PROPOSED REMEDIAL ACTION PLAN

Former Loudon and Kem Cleaners
State Superfund Project
Albany, Albany County
Site No. 401060
January 2015

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Albany Public Library - Main Library
Attn: Reference Desk
161 Washington Avenue
Albany, NY 12210
Phone: (518) 427-4310

A public comment period has been set from:

January 30, 2015 to February 28, 2015

A public meeting is scheduled for the following date:

February 9, 2015 at 4:00 PM

Public meeting location:

Albany Public Library - Main Branch
161 Washington Avenue
Albany, NY 12110

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through February 28, 2015 to:

Ralph Keating
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
ralph.keating@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

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

LOCATION: Former Loudon and Kem Cleaners site is located at 350 Northern Boulevard in an urban area in the northern section of the City of Albany, NY. The site is northwest of Northern Boulevard, northeast of Albany-Shaker Road, east of Old Hickory Road, and southwest of Loudonville Road (Route 9).

SITE FEATURES: The site area is approximately 3.9 acres and is developed with an L-shaped retail building (strip mall). The building contains many separate businesses that operate in the single-story portion of the building and a three story office building located in the center of the building. The remainder of the site is parking for the businesses and office.

CURRRENT ZONING AND LAND USE: The site is currently zoned commercial and most of the tenant spaces in the strip mall are currently occupied. The surrounding parcels include an apartment complex to the north, west, and southeast, a hospital to the south, and a major highway and golf course to the east and northeast. The nearest residence is located approximately 0.25 miles to the west of the site.

PAST USE OF THE SITE: Two separate addresses/tenant spaces were occupied by dry cleaners (known as Loudon Dry Cleaners, Kem Cleaners and possibly other names) that used tetrachloroethene (Perc, PCE) from approximately 1954 to 1997. The current dry cleaner business, Kem Cleaners converted to 'drop-off service only' in 1997.

SITE GEOLOGY AND HYDROGEOLOGY: The overburden geology consists of varied medium to fine sands, silts, and clays. The depth to groundwater varies across the investigation area from 13 to 27 feet below ground surface (13-20 feet bgs on-site and up to 27 feet bgs off-site). The ground water flow direction is to the southeast.

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, alternatives (or an alternative) that restrict(s) the use of the site to restricted residential use (which allows for commercial and industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (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 PRPs for the site, documented to date, include:

Sky Four Realty Company

Kem Cleaners/Greener Cleaners

Kem Cleaners

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- air
- groundwater
- soil
- 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. The tables found in Exhibit A list the applicable SCGs in the footnotes. 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 hazardous waste 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 in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

TETRACHLOROETHYLENE (PCE)	1,2-Dichloroethene
TRICHLOROETHENE (TCE)	VINYL CHLORIDE

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion

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 Record of Decision.

There were no IRMs performed at this site during the RI.

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.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

NATURE AND EXTENT OF CONTAMINATION:
Based on investigations conducted to date, the primary contaminants of concern (COC) for the site include the following chlorinated solvents: tetrachloroethene (PCE), trichloroethene (TCE), 1,2-dichloroethene (cis-DCE), and vinyl chloride (VC).

Soil: Only a few site-related COCs were detected above the protection of groundwater soil cleanup objectives (PGWSCOs)/unrestricted use SCOs (UUSCOs) as follows: PCE at 11.9 parts per million (ppm) vs. PGWSCO of 1.3 ppm, Cis-DCE at 0.44 ppm vs. PGWSCO of 0.25, and VC at 0.056 ppm vs. PGWSCO of 0.02 ppm. No metals, SVOCs, PCB/pesticides, or other VOCs were found above the unrestricted SCOs for soil. However, the number of subsurface samples for those parameters were limited. Site-related soil contamination is not expected to extend off-site based on the available data.

Groundwater: On-site groundwater standards were exceeded for VOCs including: PCE up to 650 parts per billion (ppb), TCE up to 36 ppb, and cis-1,2-DCE up to 190 ppb. At off-site locations, PCE was detected up to 5,100 ppb and TCE up to 140 ppb. The applicable groundwater standard for all of these compounds is 5 ppb. No metals, SVOCs, PCB/pesticides, or other VOCs were found above groundwater standards.

Soil Vapor and Indoor Air: Sub-slab soil vapor and indoor air data were collected from six (6) locations on-site and two (2) locations off-site. Based on the data, soil vapor was only a concern under the southeast portion of the on-site building, which contained both former dry cleaners. PCE was detected as high as 130,000 micrograms per cubic meter (ug/m3), with a corresponding indoor air concentration of 9.8 ug/m3, on-site. On-site trichloroethylene (TCE) was also detected in the soil vapor as high as 14,000 ug/m3, with a corresponding indoor air concentration being non detectable. The highest indoor air concentration for TCE was 0.68 ug/m3, on-site. Off-site soil vapor intrusion evaluations were performed on the hospital property and the adjacent apartment complex, and it was determined that no off-site structures require mitigation. At the hospital, the highest sub-slab PCE concentration was 1,800 ug/m3 with 2 ug/m3 in indoor air. Soil vapor samples were also collected outside of the hospital annex with PCE concentrations of 820 ug/m3 and 100 ug/m3. However, because the hospital slab is 3 feet thick and indoor air concentrations were so low, it was determined that no mitigation was required. At the adjacent apartments the sub-slab concentration was 1.5 ug/m3 and the indoor air concentration was 22 ug/m3, suggesting an indoor source rather than impacts from soil vapor intrusion.

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*.

Direct contact with contaminants in soil is unlikely because the majority of the site is covered with buildings and pavement. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by the 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. Soil vapor intrusion sampling identified impacts to southern half of the strip mall

building and actions are needed to address soil vapor intrusion. Sampling has indicated that actions are not needed to address soil vapor intrusion at existing off-site buildings. An evaluation for soil vapor intrusion to occur will be necessary should new buildings be built at the site or off-site in the portion of the property that is currently serving as a parking lot of the adjacent hospital.

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.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

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: SUMMARY OF THE PROPOSED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy

must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the FS report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Soil Vapor Extraction and possible SSDS with Focused Groundwater Treatment remedy.

The estimated present worth cost to implement the remedy is $1,410,000. The cost to construct the remedy is estimated to be $990,000 and the estimated average annual cost is $62,200.

The elements of the proposed remedy are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and 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 gases and other emissions;
• Increasing energy efficiency and minimizing use of non-renewable energy;
• Conserving and efficiently managing resources and materials;
• Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
• Maximizing habitat value and creating habitat when possible;
• Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
• Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Cover System
A site cover currently exists and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures

such as buildings, pavement, sidewalks and landscaped areas comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Soil Vapor Extraction (SVE)/Vapor Mitigation
SVE and, if necessary, a sub-slab depressurization system, will be implemented to remove VOCs (i.e., PCE and its associated daughter products) from the subsurface soils on-site, as well as to prevent vapors from migrating into the southern wing of the on-site building via soil vapor intrusion from impacted soil and groundwater beneath the building. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground surface but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well.

The air containing VOCs extracted from the SVE wells will be treated as necessary to remove VOCs from the air prior to it being discharged to the atmosphere. If the SVE systems do not remove sufficient quantities of soil vapor to prevent soil vapor intrusion into the on-site building, then a sub-slab depressurization system(s) (SSDS), or similar engineered system, will be installed in addition to the SVE systems to prevent the migration of vapor into the building from contaminated soil and groundwater.

4. In-Situ Chemical Oxidation (ISCO)
ISCO will be implemented to treat volatile organic compounds (e.g., PCE and its associated daughter products) in off-site groundwater in the area surrounding monitoring well MW-18, located southeast of the site where the highest PCE concentrations were observed. A chemical oxidant, potassium permanganate (KMnO4), will be injected directly into the subsurface to destroy the contaminants in the groundwater in this area. Groundwater monitoring will continue and inform the need, if any, for future injections.

5. Institutional Controls
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

• 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);
• allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
• restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
• requires compliance with the Department approved Site Management Plan.

6. Site Management
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 environmental easement discussed in Paragraph 5 above.

Engineering Controls: The SVE system and SSDS (if necessary) described in Paragraph 3 and the ISCO groundwater treatment system described in Paragraph 4 above.

This plan includes, but may not be limited to:

º an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
º a provision for further investigation to refine the nature and extent of contamination under the southern wing of the on-site building, where access was previously hindered if and when the building is demolished;
º a provision for removal and treatment of the source area located under the southern wing of the on-site building (if identified) if and when the on-site building is demolished;
º descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
º a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on-site or off-site, in the portion of the property that is currently serving as a parking lot for the adjacent hospital, and including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
º a provision for assessing the continued effectiveness of the building slab in minimizing the migration of soil vapor into the off-site hospital building. The contaminated off-site groundwater under the adjacent hospital parking lot will be treated, which is expected to result in a significant drop in groundwater and soil vapor concentrations in this area; these reductions will be confirmed with post-treatment sampling.
º provisions for the management and inspection of the identified engineering controls;
º maintaining site access controls and Department notification; and
º 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:

º monitoring of on-site and off-site soil vapor, indoor air and groundwater to assess the performance and effectiveness of the remedy;
º a schedule of monitoring and frequency of submittals to the Department; and
º monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

º compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting; and
º providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the RI for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Groundwater

The depth to groundwater varies across the investigation area from approximately 13 feet below ground surface (bgs) on the northeast side of the site to 20 feet bgs on the south side of the site, while off-site depths to groundwater have been observed as deep as 27 feet bgs. The groundwater flow direction in the vicinity of the site is to the southeast. Groundwater samples were collected from shallow monitoring wells (installed to a depth of 25 bgs) and deeper monitoring wells (installed to a depth of 45 feet bgs). The samples were collected to assess VOCs in groundwater on- and off-site; previous investigations indicated that chlorinated VOCs were the primary constituents of concern. The results indicate that contamination in the shallow and deep groundwater at the site exceeds SCGs for VOCs. The location of the monitoring wells and the detected concentrations are shown on Figure 2.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethylene	ND[c] -5,100	5	12 of 23
Trichloroethylene	ND - 140	5	4 of 23
trans-1,2-Dichloroethylene	ND - 6	5	1 of 23
cis-1,2-Dicholoethylene	ND - 890	5	3 of 23
Acetone	ND - 120	50	1 of 23

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).
c – non-detect.

The primary groundwater contaminants are tetrachloroethylene (PCE) and some of its daughter products (chemicals formed by the partial degradation of PCE including, trichloroethylene (TCE), and cis-1,2-dichloroethylene) (1,2-DCE)) associated with the former operation of the dry cleaning facilities at two locations in the Loudon Plaza. As shown on Figure 2, the primary groundwater contamination is found on the south side of the site near Northern Boulevard and also off-site to the southeast near the Loudon Arms apartments and also to the east in the portions of the doctor's parking lot of Memorial Hospital.

Based on the findings of the RI, the past disposal of hazardous waste from one or both of the former dry cleaners has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are:

Tetrachloroethylene (PCE) Trichloroethylene (TCE)
Cis-1,2-Dichloroethylene (cis-1,2-DCE)

Soil

During the operational history of the dry cleaners from 1954 to 1997, the site was covered with either structures, sidewalks or asphalt and a few open areas with grass and landscaping between the parking lot and Northern Boulevard. A significant number (38 samples) of subsurface soil samples were collected and analyzed for VOCs only at the site during the RI in an attempt to identify a source of PCE in the soils. Three additional soil samples were collected at a shallow depth of approximately two feet below surface (below the pavement). The soil samples were collected and analyzed based on screening criteria that suggested possible contamination and possible impacts to groundwater. The results indicate that only one sample location of the soils at the site exceed the unrestricted SCG for VOCs and none of the shallow soil locations exceeded any SCG for VOCs. The location of the soil borings and the detected concentrations are shown on Figure 3.

Table 2 – Subsurface Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b]/Protection of Groundwater SCG[c] (ppm)	Frequency Exceeding Unrestricted SCG	Frequency Exceeding Protection of Groundwater SCG	Restricted Residential Use SCG[d] (ppm)	Frequency Exceeding Restricted Residential SCG
VOCs						
Acetone	ND - 0.11	0.05	2 of 38	2 of 38	100	0 of 38
Tetrachloroethylene	ND-11.9	1.3	2 of 38	2 of 38	19	0 of 38
Cis-1,2-Dichloroethylene	ND - 0.44	0.25	1 of 38	1 of 38	100	0 of 38
Vinyl Chloride	ND – 0.056	0.02	1 of 38	1 of 38	0.9	0 of 38

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

d -SCG:Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Residential Use, unless otherwise noted.

Table 3 – Surface Soil – Three Surface Soil samples were collected.

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b]/Protection of Groundwater SCG[c] (ppm)	Frequency Exceeding Unrestricted SCG	Frequency Exceeding Protection of Groundwater SCG	Restricted Residential Use SCG[d] (ppm)	Frequency Exceeding Restricted Residential SCG
VOCs – no VOCs were detected						
SVOCs – no SVOCs were detected						
Metals – no Metal detected above SCGs						
Pesticides/PCBs – no Pesticides or PCBs detected						

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.
d -SCG:Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Residential Use, unless otherwise noted.

The primary soil contaminants believed to be PCE associated with residues from the operation of the former dry cleaning facilities; however, most of the subsurface sampling efforts failed to clearly identify a definite source area of disposal in site soils. It is believed that spillage of PCE took place at various times under or next to one or both of the former dry cleaner locations. As noted on Figure 3, areas around the former dry cleaner locations have been investigated thoroughly.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste (dry cleaners solvent) in soils was detected at MW-26 which is near the former Kem Cleaners location. Contaminants of concern found associated with dry clearers' PCE and the usually associated daughter products (chemicals formed by the partial degradation of PCE including, vinyl chloride and cis-1,2-dichloroethylene) (1,2-DCE)) are present in on-site soils. Therefore, the contaminants of concern at the two locations of the former dry cleaners in the Loudon Plaza, to be addressed by the remedy selection process are:

Tetrachloroethylene (PCE)
Cis- 1,2-Dichloroethylene (1,2-DCE) Vinyl Chloride

Soil Vapor

The potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor. During the RI, six tenant spaces under the southeast wing of the Loudon Plaza were evaluated for soil vapor intrusion issues as well as two off-site locations.

The soil vapor samples collected during the RI were from approximately 6 inches below the slab of the tenant space to approximately 10 feet bgs, depending on the type of soil vapor sample that could be installed. Concurrent indoor air samples were collected from each tenant space and at least one outdoor air sample was collected to characterize site-specific indoor air conditions and outdoor ambient air conditions. Off-site sub-slab air (approximately 6 inches bgs) samples were collected from the Loudon Arms apartment complex as well as Memorial Hospital. In addition, two soil vapor samples (8 feet bgs) were collected through/beneath the parking lot of Memorial Hospital.

The results indicated elevated concentrations of VOCs, predominantly PCE and some of its daughter products, including TCE, cis-1,2-DCE, and vinyl chloride under all six of the tenant spaces of the Loudon Plaza with the highest levels found beneath the former Loudon Cleaners and Kem Cleaners locations. Elevated levels of PCE, TCE, and cis-1,2-DCE were also detected in soil vapor samples collected off-site to the west of the site.

Table 4 – Soil Vapor – sub slab and soil vapor

Detected Constituents	Concentration Range Detected (ug/m3)[a]
Tetrachloroethylene	ND[b] -130,000
Trichloroethylene	ND – 14,000
trans-1,2-Dichloroethylene	ND - 290
cis-1,2-Dicholoethylene	ND – 44,000

a - micrograms per cubic meter, ug/m3.
b- non-detect.

Table 5 – Soil Vapor –indoor air and outdoor (ambient)

Detected Constituents	Concentration Range Detected (ug/m3)[a]
Tetrachloroethylene	ND[b] -22
Trichloroethylene	ND – 0.68
Carbon Tetrachloride	0.31 -0.56

a - ppb: parts per billion, which is equivalent to micrograms per cubic meter, ug/m3, in air.
b- non-detect.

The primary soil vapor contaminants are PCE, TCE, cis-1,2-DCE, and trans-1,2-DCE associated with the operation of the former dry cleaning facilities. As shown on Figure 4, the primary soil vapor contamination is found beneath the tenant spaces of the former dry cleaner locations and adjacent tenant spaces. No soil vapor problems were found under the tenant spaces in the northern wing of the Loudon Plaza, including the office building.

Based on the findings of the RI, the disposal of hazardous waste has resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are:

Tetrachloroethylene (PCE)
Trichloroethylene (TCE)
1,2-Dichloroethylene (1,2-DCE)

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A. All alternatives except Alternative 1 (No Action) include a Site Management Plan and Environmental Easement as standard elements of the remedy.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment. The No Action alternative does not require any time to implement.

Present Worth: *$0*
Capital Cost: *$0*
Annual Costs: *$0*

Alternative 2: Mitigation of Soil Vapor by Sealing and Installation of a Sub-Slab Depressurization System and Long-Term Monitoring of Groundwater

This alternative consists of mitigation methods that involve sealing preferential pathway infiltration points and actively manipulating the pressure differential between the building's interior and exterior (on a continuous basis). The buildings foundation is slab-on-grade. In conjunction with sealing potential subsurface vapor entry points, active Sub-Slab Depressurization Systems (SSDS) would be installed to draw vapors from the soil beneath the impacted buildings slab (creating a vacuum) and subsequently discharging the vapors to the atmosphere. Additionally, implementation of this alternative will include long term groundwater sampling to further evaluate contaminant migration and monitoring periodically.

Present Worth: ..... *$ 455,000*
Capital Cost: *$117,000*
Annual Costs (years 1-5): *$44,200*
Annual Costs (years 6-30): *$10,320*

Alternative 2A: Mitigation of Soil Vapor by Sealing and Installation of a Sub-Slab Depressurization System (s) and In-Situ Groundwater Treatment using Chemical Reduction (ISCR) with Permeable Reactive Barriers and Long-Term Monitoring of Groundwater

This alternative consists of mitigation methods by sealing preferential pathways and installation of SSDS's as described in alternative 2. Additionally, In-situ Chemical Reduction (ISCR) groundwater treatment will be employed using a product called EHC to create a combination of grid injections and permeable reactive barriers (PRBs) strategically located on-site to destroy cVOCs as they migrate through the treatment zones under natural groundwater flow conditions. Grid injections will be installed at locations of known impacted PCE areas. Based upon existing data the entire delineated plume would not be treated as it would not be a cost effective remedy.

This alternative involves the direct injection of ISCR product at two (2) to three (3) elevated (e.g. "Hot Spot")

PCE locations and installing two (2) to three (3) PRBs perpendicular to the groundwater flow to intercept contaminants migrating down gradient. Initial treatment will include the installation of a grid injection pilot test at MW-18 to ensure adequate EHC product performance and to identify any modifications that may need to be completed prior to implementation of the full scale remedy. Long-term groundwater monitoring is proposed to be monitored periodically.

Present Worth: *$1,580,000*
Capital Cost: *$1,234,000*
Annual Costs (years 1-5): *$44,200*
Annual Costs (years 6-30): *$10,320*

Alternative 2B: Mitigation of Soil Vapor by Sealing Preferential Pathways and Installation of Sub-Slab Depressurization System(s) and In-Situ Groundwater Treatment Using In-Situ Chemical Oxidation (ISCO) and Long Term Monitoring of Groundwater

This alternative consists of mitigation methods by sealing preferential pathways and installation of SSDS's as described in alternative 2. Additionally, in-situ groundwater treatment will be applied to enhance PCE plume mitigation using In-Situ Chemical Oxidation (ISCO). This alternative involves utilizing permanganate (by methods of direct injection) to address the areas with cVOC impacted groundwater. The ISCO treatment would utilize direct injection at two (2) to three (3) elevated PCE locations and installing two (2) to three (3) "injection lines" perpendicular to groundwater flow to remediate groundwater contamination as the injected treatment migrates down gradient. Initial treatment will include the installation of a grid injection pilot test at MW-18 to ensure adequate permanganate product performance and to identify any modifications that may need to be completed prior to implementation of the full scale remedy. Two (2) rounds of full scale injection treatment are anticipated to be needed to reduce contaminant levels to the respective chemical specific SCGs. Long term groundwater monitoring is proposed to be monitored periodically.

Present Worth: *$2,010,000*
Capital Cost: *$1,677,000*
Annual Costs (years 1-5): *$44,200*
Annual Costs (years 6-30): *$10,320*

Alternative 3: Horizontal Soil Vapor Extraction System with Long-Term Monitoring of Groundwater

This alternative proposes to install a horizontal soil vapor extraction (HSVE) system; a technique used to remediate contaminated subsurface soil vapor. Installation and operation of an HSVE system will involve using high flow rates, induced vacuum or a combination of high flow/induced vacuum to collect and remove vapor phase contamination. The HSVE system will also be designed to mitigate vapor phase intrusion to indoor air. The system would be installed to reduce vapor concentrations at both the Former Loudon and Former Kem Cleaner locations. Long term groundwater monitoring is proposed to be monitored periodically.

Present Worth: *$772,000*
Capital Cost: *$366,000*
Annual Costs (years 1-5): *$60,000*
Annual Costs (years 6-30): *$10,320*

Alternative 4: Horizontal Soil Vapor Extraction with In-Situ Groundwater Treatment Using In-Situ Chemical Reduction (ISCR) with Permeable Reactive Barriers (PRBs) with Long-Term Monitoring of Groundwater

This remedial alternative proposes to install a HSVE system as described in Alternative 3 and apply in-situ groundwater treatment to enhance PCE plume mitigation using In-Situ Chemical Reduction (ISCR) as described in alternative 2A. Long term groundwater monitoring is proposed to be monitored periodically.

Present Worth: *$1,930,000*
Capital Cost: *$1,523,000*
Annual Costs (years 1-5): *$60,200*
Annual Costs (years 6-30): *$10,320*

Alternative 5: Horizontal Soil Vapor Extraction with In-Situ Groundwater Treatment Using In-Situ Chemical Oxidation (ISCO) with Long-Term Monitoring of Groundwater

This remedial alternative proposes to install a HSVE system as described in alternative 3 and apply in-situ groundwater treatment to enhance PCE plume mitigation using ISCO as described in alternative 2B. Long term groundwater monitoring is proposed to be monitored periodically.

Present Worth: *$2,290,000*
Capital Cost: *$1,882,000*
Annual Costs (years 1-5): *$60,200*
Annual Costs (years 6-30): *$10,320*

Alternative 6: Soil Vapor Extraction/ Sub-Slab Depressurization System with Focused In-Situ Groundwater Treatment Using In-Situ Chemical Oxidation (ISCO) with Long-Term Monitoring of Groundwater

This remedial alternative proposes to install vertical SVE system(s) at three locations near the former structure and apply grid in-situ groundwater treatment at known impacted areas near MW-18 to reduce PCE concentrations using ISCO as described in alternative 2B. If the SVE systems do not adequately address the potential for vapor intrusion, a SSDS as described in Alternative 2 would be installed. Long-term groundwater monitoring is proposed to be monitored periodically.

Present Worth: *$1,410,000*
Capital Cost: *$990,000*
Annual Costs (years 1-5): *$62,200*
Annual Costs (years 6-30): *$10,320*

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Exhibit C

Cost Estimate Comparison of Remedial Alternatives

Former Loudon and Kem Cleaners Albany, NY

	Alternative 1	Alternative 2	Alternative 2A	Alternative 2B	Alternative 3	Alternative 4	Alternative 5	Alternative 6
	No Action	Mitigation of Soil Vapor by Sealing Preferential Pathways and Installation of Sub-Slab Depressurization System(s) and Long Term Air and Groundwater Monitoring	Mitigation of Soil Vapor by Sealing Preferential Pathways and Installation of Sub-Slab Depressurization System(s) and In-Situ Groundwater Treatment Using In-Situ Chemical Reduction (ISCR) with Permeable Reactive Barriers (PRBs) and Long Term Air and Groundwater Monitoring	Mitigation of Soil Vapor by Sealing Preferential Pathways and Installation of Sub-Slab Depressurization System(s) and In-Situ Groundwater Treatment Using In-Situ Chemical Oxidation (ISCO) and Long Term Air and Groundwater Monitoring	Horizontal Soil Vapor Extraction System with	Horizontal Soil Vapor Extraction with In-Situ Groundwater Treatment Using In-Situ Chemical Reduction (ISCR) with Permeable Reactive Barriers (PRBs) with Long Term Air and Groundwater	Horizontal Soil Vapor Extraction with In-Situ Groundwater Treatment Using In-Situ Chemical Oxidation (ISCO) with Long Term Air and	*SVE/SSDS with Focused In-Situ Groundwater Treatment Using In-Situ Chemical Oxidation with Long Term Air and*
Capital Cost	$ -	$ 117,000	$ 1,234,000	$ 1,667,000	$ 366,000	$ 1,523,000	$ 1,882,000	$ 990,000
Average Annual O&M (Years 1-5)	$ -	$ 44,200	$ 44,200	$ 44,200	$ 60,000	$ 60,200	$ 60,200	$ 62,200
Average Annual O&M (Years 6-30)	$ -	$ 10,320	$ 10,320	$ 10,320	$ 10,320	$ 10,320	$ 10,320	$ 10,320
Total O&M (Years 1-5)	$ -	$ 221,000	$ 221,000	$ 221,000	$ 300,000	$ 301,000	$ 301,000	$ 311,000
Total O&M (Years 6-30)	$ -	$ 258,000	$ 258,000	$ 258,000	$ 258,000	$ 258,000	$ 258,000	$ 258,000
Total Present Worth	$ -	$ 455,000	$ 1,580,000	$ 2,010,000	$ 772,000	$ 1,930,000	$ 2,290,000	$ 1,410,000
Total Cost	**$ -**	**$ 596,000**	**$ 1,720,000**	**$ 2,150,000**	**$ 924,000**	**$ 2,090,000**	**$ 2,450,000**	**$ 1,560,000**

Notes:

1. Full cost estimate breakdown are shown in the Feasibility Study.
2. Alternatives 2A, 2B, 4, 5, and 6 include optional post-remedial actions.
3. All costs have been rounded to 3 significant figures.
4. Present Worth Costs were calculated using a 5% interest rate per year.

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 6 as the remedy for this site: Soil Vapor Extraction and possibly Sub-Slab Depressurization System(s) with Focused In-Situ Groundwater Treatment Using In-Situ Chemical Oxidation with Long Term Air and Groundwater Monitoring.

This alternative will achieve the remediation goals for the site by the installation, operation and maintenance of SVE system(s) using vertical slotted PVC pipes at impacted areas near the structure.

The SVE system projected locations are provided on Figure 5**.**

Additionally, this alternative proposes treating contaminated groundwater using ISCO technology as described in alternative 2B. The treatment would include a grid injection pattern applied at an area near MW-18 as shown on Figure 5.

Basis for Selection

The proposed remedies are based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative 1 is not protective of public health and is not considered further in this evaluation. Alternatives 2, 2A, 2B, 3, 4, 5, and 6 are all protective of public health and the environment to varying degrees and are considered further in this evaluation.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 2 does not attempt to attain either soil or groundwater SCGs and is not considered further. Alternatives 2A and 2B do not attempt to attain soil SCGs and are not considered further. Alternative 3 does not attempt to attain groundwater SCGs and therefore is not considered further. Alternatives 4, 5, and 6 all attempt to attain soil and groundwater SCGs and are considered further.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternatives 4, 5, and 6 can be considered effective remedies for soil, soil vapor treatment and for the treatment of impacted groundwater. The installation and operation of the SVE system(s) would reduce soil vapor impacts and mitigate soil vapor intrusion into the structure. Alternative 6 includes the potential addition of SSDS(s) which would provide additional means to mitigate soil vapor intrusion into the structure. Using in-situ treatment in groundwater is expected to reduce the dissolved groundwater impacts providing means to meet RAOs. The long term effectiveness of any of these alternatives would be evaluated over time in the field.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 4, 5, or 6 involves the mass removal and/or treatment of impacted soil vapor and groundwater therefore, for these matrices, the toxicity, mobility, and volume of impacted mass would be significantly reduced.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Short-term impacts anticipated during the implementation of alternative 4, 5, or 6 include a potential dust and noise concern to the workers, employees at the building and residents along the adjacent properties during the installation of the SVE wells and groundwater treatment injection points. The permeable reactive barrier under alternative 4 has the potential to create more short-term impacts than the injection points under alternative 5 or 6. Under alternative 6, the installation of a SSDS could be problematic to an existing business if the system installation involves significant trenching in the floors of the different tenant spaces. Additional potential impacts include the short-term impact to traffic (with equipment occupying parking lot space), inhalation of soil vapor by workers during the installation process and proper collection of drilling, and well development fluids to ensure protection to human health and the environment. Engineering controls will be employed to mitigate impacts to workers during installation.

Using in-situ treatment in groundwater is expected to reduce the dissolved groundwater contamination within the first year, ultimately providing means to meet RAOs over the longer term.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Implementation of alternative 4, 5, or 6 could begin immediately following the technical design of the SVE and groundwater treatment system(s). Upon completion of a utility mark-out, establishing proper administrative controls/permits etc. and establishing means and methods for traffic controls both soil vapor and groundwater treatment construction activities could begin simultaneously. Structurally, the pipe network of the SVE system

is not complex and therefore design costs would largely be incurred sizing the powered and treatment components of the system. The permeable reactive barrier under alternative 4 would be somewhat more difficult to implement than the injection points under alternative 5 or 6.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The present worth cost of alternative 4 is 37 percent more than alternative 6. The present worth cost of alternative 5 is 62 percent more than alternative 6. Since all three of these alternatives would be effective at meeting the remedial goals for this site, alternative 6 is the most cost-effective of these alternatives.

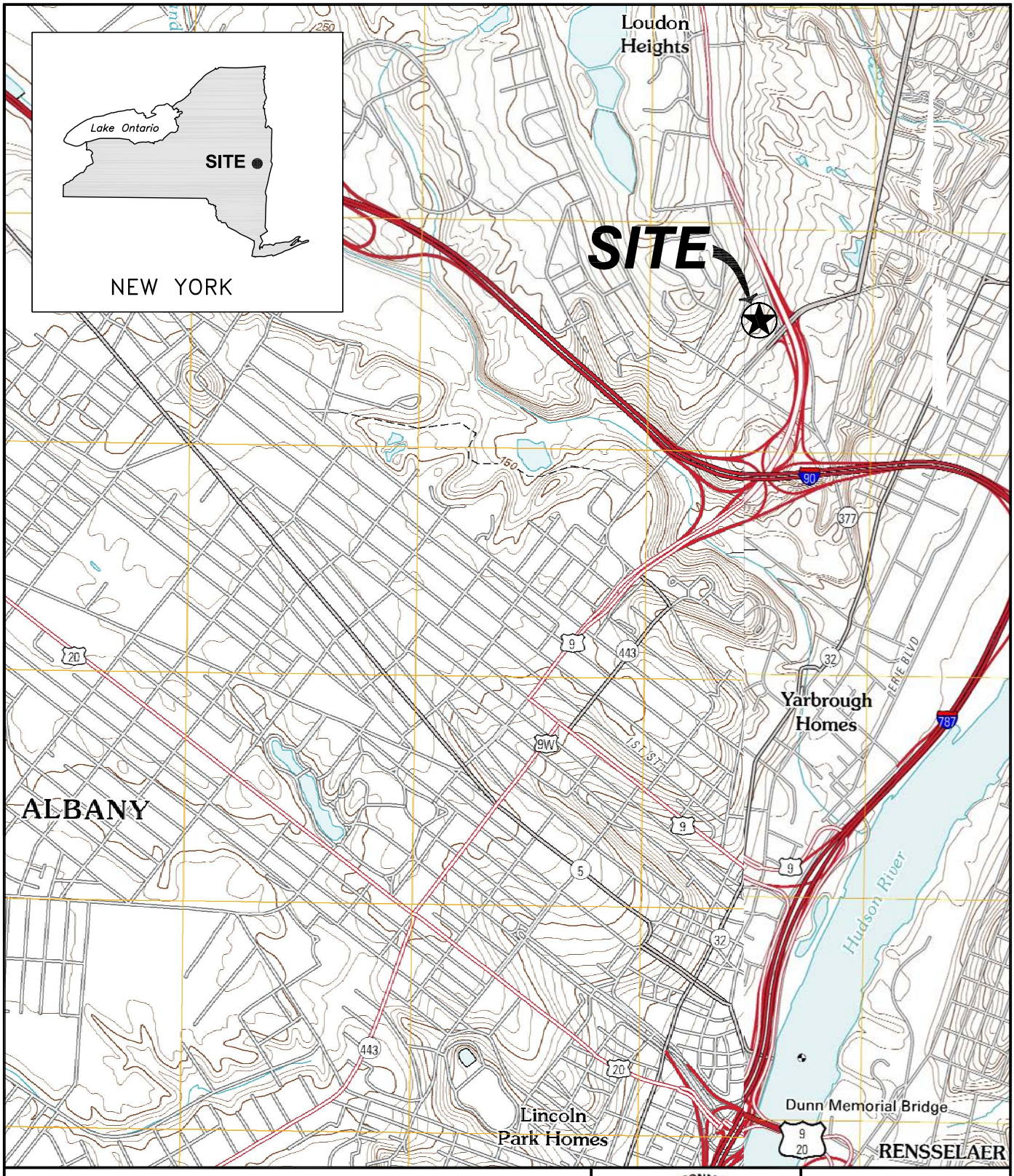
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Alternative 4, 5, or 6 address exposures from contaminated groundwater and soil vapor at the site. The site will continue to be allowed for commercial use since none of the soils sampled during this investigation exceeded those SCOs. Only unrestricted use SCOs were found to be exceeded in one area and restrictions on the use of those soils will be addressed through the Site Management Plan.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 6 is being proposed because, as described above, it satisfies the threshold criteria and provide the best balance of the balancing criterion.



SCALE

0 2000 4000 FEET

REFERENCE:

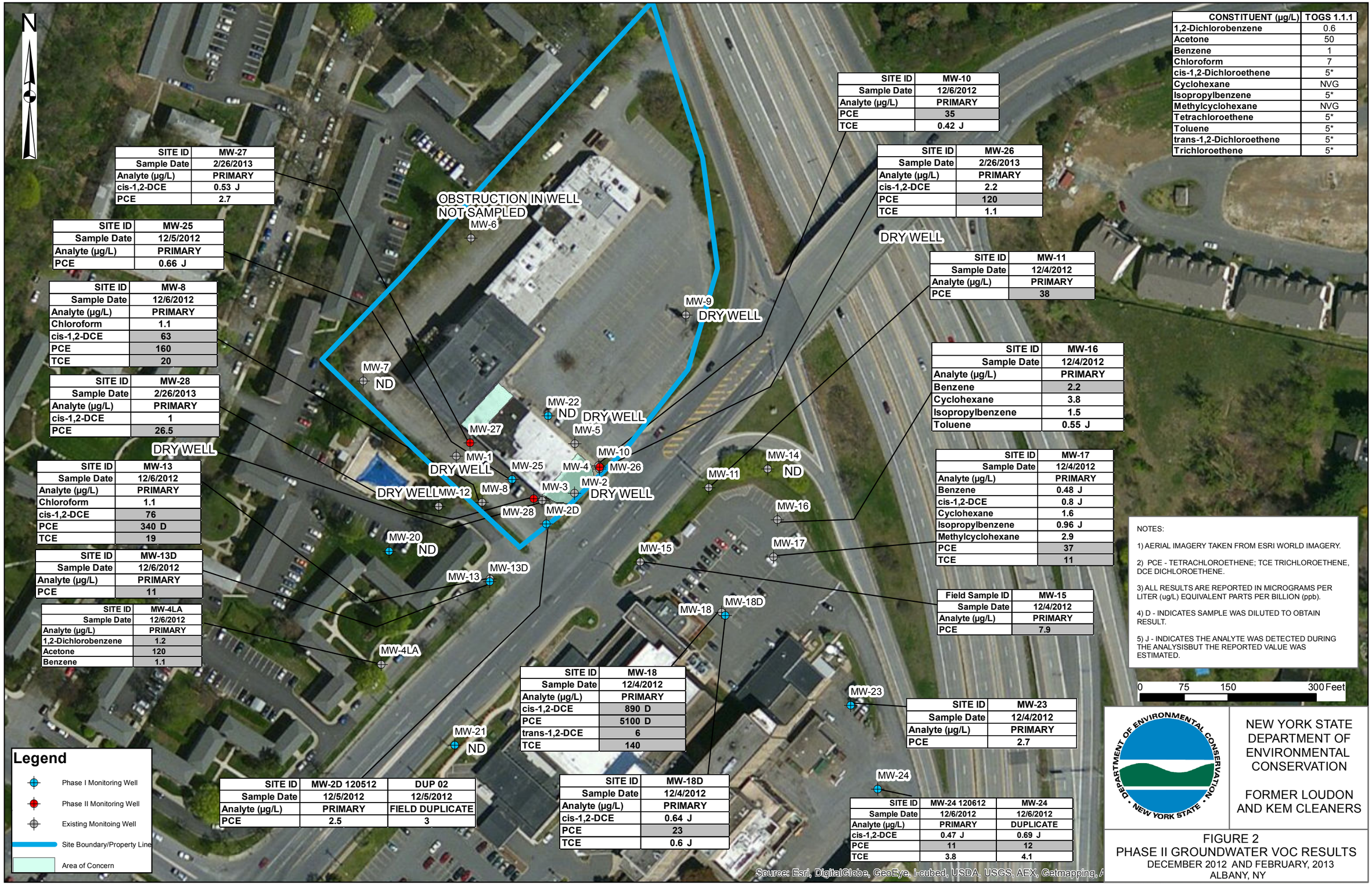
DRAWING CREATE WITH USGS 7.5–MINUTE QUADRANGLE MAPS: ALBANY, NEW YORK AND TROY SOUTH, NEW YORK.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FIGURE 1

SITE LOCATION MAP
FORMER LOUDON AND KEM CLEANERS

LOUDON PLAZA 350 NORTHERN BOULEVARD
ALBANY, NEW YORK



CONSTITUENT (µg/L)	TOGS 1.1.1
1,2-Dichlorobenzene	0.6
Acetone	50
Benzene	1
Chloroform	7
cis-1,2-Dichloroethene	5*
Cyclohexane	NVG
Isopropylbenzene	5*
Methylcyclohexane	NVG
Tetrachloroethene	5*
Toluene	5*
trans-1,2-Dichloroethene	5*
Trichloroethene	5*

SITE ID	MW-27
Sample Date	2/26/2013
Analyte (µg/L)	PRIMARY
cis-1,2-DCE	0.53 J
PCE	2.7

SITE ID	MW-25
Sample Date	12/5/2012
Analyte (µg/L)	PRIMARY
PCE	0.66 J

SITE ID	MW-8
Sample Date	12/6/2012
Analyte (µg/L)	PRIMARY
Chloroform	1.1
cis-1,2-DCE	63
PCE	160
TCE	20

SITE ID	MW-28
Sample Date	2/26/2013
Analyte (µg/L)	PRIMARY
cis-1,2-DCE	1
PCE	26.5

SITE ID	MW-13
Sample Date	12/6/2012
Analyte (µg/L)	PRIMARY
Chloroform	1.1
cis-1,2-DCE	76
PCE	340 D
TCE	19

SITE ID	MW-13D
Sample Date	12/6/2012
Analyte (µg/L)	PRIMARY
PCE	11

SITE ID	MW-4LA
Sample Date	12/6/2012
Analyte (µg/L)	PRIMARY
1,2-Dichlorobenzene	1.2
Acetone	120
Benzene	1.1

SITE ID	MW-10
Sample Date	12/6/2012
Analyte (µg/L)	PRIMARY
PCE	35
TCE	0.42 J

SITE ID	MW-26
Sample Date	2/26/2013
Analyte (µg/L)	PRIMARY
cis-1,2-DCE	2.2
PCE	120
TCE	1.1

SITE ID	MW-11
Sample Date	12/4/2012
Analyte (µg/L)	PRIMARY
PCE	38

SITE ID	MW-16
Sample Date	12/4/2012
Analyte (µg/L)	PRIMARY
Benzene	2.2
Cyclohexane	3.8
Isopropylbenzene	1.5
Toluene	0.55 J

SITE ID	MW-17
Sample Date	12/4/2012
Analyte (µg/L)	PRIMARY
Benzene	0.48 J
cis-1,2-DCE	0.8 J
Cyclohexane	1.6
Isopropylbenzene	0.96 J
Methylcyclohexane	2.9
PCE	37
TCE	11

Field Sample ID	MW-15
Sample Date	12/4/2012
Analyte (µg/L)	PRIMARY
PCE	7.9

SITE ID	MW-18
Sample Date	12/4/2012
Analyte (µg/L)	PRIMARY
cis-1,2-DCE	890 D
PCE	5100 D
trans-1,2-DCE	6
TCE	140

SITE ID	MW-23
Sample Date	12/4/2012
Analyte (µg/L)	PRIMARY
PCE	2.7

SITE ID	MW-2D 120512	DUP 02
Sample Date	12/5/2012	12/5/2012
Analyte (µg/L)	PRIMARY	FIELD DUPLICATE
PCE	2.5	3

SITE ID	MW-18D
Sample Date	12/4/2012
Analyte (µg/L)	PRIMARY
cis-1,2-DCE	0.64 J
PCE	23
TCE	0.6 J

SITE ID	MW-24 120612	MW-24
Sample Date	12/6/2012	12/6/2012
Analyte (µg/L)	PRIMARY	DUPLICATE
cis-1,2-DCE	0.47 J	0.69 J
PCE	11	12
TCE	3.8	4.1

Legend

- Phase I Monitoring Well
- Phase II Monitoring Well
- Existing Monitoring Well
- Site Boundary/Property Line
- Area of Concern

NOTES:

1) AERIAL IMAGERY TAKEN FROM ESRI WORLD IMAGERY.

2) PCE - TETRACHLOROETHENE; TCE TRICHLOROETHENE, DCE DICHLOROETHENE.

3) ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/L) EQUIVALENT PARTS PER BILLION (ppb).

4) D - INDICATES SAMPLE WAS DILUTED TO OBTAIN RESULT.

5) J - INDICATES THE ANALYTE WAS DETECTED DURING THE ANALYSISBUT THE REPORTED VALUE WAS ESTIMATED.

0 75 150 300 Feet

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORMER LOUDON AND KEM CLEANERS

FIGURE 2
PHASE II GROUNDWATER VOC RESULTS
DECEMBER 2012 AND FEBRUARY, 2013
ALBANY, NY

CONSTITUENT (mg/kg)	RSCO (Unrestricted)	RSCO (commericial)
1,1,1-DCA	0.68	500[b]
Acetone	0.05	500[b]
cis-1,2-DCE	0.25	500[b]
PCE	1.3	150
Toluene	0.7	500[b]
trans-1,2-DCE	0.19	500[b]
TCE	0.47	200
Vinyl Chloride	0.02	13

Site ID	MW-26	MW-26	MW-26
Sample Depth (ft bgs)	5-10'	7-10'	10-15'
Analyte (mg/kg)	Primary	Primary	Primary
1,1,1-Trichloroethane	**0.007 J**	ND	ND
Acetone	**0.0187 J**	ND	ND
cis-1,2-Dichloroethene	**0.44 J**	ND	**0.0699 J**
Tetrachloroethene	**11.9 D**	**0.0056 J**	**8.6 D**
Toluene	**0.0022 J**	ND	ND
trans-1,2-Dichloroethene	**0.0017 J**	ND	ND
Trichloroethene	**0.24 J**	ND	**0.0414**
Vinyl Chloride	**0.0562 J**	ND	ND

Site ID	MW-27	MW-27	MW-27
Sample Depth (ft bgs)	5-10'	10-15'	15-17'
Analyte (mg/kg)	Primary	Reanalysis	Primary
1,1,1-Trichloroethane	**0.0028 J**	ND	ND
cis-1,2-Dichloroethene	**0.002 J**	**0.0027 J**	**0.0066**
Tetrachloroethene	**0.0087**	**0.0178 J**	**0.0172**
Trichloroethene	**0.0055 J**	ND	**0.0027 JQ**

Site ID	MW-28	MW-28	MW-28	MW-28
Sample Depth (ft bgs)	5-10'	5-10'	13-15'	15-18'
Analyte (mg/kg)	Primary	Field Duplicate	Primary	Primary
1,1,1-Trichloroethane	**0.0013 J**	ND	ND	ND
Acetone	ND	ND	**0.0054 J**	ND
cis-1,2-Dichloroethene	**0.0028 J**	**0.0061**	**0.0036 J**	**0.031**
Tetrachloroethene	**0.0788 J**	**0.4 D**	**0.390 D**	**0.061**
Trichloroethene	**0.0014 J**	**0.003 J**	**0.0032 J**	**0.008**

Legend

- Phase II Monitoring Well/Soil Boring
- Existing Monitoring Well
- Phase I Monitoring Well
- Phase I Soil Boring
- Site Boundary/Property Line
- Building Boundaries
- Area of Concern

NOTES:

1) AERIAL IMAGERY TAKEN FROM ESRI WORLD IMAGERY.

2) RESULTS ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg) EQUIVALENT TO PARTS PER MILLION (ppm).

3) PCE - TETRACHLOROETHENE; TCE TRICHLOROETHENE, DCE DICHLOROETHENE.

4) SITE PROPERTY BOUNDARY IS APPROXIMATE.

5) ND - INDICATES PHASE II ANALYTE WAS NOT DETECTED ABOVE THE REPORTING LIMIT. (INDICATESPHASE I SAMPLE RESULTS DID NOT EXCEED UNRESTRICTED USE SCO.)

6) J - INDICATES THE ANALYTE WAS DETECTED DURING THE ANALYSIS BUT THE REPORTED VALUE IS ESTIMATED.

7) D - INDICATES THE SAMPLE WAS DILUTED TO OBTAIN ANALYTICAL RESULT.

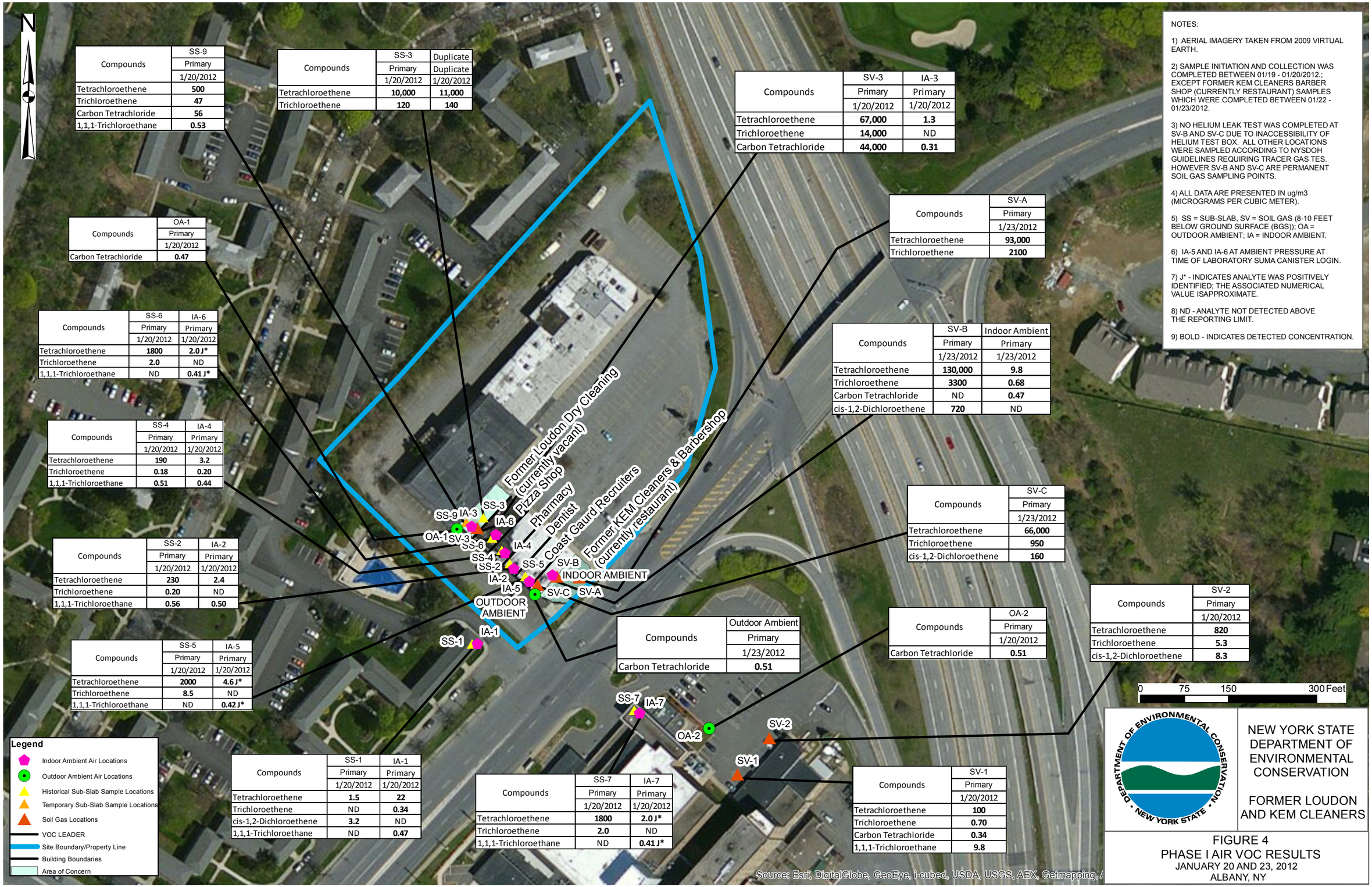
8) Q - INDICATES THE LABORATORY CONTROL SAMPLE (LCS) RESULTS WERE NOT WITHIN REQUIRED QUALITY CONTROL LIMITS.

0 50 100 200 Feet

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORMER LOUDON AND KEM CLEANERS

FIGURE 3 - SOIL VOC RESULTS
PHASE I - DECEMBER 2011 - JANUARY 2012
PHASE II - JANUARY 31ST AND FEBRUARY 1ST 2013
ALBANY, NY



Compounds	SS-9
	Primary
	1/20/2012
Tetrachloroethene	**500**
Trichloroethene	**47**
Carbon Tetrachloride	**56**
1,1,1-Trichloroethane	**0.53**

Compounds	SS-3	Duplicate
	Primary	Duplicate
	1/20/2012	1/20/2012
Tetrachloroethene	**10,000**	**11,000**
Trichloroethene	**120**	**140**

Compounds	SV-3	IA-3
	Primary	Primary
	1/20/2012	1/20/2012
Tetrachloroethene	**67,000**	**1.3**
Trichloroethene	**14,000**	ND
Carbon Tetrachloride	**44,000**	**0.31**

Compounds	OA-1
	Primary
	1/20/2012
Carbon Tetrachloride	**0.47**

Compounds	SV-A
	Primary
	1/23/2012
Tetrachloroethene	**93,000**
Trichloroethene	**2100**

Compounds	SS-6	IA-6
	Primary	Primary
	1/20/2012	1/20/2012
Tetrachloroethene	**1800**	**2.0 J***
Trichloroethene	**2.0**	ND
1,1,1-Trichloroethane	ND	**0.41 J***

Compounds	SV-B	Indoor Ambient
	Primary	Primary
	1/23/2012	1/23/2012
Tetrachloroethene	**130,000**	**9.8**
Trichloroethene	**3300**	**0.68**
Carbon Tetrachloride	ND	**0.47**
cis-1,2-Dichloroethene	**720**	ND

Compounds	SS-4	IA-4
	Primary	Primary
	1/20/2012	1/20/2012
Tetrachloroethene	**190**	**3.2**
Trichloroethene	**0.18**	**0.20**
1,1,1-Trichloroethane	**0.51**	**0.44**

Compounds	SV-C
	Primary
	1/23/2012
Tetrachloroethene	**66,000**
Trichloroethene	**950**
cis-1,2-Dichloroethene	**160**

Compounds	SS-2	IA-2
	Primary	Primary
	1/20/2012	1/20/2012
Tetrachloroethene	**230**	**2.4**
Trichloroethene	**0.20**	ND
1,1,1-Trichloroethane	**0.56**	**0.50**

Compounds	Outdoor Ambient
	Primary
	1/23/2012
Carbon Tetrachloride	**0.51**

Compounds	OA-2
	Primary
	1/20/2012
Carbon Tetrachloride	**0.51**

Compounds	SV-2
	Primary
	1/20/2012
Tetrachloroethene	**820**
Trichloroethene	**5.3**
cis-1,2-Dichloroethene	**8.3**

Compounds	SS-5	IA-5
	Primary	Primary
	1/20/2012	1/20/2012
Tetrachloroethene	**2000**	**4.6 J***
Trichloroethene	**8.5**	ND
1,1,1-Trichloroethane	ND	**0.42 J***

Compounds	SS-1	IA-1
	Primary	Primary
	1/20/2012	1/20/2012
Tetrachloroethene	**1.5**	**22**
Trichloroethene	ND	**0.34**
cis-1,2-Dichloroethene	**3.2**	ND
1,1,1-Trichloroethane	ND	**0.47**

Compounds	SS-7	IA-7
	Primary	Primary
	1/20/2012	1/20/2012
Tetrachloroethene	**1800**	**2.0 J***
Trichloroethene	**2.0**	ND
1,1,1-Trichloroethane	ND	**0.41 J***

Compounds	SV-1
	Primary
	1/20/2012
Tetrachloroethene	**100**
Trichloroethene	**0.70**
Carbon Tetrachloride	**0.34**
1,1,1-Trichloroethane	**9.8**

Legend

- Indoor Ambient Air Locations
- Outdoor Ambient Air Locations
- Historical Sub-Slab Sample Locations
- Temporary Sub-Slab Sample Locations
- Soil Gas Locations
- VOC LEADER
- Site Boundary/Property Line
- Building Boundaries
- Area of Concern

NOTES:

1) AERIAL IMAGERY TAKEN FROM 2009 VIRTUAL EARTH.

2) SAMPLE INITIATION AND COLLECTION WAS COMPLETED BETWEEN 01/19 - 01/20/2012.; EXCEPT FORMER KEM CLEANERS BARBER SHOP (CURRENTLY RESTAURANT) SAMPLES WHICH WERE COMPLETED BETWEEN 01/22 - 01/23/2012.

3) NO HELIUM LEAK TEST WAS COMPLETED AT SV-B AND SV-C DUE TO INACCESSIBILITY OF HELIUM TEST BOX. ALL OTHER LOCATIONS WERE SAMPLED ACCORDING TO NYSDOH GUIDELINES REQUIRING TRACER GAS TES. HOWEVER SV-B AND SV-C ARE PERMANENT SOIL GAS SAMPLING POINTS.

4) ALL DATA ARE PRESENTED IN ug/m3 (MICROGRAMS PER CUBIC METER).

5) SS = SUB-SLAB, SV = SOIL GAS (8-10 FEET BELOW GROUND SURFACE (BGS)); OA = OUTDOOR AMBIENT; IA = INDOOR AMBIENT.

6) IA-5 AND IA-6 AT AMBIENT PRESSURE AT TIME OF LABORATORY SUMA CANISTER LOGIN.

7) J* - INDICATES ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE ISAPPROXIMATE.

8) ND - ANALYTE NOT DETECTED ABOVE THE REPORTING LIMIT.

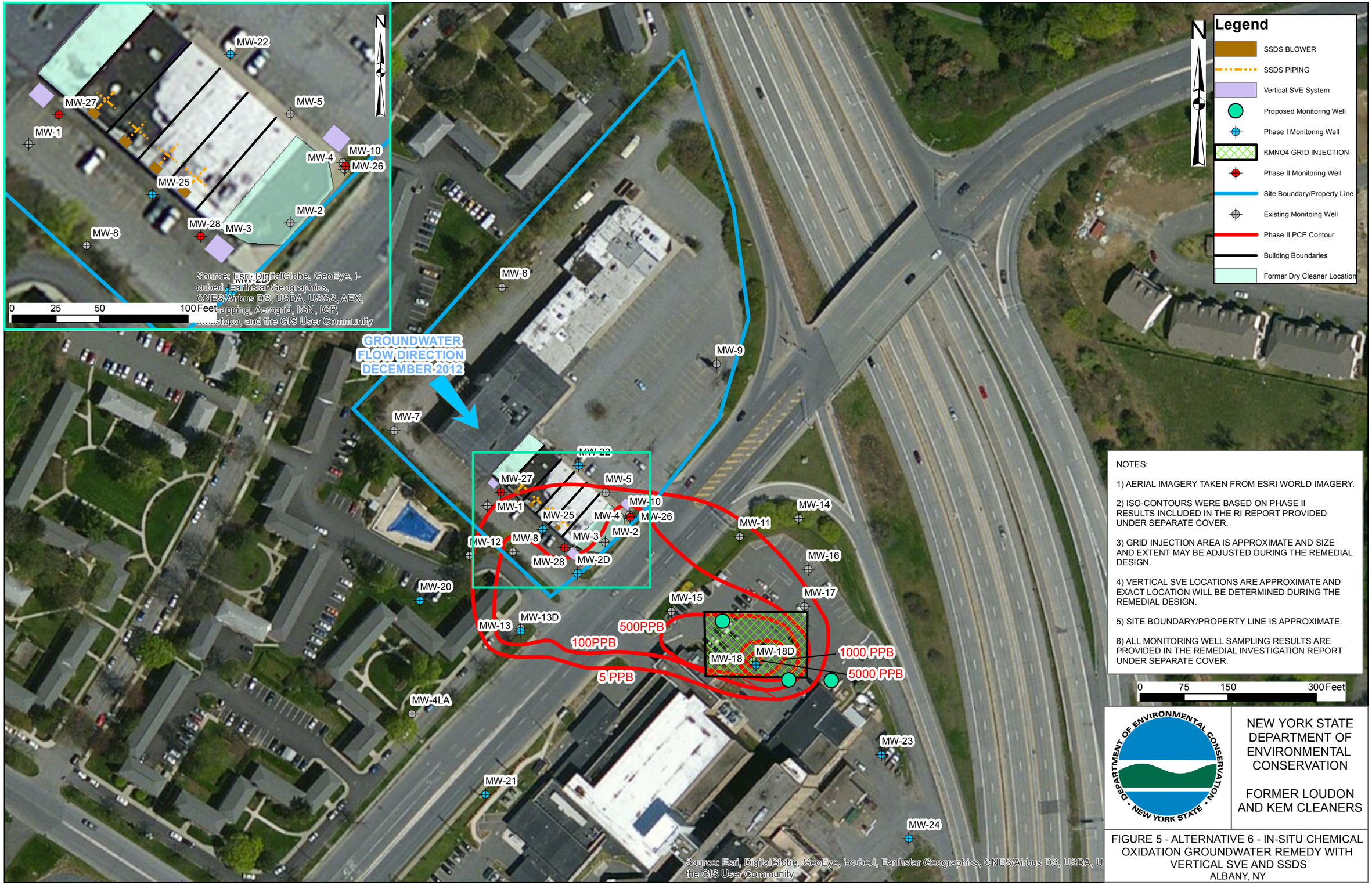
9) BOLD - INDICATES DETECTED CONCENTRATION.

0 75 150 300 Feet

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORMER LOUDON AND KEM CLEANERS

FIGURE 4
PHASE I AIR VOC RESULTS
JANUARY 20 AND 23, 2012
ALBANY, NY



NOTES:

1) AERIAL IMAGERY TAKEN FROM ESRI WORLD IMAGERY.

2) ISO-CONTOURS WERE BASED ON PHASE II RESULTS INCLUDED IN THE RI REPORT PROVIDED UNDER SEPARATE COVER.

3) GRID INJECTION AREA IS APPROXIMATE AND SIZE AND EXTENT MAY BE ADJUSTED DURING THE REMEDIAL DESIGN.

4) VERTICAL SVE LOCATIONS ARE APPROXIMATE AND EXACT LOCATION WILL BE DETERMINED DURING THE REMEDIAL DESIGN.

5) SITE BOUNDARY/PROPERTY LINE IS APPROXIMATE.

6) ALL MONITORING WELL SAMPLING RESULTS ARE PROVIDED IN THE REMEDIAL INVESTIGATION REPORT UNDER SEPARATE COVER.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORMER LOUDON AND KEM CLEANERS

FIGURE 5 - ALTERNATIVE 6 - IN-SITU CHEMICAL OXIDATION GROUNDWATER REMEDY WITH VERTICAL SVE AND SSDS
ALBANY, NY