PROPOSED REMEDIAL ACTION PLAN

Former Safety Kleen Dry Cleaners
State Superfund Project
New Windsor, Orange County
Site No. 336078
February 2019

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:

Cornwall Public Library
395 Hudson Street
Cornwall, NY 12518

A public comment period has been set from:

February 26, 2019 to March 27, 2019

A public meeting is scheduled for the following date:

March 18, 2019

Public meeting location:

Cornwall Public Library
395 Hudson Street
Cornwall, NY

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 to:

John Miller
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
john.miller@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: The Former Safety Kleen Dry Cleaners Site is an approximately 10.8-acre parcel located at 115 Temple Hill Road in Vails Gate, Orange County, NY. The site is bordered by Temple Hill Road to the east, Route 94 to the south, undeveloped land to the west and a commercially-zoned parcel to the north.

Site Features: The site is a commercially used shopping plaza, with two large retail buildings identified as Building 1 and Building 2 that each house multiple businesses. Building 1 is oriented north-south on the west side of the site and contains two tenant spaces, a Price Chopper supermarket (suite 400) and a billiards hall (suite 600). Building 2 is oriented east-west on the northern portion of the site and is the location of seven tenant spaces including the former Safety Kleen Dry Cleaner (suite 700), a beauty salon (suite 800), a pizza restaurant (suite 900), a nail salon (suite 1000) and a Radio Shack (suite 1100). A third building, not physically connected with either of the first two buildings, exists on the northeast portion of the site and is utilized for commercial purposes. The site is relatively flat and is entirely paved or covered by structures. A breezeway formerly separated buildings 1 and 2. A Sub-Slab Depressurization System (SSDS) was installed in 2013. Due to the demolition of the former dry-cleaning space in the summer of 2018, some modifications were made to the existing SSDS. The fan was moved, and piping was rerouted to accommodate the new building footprint.

Current Zoning and Land Use: The site is a commercially-zoned shopping plaza. A laundry business had been operating in the Former Safety Kleen Dry Cleaners tenant space until the unit was recently demolished as part of an on-site construction project. Surrounding land use is predominantly commercial.

Past Use of the Site: The site consisted of undeveloped woodlands or residential areas until approximately 1970 when the existing shopping plaza was constructed. The past disposal practices of a dry cleaner that had operated within the plaza led to a release of tetrachloroethene (PCE) contamination at the site.

Site Geology and Hydrogeology: Site soil includes native sands, silt and clay, underlain by a dense till material. A perched groundwater table exists across the site at depths ranging from approximately five to nine feet below ground surface. Groundwater measurements indicate that flow appears to be to the east/north-east, although the gradient of groundwater flow is very small. The ambient groundwater table was not encountered during the investigation. Site borings indicate that it exits at depths greater than twenty feet, which is where the till material was encountered during these investigations.

A site location map is attached as Figure 1. Figure 2 shows the site/property boundary.

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 commercial 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:

V.G.R. Associates, L.L.C.

Vails Gate Laundry & Dry Cleaning

VGR Associates, LLC

Statecourt Enterprises, Inc.

Michael Mansfield

Vails Gate Dry Cleaning & Laundry Service

The Department and V.G.R. Associates, L.L.C, entered into a Consent Order on March 11, 2011. The Order obligates the responsible party to implement a full remedial program.

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:

- groundwater
- soil
- soil 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 contaminants of concern identified at this site are:

tetrachloroethane (PCE)	1,2 dichloroethene (cis-1,2 DCE)
trichloroethene (TCE)	vinyl chloride (VC)

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

- soil
- groundwater
- 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.

The following IRM has been completed at this site based on conditions observed during the RI.

Sub-slab Depressurization System IRM

A soil vapor intrusion investigation of the various tenant spaces within the two on-site buildings began in October 2011. In January 2013, a sub-slab depressurization system (SSDS) was installed, as an IRM, to mitigate indoor air impacts as a result of SVI sampling for Suites 600, 700 and 800. In October 2013, the SSDS was expanded to also mitigate Suites 900 and 1000. In November 2013, testing indicated that the SSDS was not performing as needed. Repairs were made by April 2014, and the SSDS was expanded to include Suite 1100. Additional air testing was conducted in 2014 and 2015. Indoor levels of PCE were all below expected background levels, but TCE was detected slightly above the NYSDOH air guideline of 2 ug/m3 in Suite 700. Performance testing of the SSDSs in 2015 indicated that the systems were functioning as designed and should be monitored to ensure continued compliance. Suite 700 was demolished in 2018; the existing SSDS was modified to remain functional for Suites 800 and 900 and to provide control in the location where suite 700 had been. The final construction details of the SSDSs are summarized in the approved November 2018 SSDS Report and as shown on Figure 3. Indoor air of the four tenant spaces not covered by the SSDSs, Suites 400, 1200, 1300 and 1400, will be monitored to ensure additional actions are not needed to address potential indoor air impacts as a result of soil vapor intrusion in these spaces not covered by a SSDS. Details associated with the testing for vapor intrusion and installation of the SSDSs can be found in Exhibit A of this PRAP.

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: Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs) and pesticides. Based upon data collected at the site, the contaminants of concern are chlorinated VOCs, including tetrachloroethene (PCE) and its breakdown products, cis-1,2 dichloroethene (cis-1,2 DCE), trichloroethene (TCE) and vinyl chloride. Impacted media include soil, perched overburden groundwater and soil vapor.

Soil - Chlorinated solvent contamination was identified in several of the soil borings that were advanced during the remedial investigation. The highest level of contamination was observed in boring SB-MW-7, which is located in the former breezeway adjacent to the former dry cleaner. PCE was detected in this location at 27 parts per million (ppm) in a sample collected from the 13 to 15-foot interval, below ground surface. This exceeds the soil cleanup objective (SCO) for the

protection of groundwater for PCE, which is 1.3 ppm, but is below the commercial SCO of 150 ppm. No other VOCs were detected in soil above unrestricted use SCOs. In addition, sampling determined that metals, SVOCs, PCBs and pesticides were not contaminants of concern. Soil contamination generally appears to be localized in the former dry cleaner space, but the potential exists for contamination to exist beneath adjacent structures (suites 600, 800). Site-related soil contamination does not extend off-site

Groundwater - In the most recent groundwater sampling event the contaminants of concern were detected in groundwater as high as 79,000 parts per billion (ppb) for PCE (MW-7), 100 ppb for cis-DCE (MW-7), 7.1 ppb for TCE (MW-10) and 150 ppb for vinyl chloride (MW-2). The respective ambient groundwater standard for the contaminants are 5 ppb, 5 ppb, 5 ppb and 2 ppb. SVOCs, metals, PCBs and pesticides were not detected in groundwater above ambient groundwater standards.

Due to the low yield of the perched water table, it is often difficult to collect samples before certain wells pump dry. As such, the samples often contained high suspended solids. During the last groundwater sampling event, a settled/filtered sample was also collected from MW-7 and PCE was detected at 16,000 ppb, somewhat lower than the unfiltered sample. Site related groundwater contamination does not extend off-site.

Soil Vapor – The currently operating sub-slab depressurization systems in both on-site buildings (Buildings 1 and 2) are addressing the potential for soil vapor intrusion (SVI) in five tenant spaces for Suites 600, 800, 900, 1000 and 1100. The SSDS in and adjacent to Building 2 (under former Suite 700 and existing Suites 800 and 900) is also addressing the potential for SVI in Suites 1000 and 1100. During the most recent air sampling event (November 2015), indoor air samples were collected from Suites 600, 700 (the former Safety Kleen building demolished in 2018), 900, 1000, 1100, 1200, and 1300. SSDSs were not installed to depressurize spaces beneath Suites 1200,1300 or 1400. PCE was detected in the indoor air of Suite 600 at a concentration of 0.81 micrograms per cubic meter (mcg/m3), Suite 700 at 8.1 mcg/m3, Suite 900 at 1.6 mcg/m3, Suite 1000 at 0.68 mcg/m3, Suite 1100 at 2.4 mcg/m3, Suite 1200 at 1.1 mcg/m3, and was non-detect at Suite 1300. TCE was detected in the indoor air of Suite 700 (now demolished) at a concentration of 3 mcg/m3, which slightly exceeds the NYSDOH recommended air guideline of 2 mcg/m3 for TCE. TCE was detected in the indoor air of Suite 900 at 0.54 mcg/m3, Suite 1100 at 0.3 mcg/m3, and Suite 1200 at 0.49 mcg/m3. TCE was not detected in the indoor air of Suites 600, 1000, or 1300. Although soil vapor intrusion sampling of Suites 400 and 1300 indicated that no further action is recommended, air monitoring is recommended along with Suite 1200 and Suite 1400 to verify that the current SSDSs do not need to be expanded or new SSDSs are not needed in these four remaining tenant spaces.

Soil vapor contamination does not extend off-site.

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*.

Since some contaminated soils remain at the site below concrete or backfill, people will not come into contact with the contaminated soils unless they dig below the surface materials. 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 this contamination. Volatile organic compounds in the soil or 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, if referred to as soil vapor intrusion. Sub-slab depressurization systems have been installed on the two site buildings to prevent the indoor air quality of six tenant spaces from being affected by the contamination in soil vapor beneath the building. Indoor air monitoring is recommended for the remaining three tenant spaces not covered by the SSDSs. Sampling indicates soil vapor intrusion is not a concern for off-site buildings.

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 groundwater 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 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 Targeted Excavation with In-situ Bioremediation Groundwater Treatment with Institutional and Engineering Controls (IC/ECs) remedy.

The estimated present worth cost to implement the remedy is $925,000. The cost to construct the remedy is estimated to be $510,000 and the estimated average annual site management cost is $40,000.

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. Excavation

Excavation and disposal of contaminant source areas, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soils exceeding the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
- soils that may create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

The area targeted for excavation consists of approximately 275 square feet and the anticipated depth of soil removal is to the top of/slightly into the confining unit or approximately ten feet deep based on investigation results. Excavation may be required to further depths depending upon the post-excavation sampling results. The removal will target the shallower impacted soil in the perched groundwater table. It is estimated that approximately 100 cubic yards of contaminated soil will be removed for off-site disposal.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. Backfill will include at least a two-foot layer of sufficiently permeable material in the perched water table to provide for a suitable in-situ treatment zone. The site will be re-graded to accommodate installation of a cover system as described in remedy element 3.

3. Vapor Mitigation

The sub-slab depressurization systems installed on 6 of 10 tenant spaces within the two on-site buildings as an interim remedial measure (section 6.2) will continue and are required to be operated continuously. Indoor air of the four tenant spaces not covered by the SSDSs, Suites 400, 1200, 1300 and 1400 will be monitored to ensure additional actions are not needed to address potential indoor air impacts as a result of soil vapor intrusion in these spaces not covered by a SSDS.

4. Cover System

A site cover of pavement or buildings currently exists for the entire site and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for

commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

5. Enhanced Bioremediation

In-situ enhanced bioremediation will be employed to treat contaminants in the perched groundwater table in the source area. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the addition of emulsified activated carbon injections, or similar material. The carbon adsorbs the contamination and promotes the growth of bacteria which further stimulates biological breakdown of contaminants. The treatment zone is an area of approximately 275 square feet, corresponding to the area of excavation. The material will be delivered to the treatment zone through multiple injection wells that are installed in the source area. The injection wells will be installed in the backfilled area adjacent to MW-7 and in the footprint of the former dry-cleaning space. The amount of material to be injected will be determined during design and depend upon the type of material that is selected.

Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required.

6. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require 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);

- allow the use and development of the controlled property for 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;

    - requires compliance with the Department approved Site Management Plan.

7. Site Management Plan

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 SSDS discussed in Section 6.2 above and the cover system discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

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

- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes investigation of the area beneath the suites 600 and 800 and further delineation as warranted.

- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;

- a provision for evaluation of the potential for soil vapor intrusion for any new buildings developed on the site (since the current buildings have already been mitigated), including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 3 above will be placed in any areas where the upper one foot of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);

- provisions for the management and inspection of the identified engineering controls;

- maintaining site access controls and Department notification; and

- 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:

- monitoring of groundwater to assess the performance and effectiveness of the remedy, with a provision for additional treatment if determined necessary by the Department;

- a schedule of monitoring and frequency of submittals to the Department; and

- monitoring for vapor intrusion for any buildings on the site as may be required by the Institutional and Engineering Control Plan discussed in item a 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:

- procedures for operating and maintaining the remedy;

- compliance monitoring of treatment systems to ensure proper O&M;

- maintaining site access controls and Department notification; and

- 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 Remedial Investigation 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. The contaminants of concern at the site are volatile organic compounds (VOCs). 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.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil, and soil vapor.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas identified at the site include an area of contaminated soil located in former breezeway between the former dry cleaner space (Suite 700, now demolished) and the billiards hall (Suite 600).

Data collected during the remedial investigation indicates that hazardous waste was disposed at the site, which resulted in the current soil contamination and localized groundwater impacts. Contaminants of concern include PCE and its breakdown products TCE, cis-1,2 DCE and vinyl chloride. The contaminants are believed to be related to chlorinated solvent use associated with the site's past dry-cleaning operations. Figure 4 shows the general location of the source area for the primary contaminants of concern in soil. PCE contamination was observed in several soil samples collected during the RI, but the highest concentration (27 ppm) was observed in the 13 to 15-foot sampling interval in soil boring SB-7.

Following the recent demolition of the former dry-cleaning tenant space, a membrane interface probe (MIP) was used to screen for contaminants in the source area. Additional soil samples were collected for analysis beneath the former dry cleaner to further delineate the limits of the previously identified area of soil impacts. Generally, the results of this investigation did not find significant concentrations of dry cleaning solvents in the shallow soil beneath the former dry cleaner. However, the MIP did detect elevated readings in borings MIP-20 and MIP-22 at depths of about 8 and 10 feet below ground surface (bgs), respectively. These boring are located near MW-7 and the findings support the conclusion that the contamination is localized in nature. In addition, the potential exists that contamination is present under structures adjacent to the former dry cleaner, suites 600 and 800.

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

In total, 17 groundwater samples were collected from 9 monitoring wells during the RI to determine the nature and extent of contamination in the groundwater. The wells are screened in the overburden, across the perched groundwater table.

All wells are located on-site and are in relatively close proximity to the former dry-cleaning tenant space. Three wells are near the source area (MW-1R, MW-7 and MW-2) and two others are located upgradient (MW-8 and MW-9). The remaining four monitoring wells are located downgradient of the source area. Several of the wells were located along the northern property boundary to determine whether contamination was migrating from the site. These wells (MW-3 and MW-6) showed no impacts indicating that groundwater contamination is not leaving the site.

As shown in Table 1, several samples exceeded the SCGs for the contaminants of concern in groundwater. PCE and its breakdown products were detected in four of the monitoring wells. By far, the most impacted well was MW-7. Lesser concentrations of contaminants were also observed in monitoring wells MW-1R, MW-2 and MW-10. Figure 5 depicts the well locations and lists the contaminant concentrations that were detected in each well during the RI.

It should be noted that due to the nature of the perched water table, some of the wells (MW-1R and MW-7) would dry up during conventional low flow sampling. Thus, it was necessary to collect a grab groundwater sample from these wells for analysis. Significant discrepancies were observed in the sampling results during the investigation, particularly in source area well MW-7. During the most recent sampling event, multiple samples were collected from well MW-7 for analysis. One of the samples was a grab sample, which contained high suspended solids, and the another was a settled sample with reduced turbidity. The results from these samples differed significantly. The sample with high suspended solids detected PCE at a concentration of 79,000 ppb whereas the other sample detected PCE at a concentration of 16,000 ppb. It is believed that the grab sample could be negatively impacted by the presence of contaminated soil particles.

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene (PCE)	0 – 79,000	5	4 of 9
Trichloroethene (TCE)	0 – 7	5	1 of 9
Cis-1,2 Dichloroethene (DCE)	0 - 100	5	4 of 9
Vinyl Chloride	0 - 150	2	2 of 9

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).

Based on the findings of the RI, the past disposal of hazardous waste 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: tetrachloroethene (PCE) and its related breakdown products listed above.

Soil

There were no surface soil samples collected during the RI since the entire site is either paved or covered by structures. A total of seven soil borings were advanced during the RI to evaluate subsurface soil conditions. The borings were located near the former dry cleaner space as seen on Figure 6. Three of the borings were advanced beneath the dry cleaner foundation and adjacent to the location of the dry-cleaning machine. Two of the borings (SB-MW-1R and SB-MW-7) were converted into monitoring wells. Each boring was continuously sampled and screened using a photoionization detector (PID). One soil sample was collected from each boring. In general, the lab samples were collected from the location where the highest PID readings were detected or, if there were no detections, from the interval just above the water table.

As stated above, an additional subsurface soil investigation was completed after the former dry-cleaner space was demolished. MIP borings were advanced at twenty-four (24) locations to depths ranging from approximately 5-20 feet below grade. The MIP borings were located within the footprint of the former dry cleaner and the surrounding parking lot. Soil samples were collected for analysis from three of the boring locations. Two of the locations that were sampled (MIP-19 and MIP-20) were in the source area, and contamination was not found at MIP-19.

The results of the sampling indicated that PCE contaminated soil was present beneath and adjacent to the former dry cleaner space. The potential exists for soil contamination to be present under adjacent structures including suites 600 and 800. The highest concentration was detected in the 13 to 15-foot feet sampling interval in soil boring SB-7, which had a concentration of 27 ppm. Soil results did not detect TCE, SVOCs, metals,PCBs, or pesticides above SCOs, in any of the samples collected.

Table 2 summarizes the results for the subsurface soil samples, including the MIP samples, that were collected during the RI.

Table #2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[d] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Tetrachloroethene	0 - 27	1.3	3 of 10	1.3	3 of 10

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

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminant identified in soil which is considered to be the primary contaminant of concern, to be addressed by the remedy selection process, is PCE.

Soil Vapor

The soil vapor intrusion pathway was assessed during the remedial investigation due to the presence of soil and groundwater contamination. This was achieved by collecting sub-slab soil vapor and indoor air samples at nearby tenant spaces in the shopping plaza. The results of the soil vapor intrusion sampling indicated that contamination does not migrate off-site and thus no off-site soil vapor intrusion sampling was determined to be necessary.

The tenant spaces were identified for soil vapor intrusion sampling based upon their location relative to the site's groundwater contamination. The groundwater contamination is very localized so the initial round of testing focused on adjacent tenant spaces. The property owner worked with the tenants to arrange for access to collect the samples in each space. The sampling efforts occurred over several heating seasons as the extent of sub-slab soil vapor impacts were determined. In general, at least one concurrent set of sub-slab soil vapor and one indoor air samples were collected from each space. However, indoor air samples were not collected from the dry cleaner and the beauty salon due to the likely presence of chemicals in use in those spaces.

In total, soil vapor intrusion sampling was completed at nine tenant spaces within the shopping plaza. The sampling determined that six of the tenant spaces were at risk for soil vapor intrusion and required mitigation. Data indicated that no action was required for the remaining three tenant spaces (Suite 400, Suite 1200 and 1300). To address the elevated sub-slab concentrations that were detected in the plaza, a vapor mitigation IRM (SSDS) was installed in 2013.

Soil Vapor Intrusion sampling details and SSDS sequence

In October 2011, sub-slab soil vapor samples were collected from beneath the dry cleaner space (Suite 700) and the two adjacent spaces on either side (Suite 600 and Suite 800). Due to active dry-cleaning activities at Suite 700 and the use of solvents at Suite 800 (hair and nail salon), an indoor air sample was only collected at Suite 600. PCE was detected in the sub-slab vapor of Suite 700 at a concentration of 1,480,000 mcg/m3, at Suite 600 at a concentration of 2,280 mcg/m3, and at Suite 800 at a concentration of 90,800 mcg/m3. TCE was not detected in the sub-slab soil vapor of Suites 600 or 700, but was detected in the sample collected from beneath Suite 800 at a concentration of 272 mcg/m3. PCE was detected in the indoor air sample from Suite 600 at a concentration of 7.3 mcg/m3 which is below the NYSDOH recommended air guideline of 20 mcg/m3for PCE. TCE was not detected in the indoor air sample from Suite 600. Low levels of other VOCs were detected in the indoor air sample, but are not site-related contaminants of concern and will not be discussed further. Based on a review of the data as compared to the NYSDOH Soil Vapor Intrusion Guidance decision matrices, actions were recommended to mitigate Suites 600, 700 and 800. In January 2013, a sub-slab depressurization system (SSDS) was installed as an interim remedial measure. Field testing confirmed adequate vacuum under Suites 600, 700, and 800. No indoor air samples were taken at that time to confirm that indoor air impacts were not occurring as a result of soil vapor intrusion.

In March 2013, the SVI investigation was expanded. Sub-slab soil vapor and indoor air samples were collected from Suites 400, 900, and 1000. PCE was detected in the sub-slab soil vapor of Suite 400 at a concentration of 3.7 mcg/m3and not detected in the indoor air. TCE was not detected in the sub-slab vapor or the indoor air samples collected from Suite 400, PCE was detected in the sub-slab vapor sample of Suite 900 at 63,700 mcg/m3, but not detected in the indoor air sample. TCE was detected in the sub-slab vapor sample of Suite 900 at 3,200 mcg/m3 but not detected in the indoor air sample. PCE was detected in the sub-slab vapor sample of Suite 1000 at 26 mcg/m3and was detected in the indoor air at 110 mcg/m3. TCE was not detected in either sub-slab vapor sample and indoor air sample from Suite 1000. Based on a review of this data for Suites 400, 900, and 1000 when compared to the NYSDOH Soil Vapor Intrusion Guidance decision matrices, no further actions were

recommended for Suite 400 and actions were recommended to mitigate Suites 900 and 1000. The SSDS previously installed on Suite 700 of the former drycleaner was expanded in October 2013 to include vapor extraction points beneath Suites 600, 900 and 1000. Field testing confirmed vacuum was present beneath Suites 600-1000. No confirmatory indoor air samples were collected at that time to confirm that indoor air impacts are no longer occurring.

In November 2013, field testing of the existing SSDS housed outside Suite 700 was performed and it was discovered the system was not operating properly and was not maintaining a vacuum beneath Suites 600, 800, or 1000. Indoor air samples were collected at that time. from Suites 600, 900, 1000, and 1100. PCE was detected in the indoor air samples of Suite 600 at 12 mcg/m3, Suite 900 at 1,260 mcg/m3, Suite 1000 at 2,620 mcg/m3, and Suite 1100 at 182 mcg/m3. TCE was detected in the indoor air samples at concentrations of 11 mcg/m3 (Suite 900), 14 mcg/m3 (Suite 1000), 1.2 mcg/m3 (Suite 1100). The levels of PCE in the indoor air of Suites 900, 1000 and 1100 exceeded the NYSDOH recommended air guideline of 30 mcg/m3 and for Suites 900 and 1000 exceeded the immediate action guideline of 300 mcg/m3 for PCE.

In early April 2014, the SSDS was fully repaired when one of the original SSDS's two fans was replaced and Suite 600 was placed on its own separate SSDS. Post-mitigation indoor air samples were collected in late April 2014. PCE was detected in the indoor of Suite 600 at 8.1 mcg/m3, Suite 900 at 13 mcg/m3 which is below the recommended air guideline of 30 mcg/m3 but is slightly above the expected background of about 10 mcg/m3 for PCE, Suite 1000 at 210 mcg/m3 (Suite 1000 was vacant at the time), and Suite 1100 at 38 mcg/m3which exceeds the air guideline of 30 mcg/m3. TCE was not detected in any of the indoor air samples. Based on these results additional sampling was scheduled for later in the year.

In December 2014, field testing was conducted and confirmed adequate vacuum was present beneath the slabs of Suites 600-1100. Indoor air samples were again collected from Suites 1000 and 1100. PCE was not detected in the indoor air of Suite 1000, but was detected in the sample collected from suite 1100 at a concentration of 10.5 mcg/m3. TCE was not detected in the indoor air of Suite 1000, but was detected in the indoor air of Suite 1100 at a concentration of 1.0 mcg/m3. Based on these results, continued operation of the system and air monitoring was scheduled.

In November 2015, indoor air samples were collected from Suites 600, 700 (changed to a laundromat with no dry-cleaning services), 900, 1000, 1100. PCE was detected in the indoor air of Suite 600 at a concentration of 0.81 mcg/m3, Suite 700 at 8.1 mcg/m3, Suite 900 at 1.6 mcg/m3, Suite 1000 at 0.68 mcg/m3, and Suite 1100 at 2.4 mcg/m3, TCE was detected in the indoor air of Suite 700 at a concentration of 3 mcg/m3 which slightly exceeds the NYSDOH recommended air guideline of 2 mcg/m3 for TCE, Suite 900 at 0.54 mcg/m3, and Suite 1100 at 0.3 mcg/m3.TCE was not detected in the indoor air of Suites 600 or 1000. Since the current SSDSs are not mitigating Suites 1200 and 1300, soil vapor intrusion sampling was conducted for these two spaces and included indoor air and sub-slab soil vapor samples. PCE and TCE were detected in the sub-slab soil vapor of Suite 1200 at concentrations of 587 mcg/m3 and 5.2 mcg/m3and PCE and TCE were detected in the indoor air at concentrations of 1.1 mcg/m3 and 0.49 mcg/m3, respectively. PCE and TCE were not detected in either sub-slab vapor sample or the indoor air sample from Suite 1300. Based on these sampling results, indoor air monitoring is recommended for Suite 1200 and even though results indicate that no further action is needed, monitoring is recommended as this space is a part of the same strip mall building. Suite 1400 was not evaluated for soil vapor intrusion and an evaluation is recommended. At a minimum, the indoor air of Suite 1400 is also recommended.

As noted, the IRM vapor mitigation system was expanded as necessary to ensure an adequate vacuum was present beneath each impacted tenant space. Figure 7 summarizes the results from the most recent soil vapor intrusion sampling which was completed in November 2015. The indoor air concentrations in each tenant space decreased

upon resampling indicating that the SSDS IRM was effective in reducing vapor intrusion. The former dry cleaner, tenant space suite 700, has since been demolished and will be paved over. The final construction details of the SSDS are summarized in the approved November 2018 SSDS Report.

Soil vapor contamination identified during the RI was addressed during the IRM described in Section 6.2.

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.

Alternative 1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2 This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

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

Alternative 2: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include excavation and disposal of all contaminated soil above unrestricted use soil SCOs. The removal would include all areas where soil and groundwater impacts exist. In general, soil would be excavated to a depth of approximately 17 feet deep near the former dry cleaner space. It is estimated that approximately 1000 cubic yards of soil would require disposal. Any excavated material that was determined to meet the soil cleanup objectives could be reused on-site. Clean backfill would need to be brought to the site to meet the required restoration grade. Alternative 2 would require the demolition of nearby structures to accommodate the soil removal and is estimated to require 10-14 months to complete.

Alternative 2 also includes collection and treatment of all contaminated groundwater generated during excavation activities. The groundwater would be treated with a carbon filtration system and discharged in accordance with applicable permit requirements in .

Capital Cost: *$6,000,000*

Alternative 3: Air Sparging and Soil Vapor Extraction with IC/ECs

This alternative would include the conversion of the existing sub-slab depressurization system (SSDS) into an air sparge/soil vapor extraction (AS/SVE) system. An AS/SVE system includes the injection of pressurized air into the subsurface, below the water table, to volatilize contamination in soil and groundwater. This would be accomplished by connecting an air compressor to a series of installed air sparge injection points. The contaminated vapors are then captured by a network of vacuum extraction wells that is designed to ensure an adequate vacuum is present to control vapor migration. The contaminated vapors are then treated through an activated carbon vessel and monitored prior to discharge to the ambient air.

It is estimated that ten air sparge injection wells and six vapor extraction points would be installed to convert the existing SSDS in an AS/SVE system. However, a pilot test would be completed to determine the final design of the remedy. Under this remedy the AS/SVE system is estimated to be operated for approximately 15 years.

Alternative 3 also utilizes institutional controls (ICs) and Engineering Controls (ECs) to provide protection to human health and the environment. The ICs include an environmental easement which would place restrictions on the use of groundwater and land development at the site. ECs would be utilized to maintain the site's soil cover and AS/SVE system. In addition, a Site Management Plan (SMP) would be developed to manage the ICs and ECs and provides the details of the site's future monitoring activities.

Present Worth: *$1,000,000*
Capital Cost: *$247,000*
Annual Costs (15 years): *$53,600*

Alternative 4: In-situ Bioremediation (ISB) Treatment with IC/ECs

This alternative would include the treatment of contaminated groundwater by means of enhanced in-situ bioremediation injections. Alternative 4 utilizes injections of emulsified activated carbon (or similar compound) to treat contaminants by means of anaerobic reductive dechlorination. The carbon would adsorb to contamination in the subsurface and promote the growth of bacteria to stimulate additional breakdown of contamination. Significant evidence of contaminant breakdown has already been observed in groundwater so the addition of bacteria or other enhancers are likely not needed. The material would be dispersed into the subsurface near the former dry cleaner space. The treatment zone is estimated to consist of an area of approximately 500 square feet in total. It would include a row of approximately ten injection points spaced ten feet apart. Alternative 4 assumes that one round of in-situ bioremediation treatment would be utilized, although more may be necessary to achieve remediation goals. 10 years of groundwater monitoring are assumed. The final specifications of the injection program would be determined during design.

Alternative 4 would also require the same ICs and ECs as outlined in Alternative 3 including the environmental easement, soil cover, SSDS and SMP.

The treatment technology in Alternative 4 has proven effective in the treatment of chlorinated volatile organic chemicals in groundwater at numerous sites in New York and elsewhere. However, its effectiveness in treating more heavily contaminated soils and source areas is less certain. Accordingly, the SMP would also contain a provision for additional treatment of soil or groundwater, if determined necessary, if SCGs are not achieved.

Present Worth: *$692,000*
Capital Cost: *$225,000*
Annual Costs (10 years): *$42,500*

Alternative 5: Targeted Excavation with In-situ Bioremediation (ISB) Treatment and IC/ECs

This alternative would require excavation of soil in the source area near monitoring well MW-7. Soil would be excavated in an area of approximately 275 square feet. Excavation would be completed to a depth of approximately 10 feet, which generally corresponds to the confining unit observed during the MIP program. Excavation to greater depths may be required based upon conditions in the field and the results of post-excavation

confirmation sampling. The excavation area would include excavation of soil near MW-7. In total, up to approximately 100 cubic yards of soil would be excavated and transported off-site for proper treatment and/or disposal. Post-excavation soil samples would be collected to ensure removal of all accessible contaminated soil. The excavation will be backfilled to existing grades with imported clean fill material which meets the requirements for backfill in 6 NYCRR Part 375-6.7(d) or excavated material that meets the restricted use SCOs. Backfill will also include at least a two-foot layer of gravel to the top of the perched groundwater table. Any groundwater that is generated during soil removal will be collected and treated prior to discharge. All discharges will be completed in accordance with applicable permits.

In addition, Alternative 5 would utilize an in-situ bioremediation treatment similar to Alternative 4 to treat remaining contamination in groundwater. Approximately three injection wells will be installed in the source area and screened across the backfilled permeable gravel layer.

Alternative 5 would also require the same ICs and ECs as outlined in Alternative 3 including the environmental easement, soil cover, SSDS and SMP.

Present Worth: *$1,060,000*
Capital Cost: *$650,000*
Annual Costs (10 years): *$35,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Further Action	0	0	0
Restoration to Pre-Disposal or Unrestricted Conditions	6,000,000	0	6,000,000
Air Sparging and Soil Vapor Extraction with IC/ECs	247,000	53,600	1,000,000
In-situ Bioremediation Treatment of Groundwater with IC/ECs	225,000	42,500	692,000
Targeted Excavation with In-Situ Bioremediation and IC/ECs	650,000	35,000	1,060,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 5, Targeted Excavation with In-Situ Bioremediation and IC/ECs as the remedy for this site. Alternative 5 would achieve the remediation goals for the site by removing shallower contaminated soil and treating the contamination in the perched groundwater table by means of enhanced bioremediation. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 8.

Basis for Selection

The proposed remedy is 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 (No Further Action) does not provide any additional protection to public health and the environment and thus will not be evaluated further.

The proposed remedy Alternative 5 would satisfy this criterion by removing contaminated soil and using in-situ bioremediation to break down contaminants in the areas where remaining soil below the water table and groundwater are impacted. This will help to lower concentrations in groundwater which will reduce the potential for contaminant migration and the potential for soil vapor intrusion.

Alternative 2, by means of extensive soil excavation and treatment of contaminated groundwater, is expected to meet the environmental protection threshold criterion with the highest degree of certainty. Alternatives 3 and 4 also would comply with this criterion, but to a lesser extent than Alternative 5, because they would likely remove less contamination in the source area.

Alternatives 3, 4 and 5 would each utilize ICs and ECs to place restrictions on site usage and require maintenance of the on-site sub-slab depressurization system (SSDS). By maintaining the SSDS, the most significant potential for human exposure will be addressed.

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.

All of the retained Alternatives, 2 through 5, are expected to comply with SCGs. Alternative 3 has been successfully implemented at other comparable sites and, by addressing soil and groundwater contamination, is expected to significantly reduce contaminant concentrations in the source area to create the conditions necessary

to meet groundwater SCGs. Alternative 4 also would address contamination at the site, but by means of a different approach than Alternative 3. Alternative 4 would use bioremediation to break down contaminants in the groundwater source area and thereby reduce concentrations to help achieve SCGs; however, Alternative 4 would not address contaminated soil above the water table. Similar to Alternative 4, Alternative 5 would reduce concentrations of contaminants in groundwater, but would also remove soil contamination through excavation. Alternative 2 would comply with this criterion to the highest degree of certainty by physically removing all contaminated soil from the site and treating groundwater that is generated during the excavation activities.

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.

Alternative 2 provides the highest level of long-term effectiveness and permanence since it would remove all the soil in areas of contamination. Alternative 2 also provides extensive treatment of contaminated groundwater, thus limiting the long-term potential for soil vapor intrusion impacts and need for groundwater use restrictions. Alternative 5 would provide significant long-term effectiveness by removing contaminated soil in the source area and treating remaining groundwater. Alternatives 3 and 4 would each be expected to provide significant long-term effectiveness by treating contamination in the source area, although to a lesser degree than Alternatives 2 and 5.

Alternatives 3, 4 and 5 would require groundwater use restrictions to limit potential exposures since contamination would likely remain on-site. These restrictions would be required for an indefinite timeframe. Alternatives 3, 4 and 5 would also include the long-term operation of a SSDS which would significantly reduce the long-term potential for soil vapor intrusion exposure at the site.

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 2 provides the most reduction in toxicity, mobility and volume as it would remove all soil contamination and dispose of it at an approved landfill. Alternative 2 also treats all contaminated groundwater encountered during the excavation activities and thus is expected to significantly reduce the potential for any toxicity, mobility and volume to remain within groundwater.

Alternative 3 is expected to provide a significant reduction of toxicity, mobility and volume of contamination by volatilizing contaminants in both soil and groundwater and extracting them from the subsurface. Alternative 4 would reduce contaminant toxicity, mobility and volume by treating groundwater through means of anaerobic dechlorination. However, Alternative 4 would not reduce the volume of contaminated soil. Alternative 5 would satisfy this criterion to a greater degree than Alternatives 3 and 4 because it would physically remove source material by means of excavation.

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.

Alternative 2 is expected to have much greater short-term impacts than Alternatives 3 or 4 due to its demolition and soil excavation activities. Alternative 2 would require the demolition of buildings with currently operating businesses, and operation of heavy equipment and increased truck traffic which would cause noise and other disruptions to the community. Similarly, Alternative 5 would have greater short-term impacts than Alternatives 3 or 4 due to excavation activities, but would cause less disruption than Alternative 2.

Although Alternatives 3 and 4 would be much less disruptive to the community, they would not be as effective in meeting remedial goals for the short-term. Both alternatives are expected to require many years to achieve groundwater quality standards. Alternative 2 is expected to have the greatest short-term effectiveness since it would remove all contamination at the site and achieve remedial objectives the quickest. Alternative 5 is expected to achieve remedial goals faster than Alternatives 3 and 4 since it would remove source material in addition to treat groundwater.

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.

All of the remedial alternatives are all considered implementable from a technical standpoint, since each uses proven technologies for removing and/or treating the contamination of concern.

Alternative 2 would be the most difficult remedy to implement since significant challenges would likely be presented by the required depth of soil removal. In addition, dewatering and on-site treatment of contaminated groundwater would be required. Alternative 2 would require significant structural support of the excavation and necessitate the handling of significant volumes of soil and groundwater. There would also likely be administrative challenges associated with implementing Alternative 2 due to the need for demolition of parts of the existing occupied shopping plaza.

Alternative 3 is generally relatively easy to implement, but may encounter difficulties in obtaining the necessary air flow for air sparging due to the presence of silt and clay at the site. Likewise, the ability of Alternative 4 to adequately inject material into the required treatment zone could prove difficult. Under both of these alternatives, additional remedial measures may be necessary if the treatment proves to be less than effective. Alternative 5 would be relatively easy to implement since the amount of excavation would be limited to the most accessible contaminated soil. In addition, Alternative 5 would provide a permeable treatment zone in the perched groundwater table to allow for the injection of amendments to the required depth.

Alternatives 3, 4 and 5 are not expected to encounter any significant administrative challenges during their implementation. Each of them have been implemented at numerous sites, are relatively easy to construct and require the use of minimal personnel and equipment.

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 costs of the alternatives vary significantly. Of all the alternatives, Alternative 2 would have the highest capital cost since it requires building demolition, soil removal, groundwater treatment and disposal of more significant quantities of soil and groundwater. The capital costs associated with Alternatives 3, 4 and 5 are much lower than Alternative 2, yet these remedies could still be expected to provide significant overall levels of protection for the environment. Since Alternatives 3, 4 and 5 would leave contamination at the site, they would require additional annual costs associated with the long-term maintenance and monitoring of the remedy.

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.

The current and anticipated future use of the site is commercial. Contamination has not migrated off-site. The surrounding land use is a mix of commercial and vacant properties.

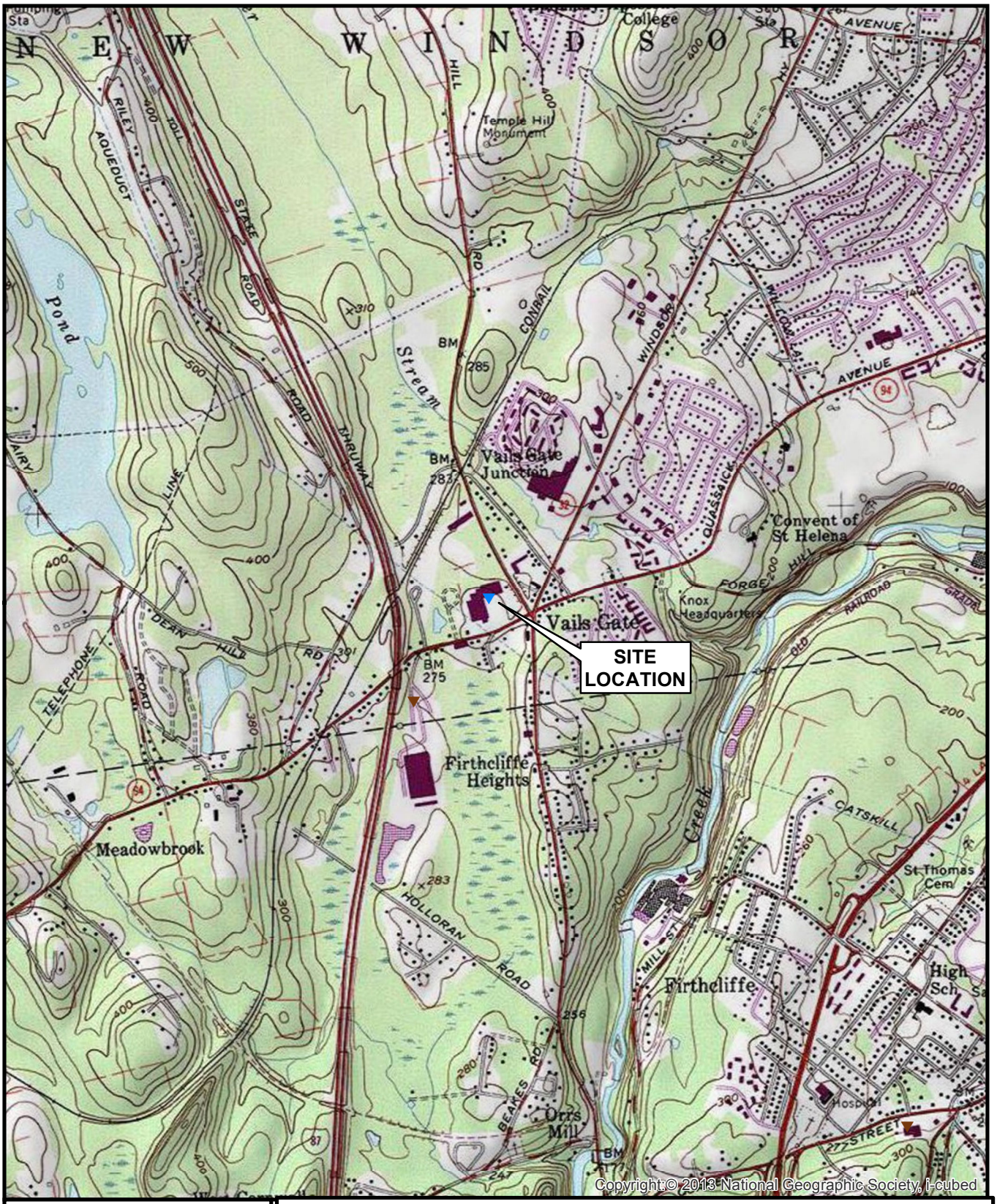
Alternative 2 would be the most desirable in terms of land use since no soil contamination would remain at the site. However, Alternative 2 would disrupt the current site usage by requiring demolition of several occupied tenant spaces in the shopping plaza.

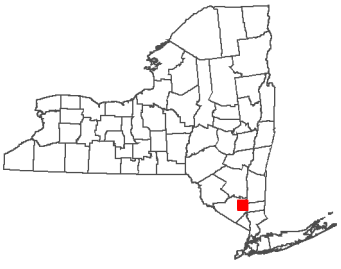
Although Alternatives 3, 4 and 5 would leave contamination behind at the site, it is expected that they would each provide an acceptable level of cleanup given the anticipated future use of the site. These alternatives would require the use of institutional and engineering controls for the foreseeable future including groundwater use restrictions and sub-slab vapor mitigation system maintenance and inspection.

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





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0 950 1,900
Feet

Figure 1

Site Location Map

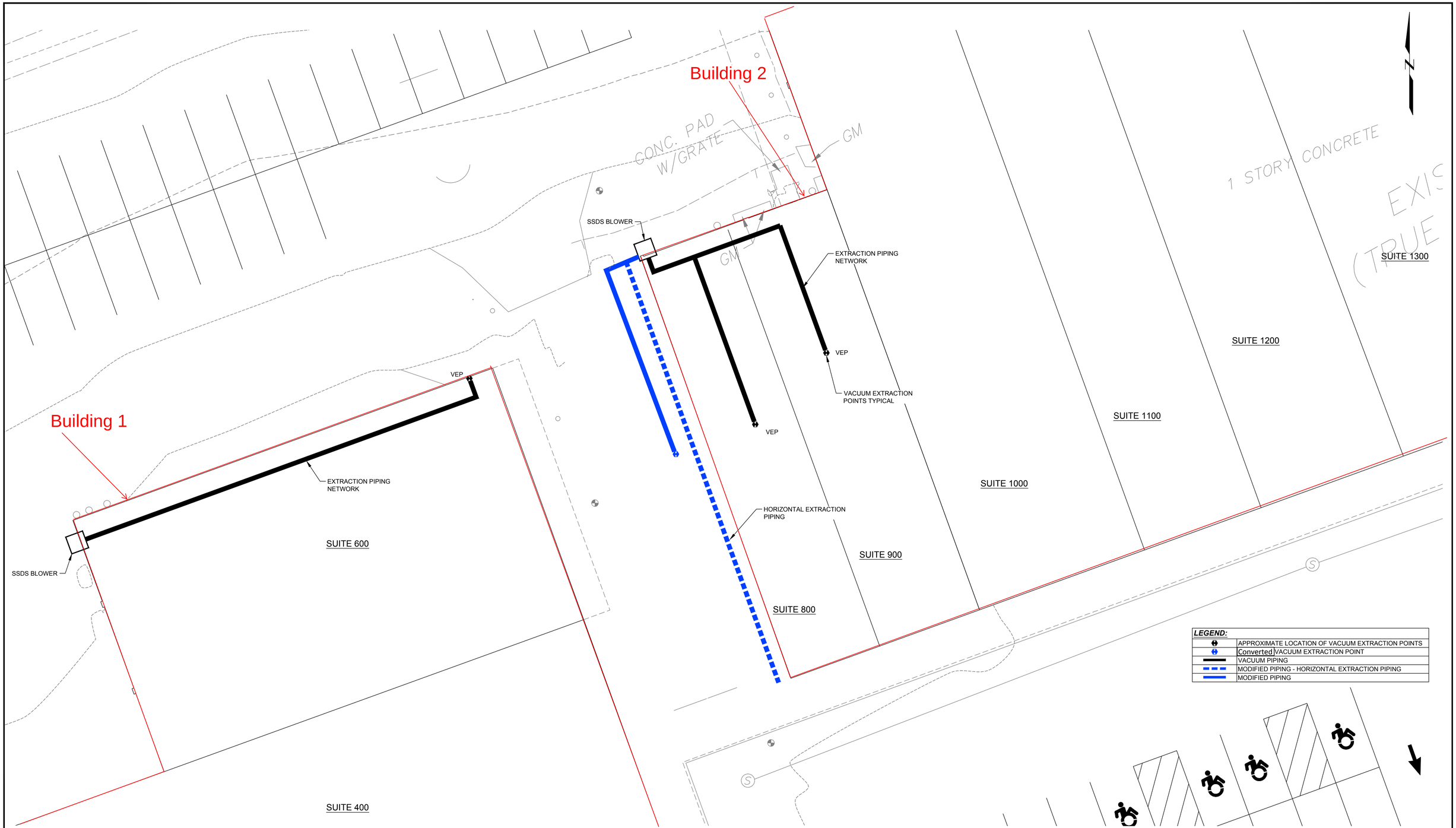
Former Safety Kleen Dry Cleaners Site
Village of Vails Gate
Site No. 336078

DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •

Former Safety Kleen Dry Cleaners Site
Property Boundary
Figure 2

230 115 0 230 Meters

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation



LEGEND:	
	APPROXIMATE LOCATION OF VACUUM EXTRACTION POINTS
	Converted VACUUM EXTRACTION POINT
	VACUUM PIPING
	MODIFIED PIPING - HORIZONTAL EXTRACTION PIPING
	MODIFIED PIPING

SOURCE:

1. PLAN BASED ON EXISTING CONDITIONS & DEMOLITION PLAN, PRICE CHOPPER PLAZA SITE PLANS PREPARED FOR V.G.R ASSOCIATES, LLC BY MASTER CONSULTING P.A. DATED SEPTEMBER 23, 2017.
2. VACUUM EXTRACTION POINTS FROM FIGURE 3. VAPOR SAMPLE LOCATIONS, NOT TO SCALE, INTERIM REMEDIAL INVESTIGATION REPORT BY SOLUTECH, ENVIRONMENTAL CONSULTANTS DATED MAY 23, 2014.
3. LOCATIONS OF VACUUM EXTRACTION POINTS ARE ESTIMATED BASED ON FIELD OBSERVATIONS AND SOLUTECH REPORTS.

0 10 20
SCALE: 1" = 10'

NOTES:

1. PROPOSED VEP WILL BE SLOTTED 2-INCH SCH 40 PVC, 0.02 SLOT SCREEN INSTALLED UPON COMPLETION OF SITE CONSTRUCTION ACTIVITIES.
2. HORIZONTAL EXTRACTION PIPING IS A SLOTTED 2-INCH SCH 40 PVC, 0.02 SLOT SCREEN.
3. HORIZONTAL EXTRACTION PIPING AND VEP* WILL BE CONNECTED TO SSDS BLOWER UPON COMPLETION OF SITE CONSTRUCTION ACTIVITIES.

Sub-Slab Depressurization System Modification Report
Former Safety Kleen Dry Cleaner
115 Temple Hill Road
New Windsor, New York

The Rosen Group
Claymont, Delaware

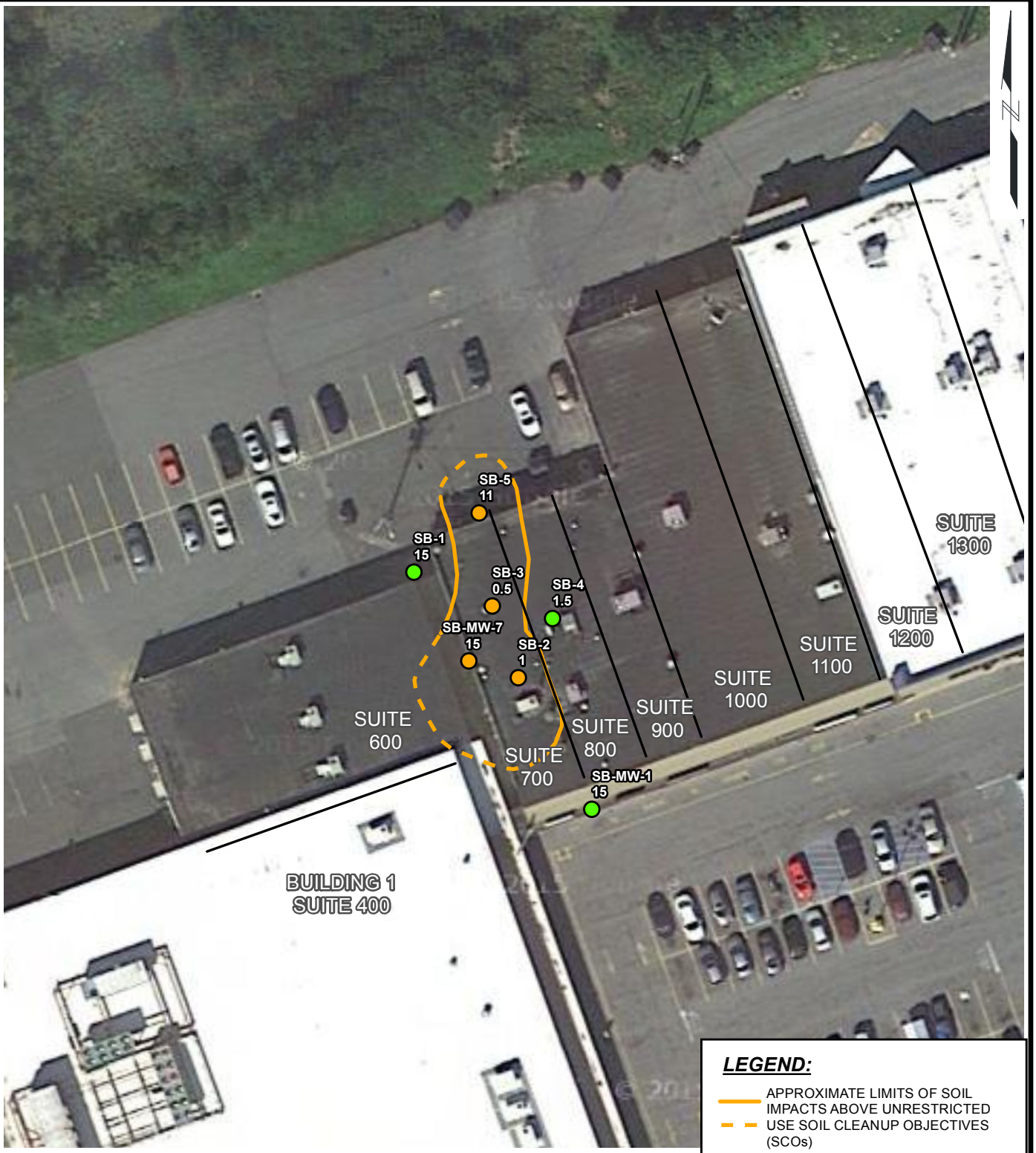
GEI Consultants

Project 1602600

SUB-SLAB DEPRESSURIZATION SYSTEM LOCATION PLAN

October 2018 Figure 3

\\hts1v-fs01\ I:\Tech\Environmental Projects\The Rosen Group\CAD\Design\Working\SSDS-Modification Report\SSDS Mod Report.dwg - 10/4/2018



SOURCE:

1. PLAN OBTAINED FROM SOLUTECH, INC, DATED JANUARY 2012.

0 50 100

SCALE: 1" = 50'

LEGEND:

- APPROXIMATE LIMITS OF SOIL IMPACTS ABOVE UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (SCOs)
- SOIL SAMPLE EXCEEDS UNRESTRICTED USE SCOs
- SOIL SAMPLE MEETS UNRESTRICTED USE SCOs
- 15 SOIL SAMPLE DEPTH BELOW GRADE (FEET)

Feasibility Study
Former Safety Kleen Dry Cleaner
115 Temple Hill Road
New Windsor, New York

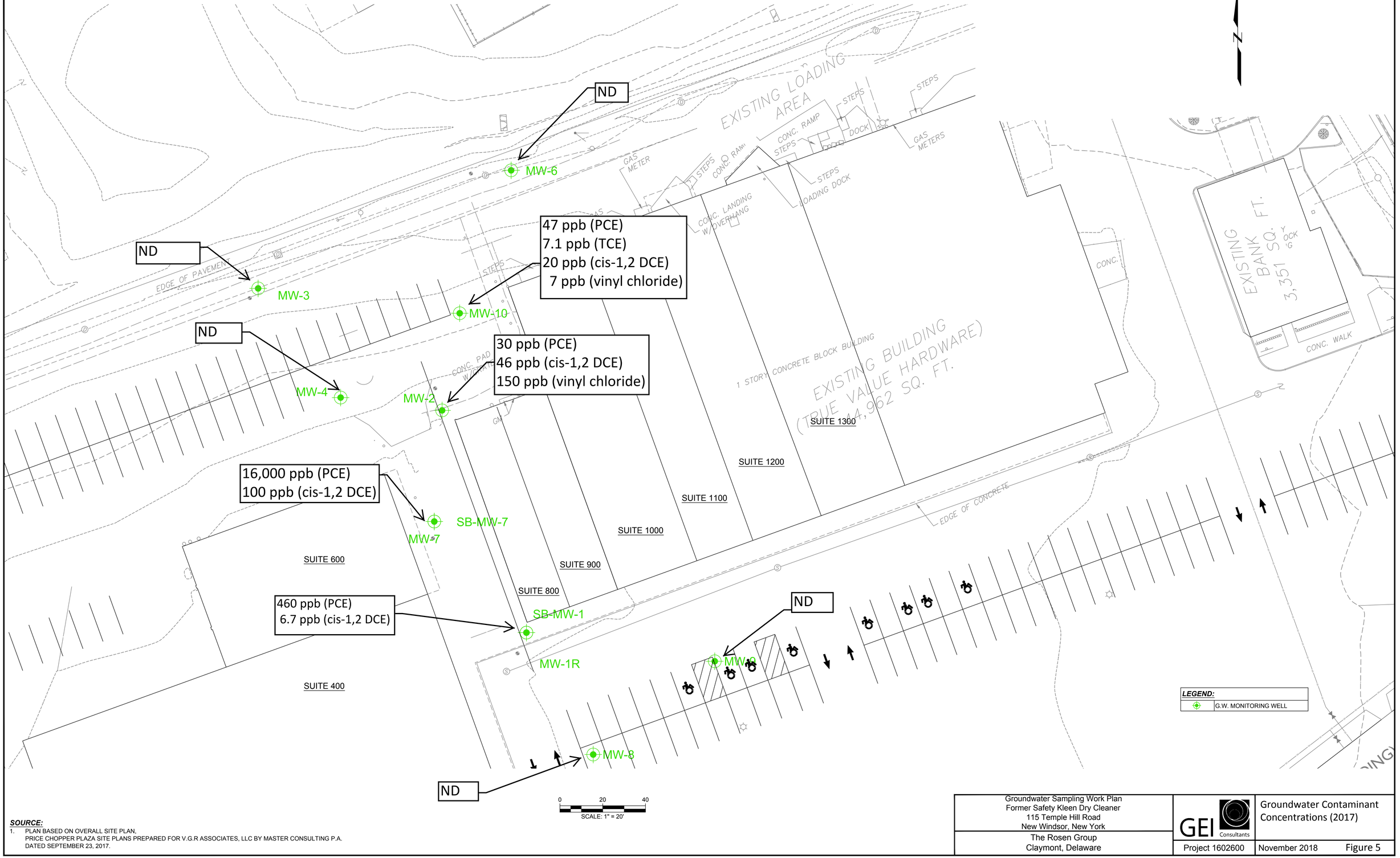
The Rosen Group
Claymont, Deleware

GEI Consultants

EXTENT OF SOIL IMPACTS

Project 1602600 | May 2016 | Figure 4

J:\Projects\1602600 The Rosen Group\Former Safety Kleen Dry Cleaner\Extent of Soil Impacts.mxd

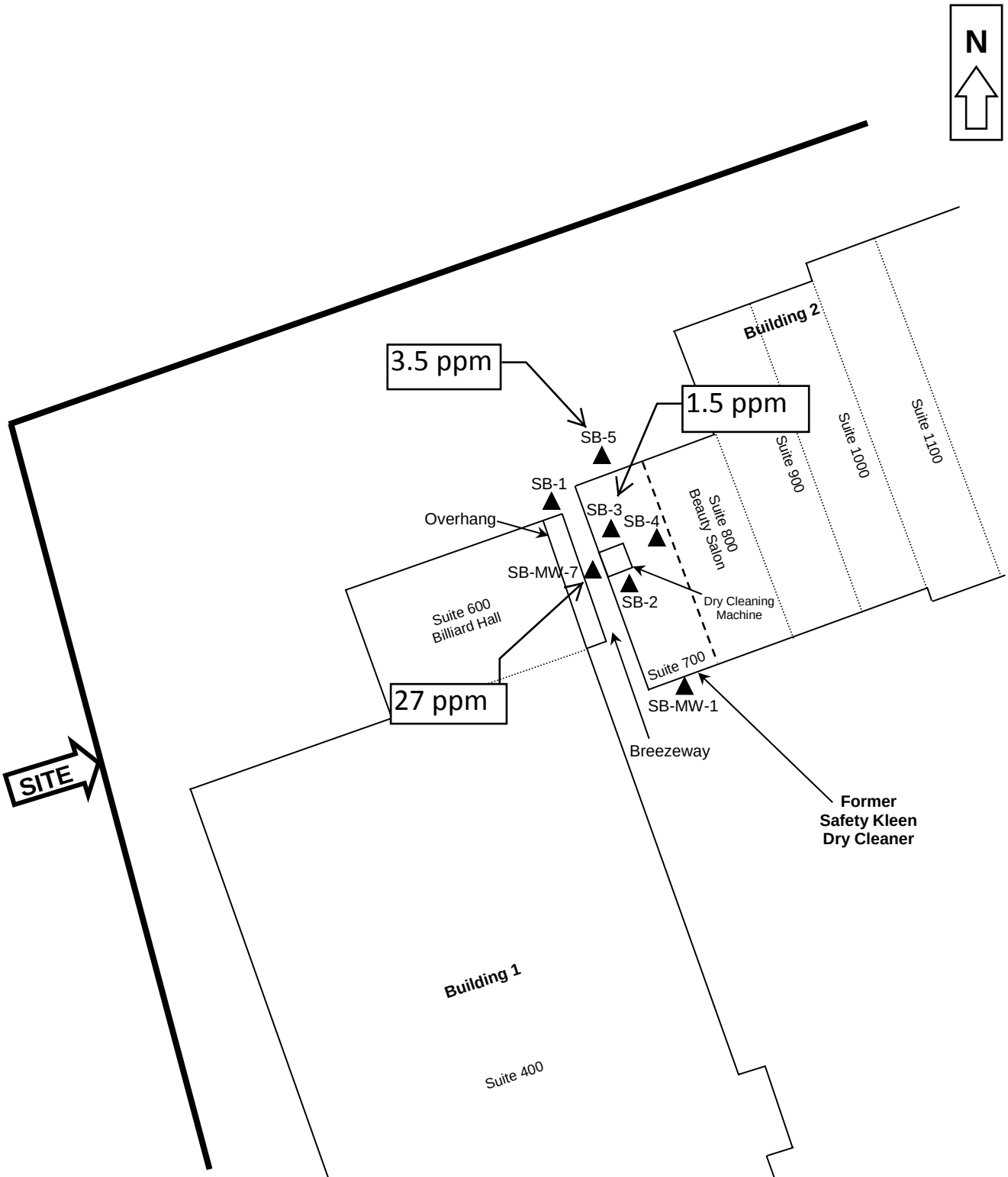


SOURCE:

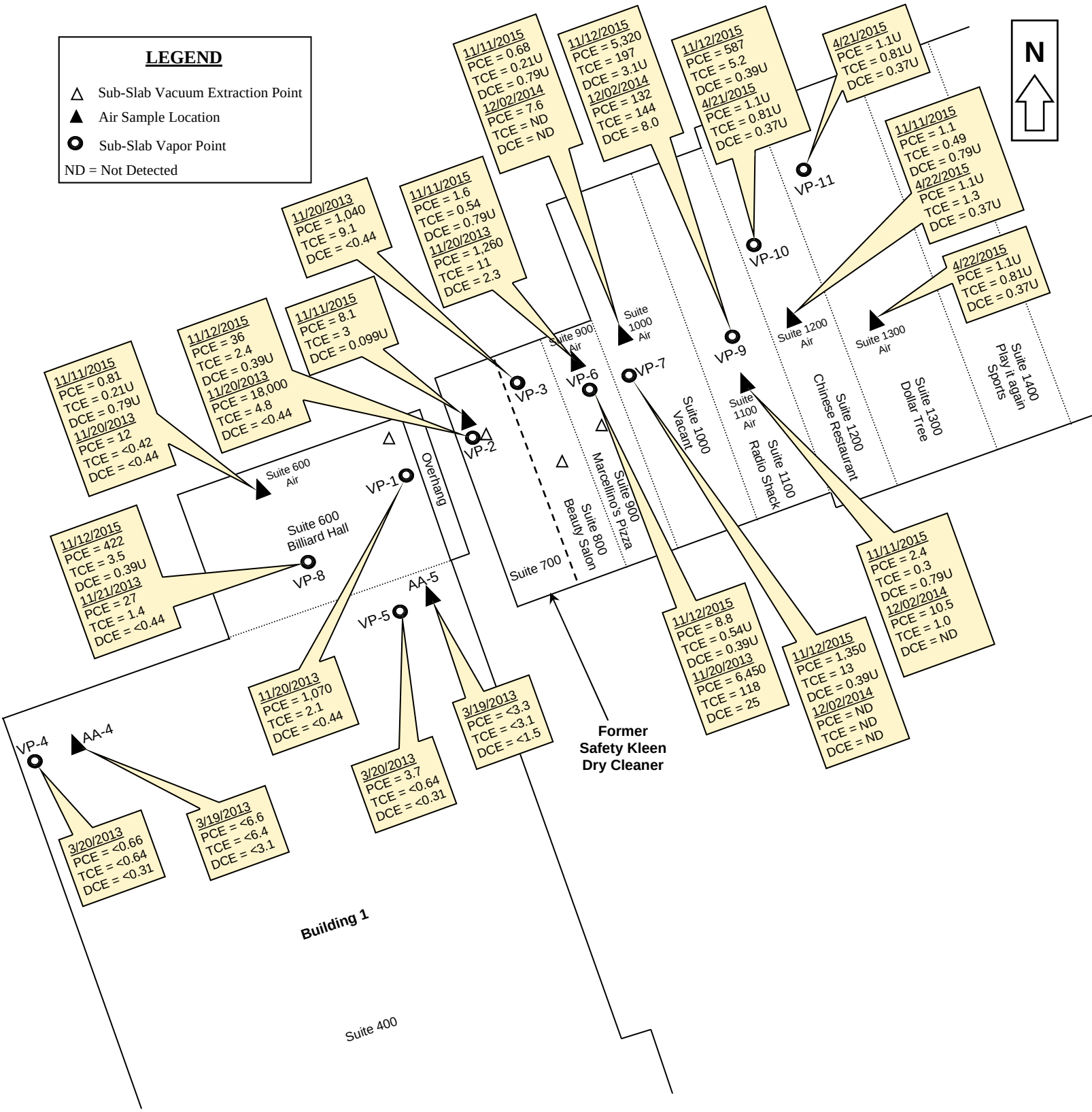
1. PLAN BASED ON OVERALL SITE PLAN, PRICE CHOPPER PLAZA SITE PLANS PREPARED FOR V.G.R ASSOCIATES, LLC BY MASTER CONSULTING P.A. DATED SEPTEMBER 23, 2017.

Groundwater Sampling Work Plan Former Safety Kleen Dry Cleaner 115 Temple Hill Road New Windsor, New York	GEI Consultants	Groundwater Contaminant Concentrations (2017)
The Rosen Group Claymont, Delaware	Project 1602600	November 2018 Figure 5

\\hts1v-fs01\ I:\Tech\Environmental Projects\The Rosen Group\CAD\Design\Working\Figure 1.dwg - 8/23/2017



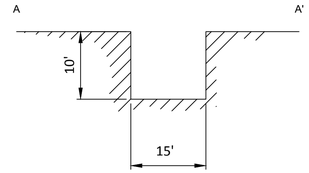
SOLUTECH, INC. **5841 Corporate Way, Suite 102** **West Palm Beach, FL 33407** **Tel: (561)688-2904 Fax: (561)688-2908**	**Interim Remedial Investigation Report** **Former Safety Kleen Dry Cleaner** PCE Exceedances in soil (ppm)		
▲ Soil Boring Locations Not to Scale	Drawn By Priya	Date: January 3, 2012 Job No.: 47100.00	Figure No.: 6



SOLUTECH, INC. **5841 Corporate Way, Suite 102** **West Palm Beach, FL 33407** **Tel: (561)688-2904 Fax: (561)688-2908**	**Sub-Slab and Ambient Air Sampling Report** **Former Safety Kleen Dry Cleaner** **115 Temple Hill Road** **New Windsor, NY**		
Air Sampling Locations Not to Scale	Drawn By Priya	Date: December 22, 2015 File No.: 47100.00	Figure No.: 7

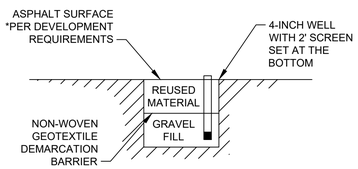
NOTE:

1. THE REMEDIAL EXCAVATION WILL EXTEND TO A TARGET DEPTH OF 9 FEET BELOW GROUND SURFACE (BGS).
2. MATERIAL FROM 0 - 2 FEET BGS WILL BE STOCKPILED FOR REUSE ON-SITE.
3. MATERIAL FROM 2 - 9 FEET BGS WILL BE SCREENED AT 1-FOOT INTERVALS WITH A PHOTOIONIZATION DETECTOR (PID).
4. BASED ON NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) SPECIFICATION ITEM 04203.9920 M, ANY INTERVAL WITH PID READINGS LESS THAN 10 PARTS PER MILLION (PPM) AND WITHOUT STAINS, DISCOLORATION, OR ODORS, BASED WILL BE STOCKPILED FOR REUSE ON-SITE.
5. CLEAN, IMPORTED GRAVEL WILL BE PLACED AT THE BOTTOM OF THE EXCAVATION. DEPTH OF GRAVEL BACKFILL WILL BE A MINIMUM OF 2 FEET.
6. NON WOVEN GEOTEXTILE DEMARCATION BARRIER WILL BE INSTALLED ON TOP OF THE GRAVEL LAYER.
7. TWO 4-INCH WELLS WITH FLUSH-MOUNTS AND SCREENED AT THE BOTTOM 2 FEET WILL BE INSTALLED IN THE EXCAVATION AREA DURING BACKFILL.
8. THE SITE WILL BE RESTORED WITH ASPHALT SURFACE PER REDEVELOPMENT REQUIREMENTS.



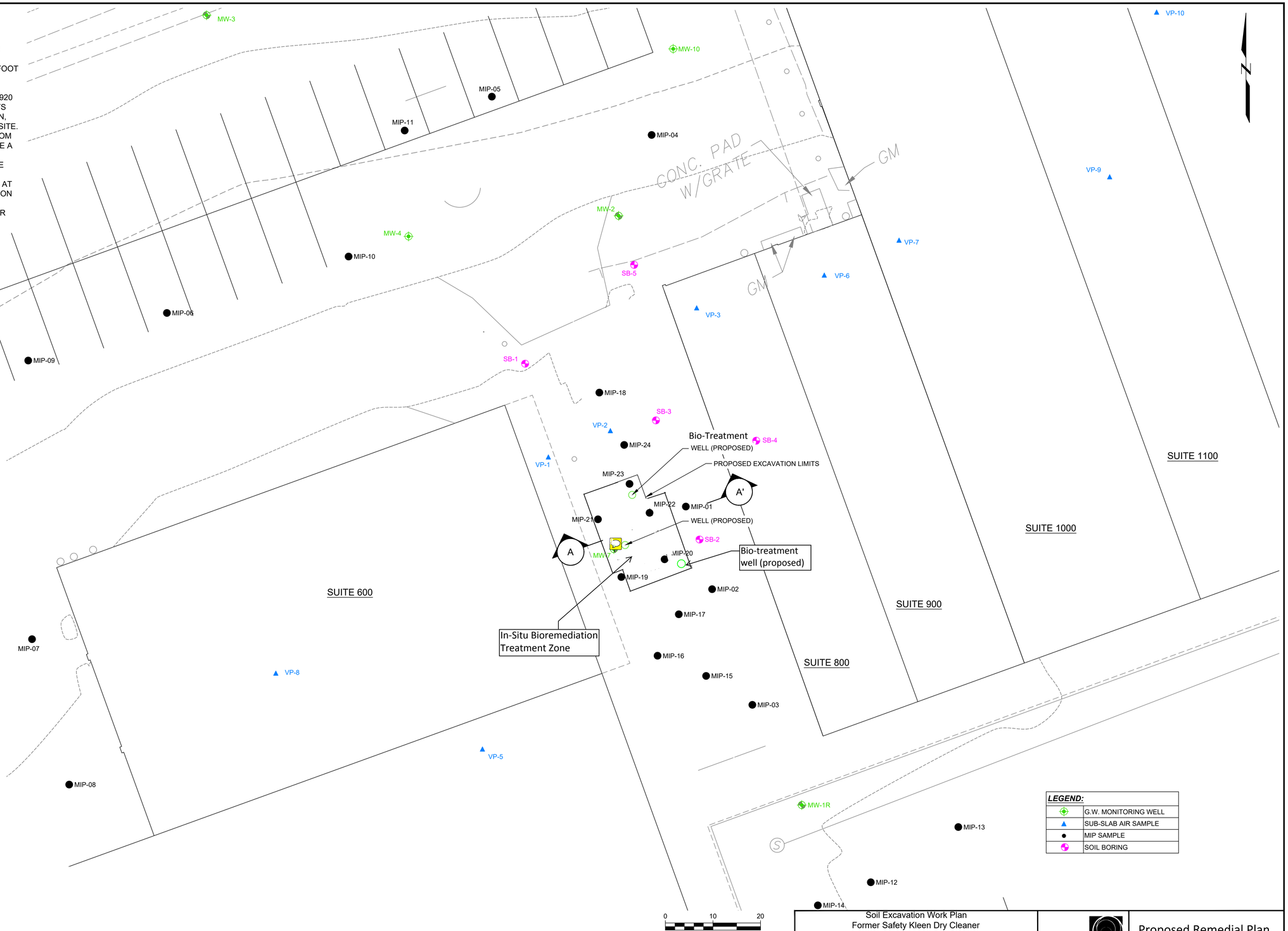
EXCAVATION CROSS SECTION

NOT TO SCALE



EXCAVATION BACKFILL AND RESTORATION DETAIL

NOT TO SCALE



LEGEND:	
⊕	G.W. MONITORING WELL
▲	SUB-SLAB AIR SAMPLE
●	MIP SAMPLE
⊕	SOIL BORING

SOURCE:

1. PLAN BASED ON OVERALL SITE PLAN, PRICE CHOPPER PLAZA SITE PLANS PREPARED FOR V.G.R ASSOCIATES, LLC BY MASTER CONSULTING P.A. DATED SEPTEMBER 23, 2017.

Soil Excavation Work Plan
Former Safety Kleen Dry Cleaner
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New Windsor, New York

The Rosen Group
Claymont, Delaware

GEI Consultants

Proposed Remedial Plan

Project 1602600 | November 2018 | Figure 8

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