DECISION DOCUMENT

Alert Fire Company Site
Voluntary Cleanup Program
Great Neck, Nassau County
Site No. V00522
March 2013

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - DECISION DOCUMENT

Alert Fire Company Site
Voluntary Cleanup Program
Great Neck, Nassau County
Site No. V00522
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Statement of Purpose and Basis

This document presents the remedy for the Alert Fire Company Site site, a voluntary cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and applicable guidance.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Alert Fire Company Site site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the remedy are as follows:

1) A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials; and
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

2) Installation of an in-situ air sparging and soil vapor extraction (AS/SVE) system, soil vapor intrusion testing and additional soil vapor intrusion mitigation measures if required.

Air sparging is an in-situ technology used to treat groundwater contaminated with volatile organic compounds (VOCs). The process physically removes contaminants from the groundwater by injecting air into a well that has been installed into the groundwater. As the injected air rises through the groundwater it volatilizes the VOCs from the groundwater into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the

ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system pulls a vacuum on wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then run through activated carbon which removes VOCs from the air before it is discharged to the atmosphere.

At this site, eight air injection wells would be installed in the portion of the site to be treated to a depth of approximately 40 feet for four shallow wells and 80 feet for four intermediate wells, which are 20 feet and 60 feet below the water table respectively. To capture the volatilized contaminants, two SVE wells would be installed in the vadose zone at a depth of approximately 15 feet below ground surface. The air containing VOCs extracted from the SVE wells would be treated with activated carbon. Other AS/SVE system components will include a regenerative blower, one or more air compressors, a moisture separator, an air cooler, and two vapor phase carbon filters set in series. Additional AS and/or SVE wells can be added, if necessary.

The AS/SVE system is proposed to remediate on-site groundwater contamination and the system is expected to control sub-slab soil vapor beneath the adjacent Fire House Building. After the AS/SVE system has been in operation for at least a month, additional soil vapor intrusion samples will be collected from the adjacent Fire House to assess whether additional soil vapor intrusion mitigation measures are warranted including a sub-slab depressurization system for the Fire House.

3) Imposition of an institutional control in the form of a deed restriction for the controlled property that:

a. requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

b. allows the use and development of the controlled property for restricted commercial excluding day care, child care and medical use and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

c. restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYS Department of Health (DOH) or Nassau County DOH;

d. prohibits agriculture or vegetable gardens on the controlled property; and

e. requires compliance with the Department approved Site Management Plan.

4) A Site Management Plan is required, which includes the following:

a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Deed Restriction discussed in Paragraph 3 above.

Engineering Controls: The AS/SVE system and soil vapor intrusion mitigation measures discussed in Paragraph 1 above.

This plan includes, but may not be limited to:

i. an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

ii. descriptions of the provisions of the deed restrictions including any land use, and/or groundwater and/or surface water use restrictions;

iii. a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, on the adjacent Alert Fire Company property, and if the use of on-site garage changes in the future, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

iv. provisions for the management and inspection of the identified engineering controls;

v. maintaining site access controls and Department notification; and

vi. the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

i. monitoring of the groundwater and soil vapor to assess the performance and effectiveness of the remedy;

ii. a schedule of monitoring and frequency of submittals to the Department; and

iii. monitoring for vapor intrusion for any buildings occupied or developed on-site, on the adjacent Alert Fire Company property, and if the use of on-site garage changes in the future.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protected of public health and the environment.

March 22, 2013

Date

James Harrington, P.E., Director
Remedial Bureau A

DECISION DOCUMENT

Alert Fire Company Site
Great Neck, Nassau County
Site No. V00522
March 2013

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The Voluntary Cleanup Program (VCP) is a voluntary program. The goal of the VCP is to enhance private sector cleanup of brownfields by enabling parties to remediate sites using private rather than public funds and to reduce the development pressures on "greenfields." This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. No comments were received. Site-related reports and documents were made available for review by the public at the following document repository:

Great Neck Public Library
159 Bayview Avenue
Great Neck, NY 11023
Phone: 516-466-8055

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at

http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Site Location: Alert Fire Company (AFC) site is located at 140 Steamboat Road in Great Neck, Town of North Hempstead, Nassau County. The surrounding properties are used for mostly residential use with some commercial activities. Properties to the north of the site include the Kings Point Indoor Tennis facility (143 Steamboat Road), an open lot owned by AFC and used for parking, and a private residence (139 Steamboat Road), with a detached garage used for undetermined commercial purposes. Properties to the south include private residences that front on Potters Lane. The property to the east, bordered by Steamboat Road to the north and Potter Lane to the south, is owned by the United Mashadi Jewish Community of America, Inc., and was recently developed as a religious center. Immediately west of the Site is the AFC Engine Hook Ladder and Hose Company No. 1 Firehouse. Further west are residential properties that front on Morris Lane to the west. A tributary to Mitchells Creek, which flows to the Manhasset Bay, is located approximately 750 feet north of the site.

Site Features: The site is an approximately 7,100-square foot property. Currently the site is vacant with the exception of a two-story, 750 square foot garage on slab located in the southern portion of the property. The remainder of the site consists of an open grass covered area.

Current Zoning/Use(s): The property is zoned for commercial use which is used by AFC as a garage and storage space. The surrounding properties are used for residential and commercial activities.

Historical Use(s) and source(s) of Contamination: Prior to 1988, Pristine Cleaners occupied the site with the main building used for dry cleaning operations and offices, and the garage used for storage. Perchlorethylene (PCE) was used at the site. During Phase I Site Assessment, a five-gallon pail recessed into the ground in the southern portion of the main building was identified and may have been used for drainage purposes. Two subsurface drainage structures or drywells (DW-1 and DW-2) were identified during geophysical survey. A pipe connected the two drywells, such that water could flow from one drainage structure to the other. A second pipe connected to DW-2 was traced back to point near the northwest corner of the former dry cleaning building. The pipe was suspected to have been a roof drain from the former building or a surface drain from a paved area on the north side of the former building.

In 2009, an interim remedial measure (IRM) for soils was completed for source removal. Approximately 74 tons of PCE-impacted soils and 27 tons of SVOC-impacted soils were removed and disposed of off-site at a permitted facility.

Site Geology/Hydrogeology: The topography of the site is relatively flat with a slight slope downward to the north toward Steamboat Road. The Upper Glacial aquifer, consisting of highly permeable sand and gravel with occasional thin clay beds. The water table is encountered on-site approximately 18 feet below grade surface. The regional groundwater flow direction in the area of the site is toward the west-southwest. With few exceptions, the site-specific groundwater flow direction is consistent with the regional groundwater flow toward the west-southwest. The local

potable water supply is the underlying groundwater. A public supply well (Water Authority of Great Neck well No.7/NYSDEC Well No. N-002214) is located downgradient and within 600 feet southwest of the site on the west side of Morris Lane. Public supply well No. 7 is screened at a depth between 234 and 285 feet below grade surface and it is used seasonally in summer during periods of high water demand. The most recent sampling of well No.7 conducted in August 2012 did not detect site related contaminants.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, at a minimum, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in DER-10, Technical Guidance for Site Investigation and Remediation were/was evaluated.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The voluntary cleanup agreement is with a Volunteer. If the Volunteer elects not to complete the remedial program under the VCP, the Department will make a determination if the site poses a significant threat to human health and the environment. If the site is determined to pose a significant threat, the Department will approach the potentially responsible parties (PRPs) to implement the remedy. PRPs are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The volunteer is a non-PRP innocent owner.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess

groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- air
- groundwater
- soil
- sediment
- soil vapor
- indoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

TETRACHLOROETHYLENE (PCE)	BENZO[K]FLUORANTHENE
BENZO(A)PYRENE	DIBENZ[A,H]ANTHRACENE
BENZO(B)FLUORANTHENE	indeno(1,2,3-cd)pyrene
BENZ(A)ANTHRACENE	Chrysene

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater

- soil
- soil vapor intrusion
- indoor air

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM

Based on the RI results, an interim remedial measure (IRM) was implemented to remove the PCE impacted soils in the source area located in the central section of the site and the SVOC impacted soils in the drywells and at the pipe terminus leading to drywell No. 2. Prior to implementing the IRM, additional soil borings were conducted in and around the source area to define the extent of PCE-impacted soils. PCE concentrations ranged from non-detectable to 8,800 ppm. An IRM was completed in 2009. Approximately 74 tons of PCE-impacted soils above SCOs of 1.4 ppm were excavated and disposed of as hazardous waste and approximately 27 tons of SVOC impacted soils were excavated and disposed of as a non-hazardous waste. Confirmatory endpoint sampling results showed two compounds chrysene and benzo(b)fluoranthene slightly above the unrestricted use SCOs (1100 ppb and 1200 ppb respectively vs 1000 ppb)and only one compound chrysene, slightly exceeded the protection of groundwater SCOs (1100 ppb vs 1000 ppb). Upon completing the soil removal, the excavation was backfilled with clean soil.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination: Based upon investigations conducted to date, the primary contaminants of concern (COC) at the site are volatile organic compounds (VOCs) such as tetrachloroethene (PCE) and some semi-volatile organic compounds (SVOCs). PCE was detected at elevated levels in the on-site soils, on-site and off-site groundwater and in soil vapor on-site and off-site.

Nature and Extent of PCE-Impacted Soil Vapors:
A Soil vapor investigation was conducted at on-site and off-site properties in six phases. Soil vapors in the central portion of the site beneath the former dry cleaning building contained PCE

levels as high as 30,000,000 ug/m3 at 5 feet below grade during the first phase of sampling. This area of the site was suspected to be the primary source area for the PCE-impacted soils.

In 2005, PCE was detected at concentrations ranging from 4.7 ug/m3 to 3,600,000 ug/m3 in soil vapors along the perimeter of the site and at 190 ug/m3 in the indoor air sample from the basement of the adjacent firehouse. To the east, PCE was detected at 31,000 ug/m3 within 50 feet of the site but was non-detectable 90 feet east of the site. PCE concentrations were significantly lower northwest and northeast of the site. PCE was detected in the sub-slab soil vapor sample and indoor air sample collected from the on-site garage at 8,100 ug/m3 and 23 ug/m3 respectively. PCE was detected in the sub-slab soil vapor sample collected from beneath the adjacent firehouse basement floor at 640,000 ug/m3. PCE was detected in the indoor air samples from the firehouse basement, first floor and second floor at 2,000 ug/m3, 44 ug/m3 and 20 mg/m3 respectively. PCE concentrations were significantly lower northwest and northeast of the site at concentrations of 12 ug/m3 and 1.4 ug/m3 respectively.

In 2006, PCE was detected at 1,900 ug/m3 in the sub-slab soil vapor sample and 3.3 ug/m3 in the indoor air in the basement a residential property located approximately 75 feet southwest of the site. AFC has since acquired this residential property. AFC intends to demolish the residence and construct a garage on the property. The residence is presently vacant and will remain vacant until it is demolished to allow for the construction of the new garage facility. PCE and its breakdown products were non-detectable in both indoor air samples collected from the basement and the first floor of the religious center located approximately 140 feet east of the site. In 2009, PCE was detected in the sub-slab soil vapor sample at concentrations of 8.94 ug/m3 and in the indoor air at concentrations of 2.71 mg/m3 from the Morris Lane residence. PCE was detected in the sub-slab vapor sample at concentrations of 27.8 ug/m3 and in the indoor air at concentrations of 0.934 ug/m from the Potters Lane residence. Based on the PCE concentrations detected in the sub-slab vapors and indoor air samples, it is not necessary to monitor or implement mitigating measures but reasonable and practical actions should be taken to identify the source and reduce exposures.

In January 2010, PCE was detected at 861,000 ug/m3 in the sub-slab soil vapor sample and at 230 ug/m3 in the indoor air from the basement of an adjacent firehouse.

Based on data collected during the multiple rounds of soil vapor testing, soil vapors with PCE concentrations in excess of 100 ug/m3 are estimated to extend approximately 200 feet west of the site and approximately 130 feet south of the site and less than 75 feet east of the site and less than 50 feet north of the site.

Nature and Extent of Impacted Soils:
Site assessments conducted prior to entering in VCA agreements revealed on-site soils impacted with PCE (non-detectable to 280,000 ppb) and SVOCs (77 to 6,600 ppb).
During the RI, soil samples were collected from soil borings located throughout the site, from two storm water drywells located in the northern portion of the site and from a 550-gallon heating oil underground storage tank (UST) excavation. The maximum concentration of PCE detected in the on-site soil was 7,500 ppm well above the SCOs of 1.4 ppm at 9-9.5 feet below grade in the central section of the site.

Elevated concentrations of SVOCs were detected in soil samples collected from drywell No.1, drywell No.2 and southwest terminus of a pipe that drained into drywell No.2. SVOCs were non-detect in the endpoint samples collected from the heating oil UST excavation. SVOCs compounds exceeding their respective SCOs included benzo(a) anthracene (maximum concentration of 11 ppm), benzo (b) fluoranthene (maximum concentration 8.3 ppm), benzo(k) fluoranthene (maximum concentration 7.8 ppm), benzo (a) pyrene (maximum concentration 9.2 ppm), indeno (1,2,3-cd) pyrene (maximum concentration 5.9 ppm), chrysene (maximum concentration 11 ppm) and dibenzo (a,h) anthracene (2.4 ppm) were detected in northern portion of the site in soils and drywell sediments. With the exception of chromium (52 ppm) , nickel (46.7 ppm) and zinc (59.5 ppm) in the soil samples and copper (66.2 ppm) and zinc (242 ppm) in the drywell sediment samples, all other TAL metals were non-detectable or present at concentrations below their respective SCOs. Pesticides and PCBs were non-detect or present at concentrations below their respective SCOs in all soil samples and drywell sediments.

Nature and Extent of Impacted Groundwater:
Groundwater investigation activities conducted during the RI included: sampling the shallow groundwater during the soil boring program, sampling of an on-site vertical profile boring at varying depths, sampling of shallow groundwater off-site using temporary well points and sampling of nested on-site monitoring wells. PCE concentrations ranged from 12 ppb to 2700 ppb in the vertical profile boring. PCE concentrations decreased with depth. Based on the results of the vertical profile boring, nested groundwater monitoring wells were installed. In 2005 PCE concentrations in the on-site monitoring wells ranged from 6 ppb to 15,000 ppb which is above the Department's Ambient Water Quality Standards and Guidance Values of 5 ppb. The highest PCE concentrations were detected in shallow monitoring wells located immediately downgradient of the PCE source area. In 2006, PCE concentrations in off-site groundwater samples collected from five temporary well points during the soil vapor investigation ranged from non-detect to 41 ppb. The highest concentration was detected in a temporary well point located approximately 150 feet southwest of the site.

During the 2010 sampling round, PCE concentrations in the on-site monitoring wells ranged from non-detectable to 20,000 ppb, and 1, 2 Dichloroethene ranged from non-detectable to 74 ppb and Trichloroethene ranged from non-detectable to 25 ppb.

During the 2012 sampling round, the PCE concentration detected was 2100 ppb in a shallow monitoring well and 210 ppb in an intermediate monitoring well. PCE concentrations in most on-site monitoring wells are trending downward. This would be consistent with the removal of the PCE source during the 2009 IRM. Trace amounts (1 to 3ppb) of bis –ethylexyl) phthalate were detected in one or more wells, below the ambient groundwater standard of 5 ppb. Pesticides and PCBs were non-detectable in all shallow groundwater samples. Except for iron, manganese and sodium, all TAL metals and cyanide were non-detectable or present at concentrations below their respective Ambient Water Quality Standards and Guidance Values required by the Department.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the one on-site building is not regularly occupied, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. The potential exists for people to inhale site-related contaminants via soil vapor intrusion in two off-site buildings on adjacent parcels. One building is vacant and the other building is not occupied on a regular basis; therefore, inhalation of site-related contaminants is not a concern in buildings in their current condition. An evaluation of the potential for soil vapor intrusion to occur will be completed should the current use of the site, and/or use of the adjacent impacted buildings or parcels change.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation.

The selected remedy is referred to as the Air Sparge/SVE and Soil Vapor Intrusion Mitigation Measures remedy.

The elements of the selected remedy, as shown in Figure 2, are as follows:

1) A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials; and
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

2) Installation of an in-situ air sparging and soil vapor extraction (AS/SVE) system, soil vapor intrusion testing and additional soil vapor intrusion mitigation measures if required.

Air sparging is an in-situ technology used to treat groundwater contaminated with volatile organic compounds (VOCs). The process physically removes contaminants from the groundwater by injecting air into a well that has been installed into the groundwater. As the injected air rises through the groundwater it volatilizes the VOCs from the groundwater into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system pulls a vacuum on wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then run through activated carbon which removes VOCs from the air before it is discharged to the atmosphere.

At this site, eight air injection wells would be installed in the portion of the site to be treated to a depth of approximately 40 feet for four shallow wells and 80 feet for four intermediate wells, which is 20 feet and 60 feet below the water table respectively. To capture the volatilized contaminants, two SVE wells would be installed in the vadose zone at a depth of approximately 15 feet below ground surface. The air containing VOCs extracted from the SVE wells would be treated with activated carbon. Other AS/SVE system components will include a regenerative blower, one or more air compressors, a moisture separator, an air cooler, and two vapor phase carbon filters set in series. Additional AS and/or SVE wells can be added, if necessary.

The AS/SVE system is proposed to remediate on-site groundwater contamination and the system is expected to control sub-slab soil vapor beneath the adjacent Fire House Building. After the AS/SVE system has been in operation for at least a month, additional soil vapor intrusion samples will be collected from the adjacent Fire House to assess whether additional soil vapor intrusion mitigatation measures are warranted including a sub-slab depressurization system for the Fire House.

3) Imposition of an institutional control in the form of a deed restriction for the controlled property that:

a. requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

b. allows the use and development of the controlled property for restricted commercial excluding day care, child care and medical use and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

c. restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYS Department of Health (DOH) or Nassau County DOH;

d. prohibits agriculture or vegetable gardens on the controlled property; and

e. requires compliance with the Department approved Site Management Plan.

4) A Site Management Plan is required, which includes the following:

a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Deed Restriction discussed in Paragraph 3 above.

Engineering Controls: The AS/SVE system and soil vapor intrusion mitigation measures discussed in Paragraph 1 above.

This plan includes, but may not be limited to:

i. an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

ii. descriptions of the provisions of the deed restrictions including any land use, and/or groundwater and/or surface water use restrictions;

iii. a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, on the adjacent Alert Fire Company property, and if the use of on-site garage

changes in the future, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

iv. provisions for the management and inspection of the identified engineering controls;

v. maintaining site access controls and Department notification; and

vi. the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

i. monitoring of the groundwater and soil vapor to assess the performance and effectiveness of the remedy;

ii. a schedule of monitoring and frequency of submittals to the Department; and

iii. monitoring for vapor intrusion for any buildings occupied or developed on-site, on the adjacent Alert Fire Company property, and if the use of on-site garage changes in the future.

FIGURE 1

<u>LOCATION MAP</u>
<u>ALERT FIRE COMPANY</u>
<u>140 STEAMBOAT ROAD</u>
<u>GREAT NECK, NEW YORK</u>

SCALE: 1"= 2000'

H2MGROUP ENGINEERS · ARCHITECTS PLANNERS · SCIENTISTS · SURVEYORS
MELVILLE, N.Y. TOTOWA, N.J.

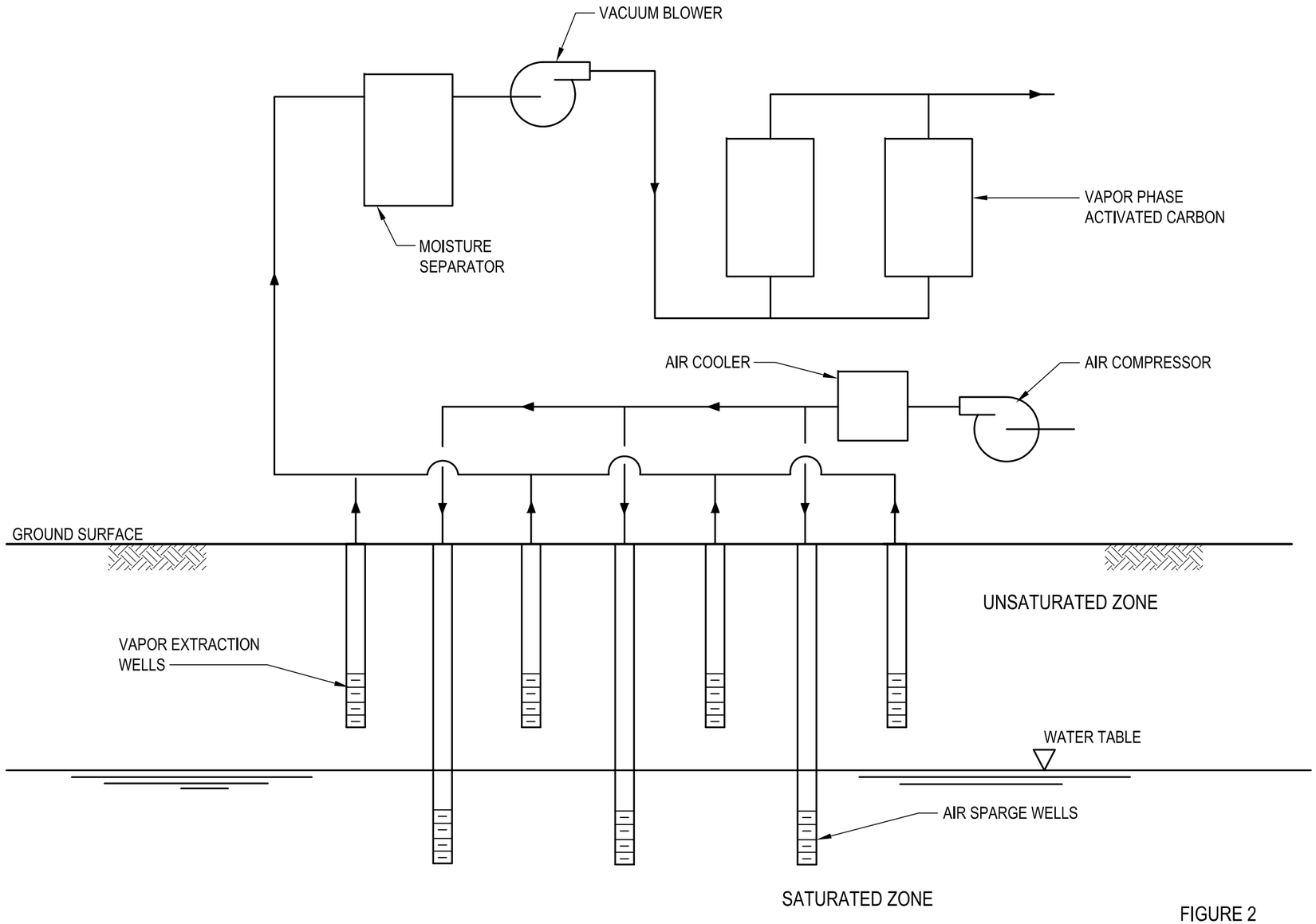

FIGURE 2

AS/SVE Process Schematic

NTS

CLIENT **ALERT FIRE COMPANY** 140 STEAMBOAT ROAD GREAT NECK, NEW YORK TOWN OF NORTH HEMPSTEAD, NASSUA COUNTY, NEW YORK	PROJECT #: ALFC 1001 DATE: February 2011	H2M architects + engineers Melville, NY Parsippany, NJ

M:\cadd\ALFC\1001\FIGURE 6.2.dwg Last Modified: Oct 09, 2012 - 3:15pm Plotted on: Oct 16, 2012 - 8:14am By jnb