dust (particulate) monitoring will be performed during soil remediation and well installation intrusive activities with the potential to create dust by using a Miniram personal monitor calibrated according to the manufacturer's instructions. The Miniram will be capable of calculating 15-minute running average concentrations and operated continuously at the downwind perimeter of the work zone during ground intrusive activities. To ensure the validity of the fugitive dust measurements, appropriate QA/QC measures will be employed, including periodic instrument calibration, operator training, daily instrument performance (span) checks, and record-keeping on daily log sheets. If measurable dust levels are noted, then readings will also be obtained upwind of the work zone. If the downwind particulate level exceeds the upwind level by more than 100 micrograms per cubic meter (ug/m^3), then dust suppression techniques will be employed or work will be halted or controlled such that dust levels are reduced at the downwind perimeter to within 150 ug/m^3 of the upwind level.

If dust is generated during work activities, then dust suppression will be performed, as discussed in Section B.1.6 of this HASP. Corrective measures may include increasing the level of PPE for onsite personnel and implementing additional dust suppression techniques. Should the action level of 150 $\mu g/m^3$ continue to be exceeded, work will stop and the NYSDEC will be notified as described in Section B.2 above. The notification will include a description of the control measures implemented to prevent further exceedances.

Reasonable fugitive dust suppression techniques will be employed during all intrusive Site activities that may generate fugitive dust. Particulate (fugitive dust) monitoring will be employed during the handling of contaminated soil or when onsite activities may generate fugitive dust from exposed contaminated soil.

Fugitive dust from contaminated soil that migrates offsite has the potential for transporting contaminants offsite. Although there may be situations when the monitoring equipment does not measure dust at or above the action level, visual observation may indicate that dust is leaving the Site. If dust is observed leaving the working area, additional dust suppression techniques will be employed.

The following techniques have been shown to be effective for controlling the generation and migration of dust during intrusive investigation activities and will be used as needed during investigation activities at the Site:

- Wetting equipment and exposed soil;
- Restricting vehicle speeds to 10 mph;
- Covering areas of exposed soil after investigation activity ceases; and
- Reducing the size and/or number of areas of exposed soil.

When techniques involving water application are used, care will be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will be considered to prevent overly wet conditions, conserve water, and provide an effective means of suppressing fugitive dust.

Evaluation of weather conditions is also necessary for proper fugitive dust control. When extreme wind conditions may make dust control ineffective, investigation actions may be suspended until wind speeds are reduced.

B.2.3 Noise Monitoring

Due to the use of heavy equipment, there is a potential for noise to impact the surrounding community. Work will be performed only during normal working hours when ambient noise levels are elevated due to ongoing activities in the surrounding community, which is primarily urban and commercial. Therefore, the potential for noise impacts on the surrounding community is low.

However, if pedestrians are present in the Site vicinity, it is possible for noise impacts to occur. To address these concerns and other safety concerns, pedestrians will be barred from entering the work zone. In addition, the HSO will periodically monitor noise levels at the work zone boundary and the closest property boundary with a Realistic^{tm} hand-held sound level meter. Noise levels will be monitored in dBs in the A-weighted, slow-response mode. If noise level readings exceed an eight-hour time-weighted average of 85 dB at the work zone boundary or at the closest property boundary, the HSO will take appropriate measures to reduce noise exposure beyond these boundaries. These measures may include extension of the work zone boundary, issuing appropriate hearing protection devices as discussed in Section C.1.6 of this work plan, or other measures, as appropriate. In the event that the noise exposure measures are inadequate, work will cease until noise levels can be reduced to below 85 dB at the work zone boundary and/or at the closest property boundary.

APPENDIX C

DEPRESSURIZATION FAN SPECIFICATIONS

FR 160 CENTRIF. INLINE FAN

Item no. 411335

Document type: **Product card**
Document date: **2017-05-12**
Generated by: **Systemair Online Catalogue**

Description

- The FR series includes 9 fan model sizes with airflow capacities between 150 and 650 cfm
- Vibration welded seam (sizes FR 100 thru FR 160) ensures leak proof housing
- Adhesive caulk joins and seals the housing for sizes FR 200 thru FR 250
- 100% speed-controllable
- Air stream temperatures up to 140 °F

Application
The FR Series is a versatile inline duct fan. These models can be used for multiple point exhaust, residential and commercial applications, crawl space venting or make-up air supply. They are also widely used as booster fans to move air from one room or area to another. These models are not designed for nor should be used in radon applications.
Design
The fans feature a fully sealed plastic housing.
The housing for model sizes FR 100 thru FR 160 is joined via a vibration welding process. The process uses transverse, reciprocating motion at the point of contact between the housing's inlet and outlet pieces. The friction produces heat that melts the thermoplastic material at the interface. The melted material quickly re-solidifies, resulting in a fused, single-piece housing. The fused seam is inherently air tight, very strong and permanent.
The housing for model sizes FR 200 thru FR 250 is joined and sealed via an adhesive caulk.
An air-tight fan ensures that efficiency is not lost and contaminants are not spilled due to leakage.
The fan can be mounted in outdoor and wet locations. The FR Series features external rotor motors that have proven dependable year after year.
A large electrical wiring enclosure is designed into the fan housing, making electrical installation easier.
Motor protection
Thermal overload protected with automatic reset. The fans can be controlled via a solid state speed controller.

Technical parameters

Nominal data		
Voltage	120	V
Frequency	60	Hz
Phase	1	~
Input power (P1)	116	W
Current	0.99	A
Max. airflow	341	cfm
Fan impeller speed	2296	r.p.m.
Weight	8	lbs.

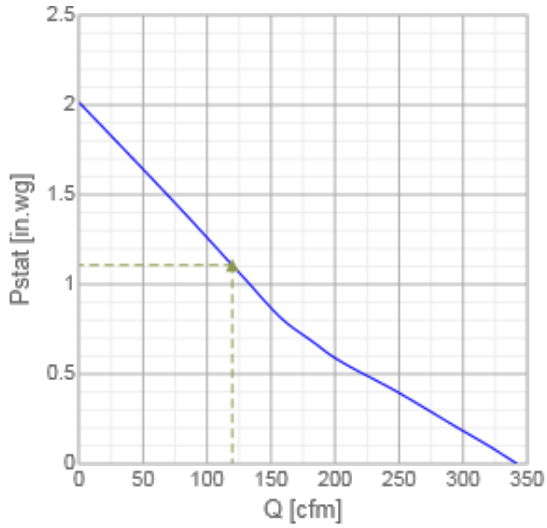
Temperature data		
Max. temperature of transported air	140	°F

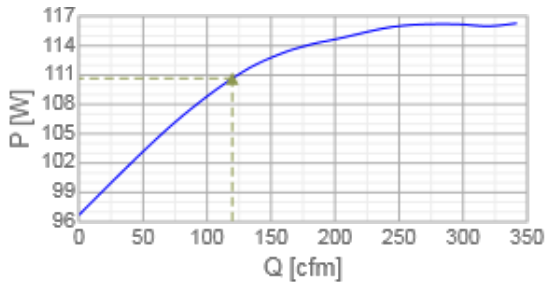
Protection / Classification		
Insulation class	B	
Enclosure class, motor	IP44	IP

EPS diagrams

Performance

Diagrams





Hydraulic data

	Working point						
	Q [cfm]	Ps [in.wg]	P [W]	n [r.p.m.]	I [A]	SFP [W/(cfm)]	U [V]
Max efficiency	120	1.11	111	2538	0.941	0.924	120

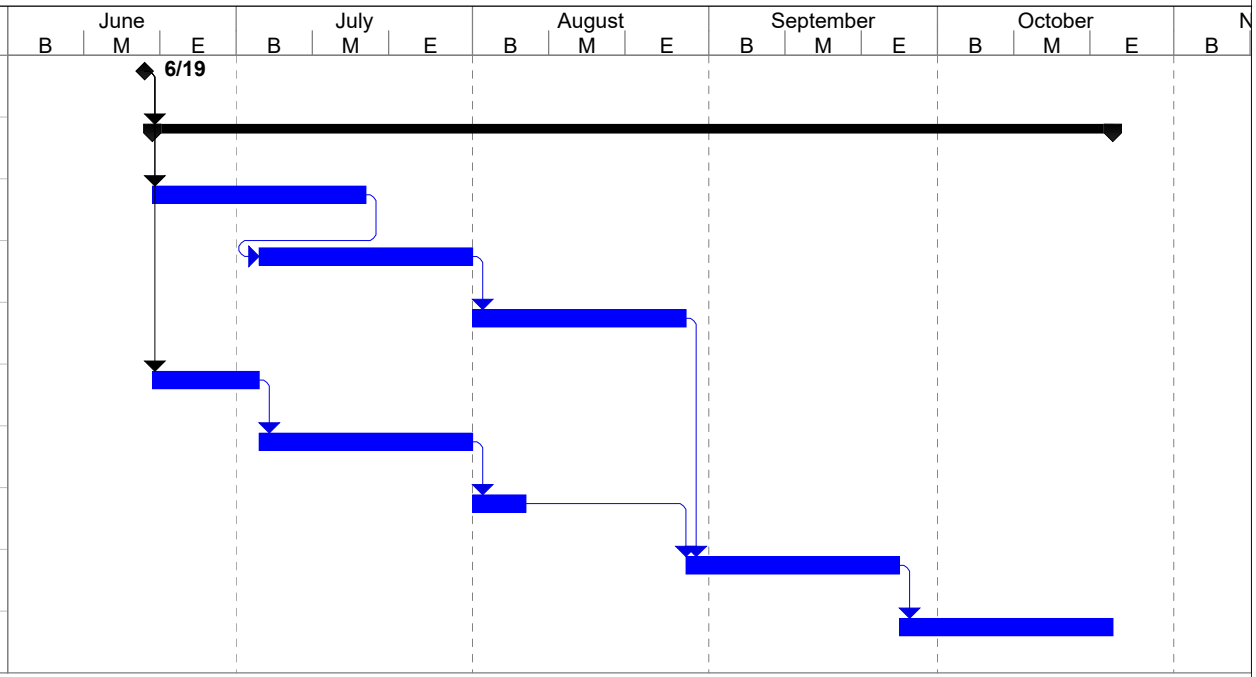
Dimensions

APPENDIX C

SCHEDULE OF ACTIVITIES

IRM SCHEDULE
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

ID	Task Name
1	NYSDEC approval of IRM Work Plan
2	**IRM Work**
3	LP-21 Remediation
4	LP-21 Confirmatory Sample Analysis
5	Confirmatory Sample DUSR Preparation
6	Install DP-1 Mitigation Well and Monitoring Points
7	Install DP-1 Piping, Fan & Electrical
8	Start DP-1 Fan & Conduct Monitoring
9	Prepare IRM Report and Internal Review
10	NYSDEC Review of IRM Report



Project: IRMschedulerev2
Date: Thu 5/18/17

Task		External Milestone		Manual Summary Rollup	
Split		Inactive Task		Manual Summary	
Milestone		Inactive Milestone		Start-only	
Summary		Inactive Summary		Finish-only	
Project Summary		Manual Task		Progress	
External Tasks		Duration-only		Deadline	