PROPOSED REMEDIAL ACTION PLAN

Beau Brummel Cleaners
State Superfund Project
Commack, Suffolk County
Site No. 152211
February 2016

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 resulted in threats to public health and the environment that were addressed by actions known as interim remedial measures (IRMs), which were undertaken at the site. An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the remedial investigation (RI) or feasibility study (FS). The IRMs undertaken at this site are discussed in Section 6.2.

Based on the implementation of the IRM(s), the findings of the RI indicate that the site no longer poses a threat to human health or the environment. The IRM(s) conducted at the site attained the remediation objectives identified for this site, which are presented in Section 6.5, for the protection of public health and the environment. No Further Action is the remedy proposed by this Proposed Remedial Action Plan (PRAP). A No Further Action remedy may include site management, which will include continued operation of any remedial system installed during the IRM and the implementation of any prescribed institutional controls/engineering controls (ICs/ECs) that have been identified as being part of the proposed remedy for the site. This PRAP identifies the IRM(s) conducted and discusses the basis for No Further Action.

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:

Commack Public Library
Attn: Suzanne McGuire
18 Hauppauge Road
Commack, NY 11725-4498
Phone: (631) 499-0888

A public comment period has been set from:

2/8/2016 to 3/9/2016

A public meeting is scheduled for the following date:

2/22/2016 at 7:00 PM

Public meeting location:

Commack Branch of Smithtown Library, 3 Indian Head Road, Commack, NY 11725

At the meeting, the findings of the remedial investigation (RI) 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 3/9/2016 to:

Melissa Sweet
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
melissa.sweet@dec.ny.gov

The Department may modify the proposed remedy 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 Beau Brummel Cleaners is located in a mixed commercial and residential area at 2049 Jericho Turnpike, Commack in Suffolk County.

Site Features: The property, on 0.25 acres, is mostly covered by a single building with the remaining area covered by asphalt.

Current Zoning/Use(s): The site is an active drycleaners, zoned for commercial use. The surrounding parcels primarily consist of commercial businesses, with the exception of a church with a daycare immediately to the north.

Past Use of the Site: Historical operations dating back to 1971 at the dry cleaner appear to have affected the area by discharging tetrachloroethylene (PCE), a dry cleaning chemical, on-site.

Prior to the Remedial Investigation:
In April 1998, a routine sanitary system sampling event was conducted by the Suffolk County Department of Health Services (SCDHS) on-site. The results of sludge and liquid samples from the septic tank and overflow pool collected on-site revealed elevated readings of PCE.
In October 1998, the facility's sanitary system was remediated to SCDHS requirements.
In December 2004, groundwater samples were collected at a service station 300 ft downgradient of the site and revealed elevated levels of PCE in property monitoring wells.
In March 2005, during a facility inspection by SCDHS and the Department, it was noted that the processing water that was being treated and then evaporated via a misting spray unit, was leaking onto the back parking lot area. Soil samples were collected under the vacuum exhaust and under the mister. Results indicated the soil exhibited elevated levels of PCE.
In 2009, a Site Characterization Investigation was conducted which found elevated levels of PCE in groundwater, soil, and soil vapor. Outdoor air near the daycare was found to be above guidance values and actions were taken to remedy the situation.

Site Geology and Hydrogeology: Groundwater is approximately 98 ft below ground surface and flows to the east. The Suffolk County Water Authority's (SCWA) Blue Spruce well field (S-36791) is located approximately 1,070 feet down gradient of the dry cleaner.

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 commercial use (which allows

for industrial use) as described in Part 375-1.8(g) is/are 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:

Han's Cleaners of Commack, Inc. d/b/a/ Beau Brummel Cleaners

Lee's Cleaners of Commack, Inc. d/b/a/ Beau Brummel Cleaners

Lee's Cleaners of Commack, Inc. d/b/a/ Beau Brummel Cleaners

U Song Lee & Nam Hon Lee

Sang Ok Han

The Department and Han's Cleaners of Commack, Inc. d/b/a/ Beau Brummel Cleaners entered into a Consent Order on March 31, 2011, Index No. A1-0656-12-10. The Order obligates the responsible party to implement an Interim Remedial Measure only.

The PRPs for the site declined to implement a full remedial program when requested by the Department. The Department conducted the RI/FS.
After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

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
- 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:

tetrachloroethene (PCE) benzo(a)pyrene

Based on the investigation results, comparison to the SCGs, and the potential public health and environmental exposure routes, certain media and areas of the site required remediation. These

media were addressed by the IRM(s) described in Section 6.2. More complete information can be found in the RI Report and the IRM Construction Completion Report.

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

Soil Vapor Extraction System

A Soil Vapor Extraction System (SVE) was installed in October 2014 to remediate subsurface vapors and soils and to ensure that the potential for soil vapor intrusion in the building on-site is being addressed. The SVE system applies vacuum to wells that have been installed into the vadose zone to remove the VOCs. One suction pit was installed in the location of the former dry-cleaning machine and two more were installed outside the building in the parking lot – one on the northern portion and one in the southern portion at approximately 12 ft below ground surface. These pits were piped a blower and then to carbon treatment per the Department's Air Guide 1 requirements.

This system was installed and is operated by the Han's Cleaners of Commack, Inc. d/b/a/ Beau Brummel Cleaners under the March 31, 2011 Consent Order. A Construction Completion Report, documented the IRM activities completed and successful operation of the system.

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.

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. Based upon investigations conducted to date, the primary contaminant of concern for the site is tetrachloroethylene (PCE).

Soil – On-site soils were tested for VOCs, SVOCs, PCBs, pesticides, and metals. PCE, a VOC, was detected in four shallow samples (SB-1, SB-2, SB-3, and SV-1) at low concentrations, ranging from 0.0016 parts per million (ppm) to 1.3 ppm. None of the detected concentrations exceeded the unrestricted use SCO (1.3 ppm) for PCE. Benzo(a)pyrene, an SVOC, was detected

above the commercial SCO (1 ppm) at one location (1.1 ppm) on-site. Off-site soil did not exhibit detections for any COCs.

Groundwater – PCE and its degradation products was found on-site exceeding groundwater standards (5 ppb) with a maximum concentration of 370ppb of PCE in 2009, which has decreased to 99ppb in 2014, located at the top of the water table. TCE and DCE have decreased from a maximum of 18 ppb and 68 ppb respectively in 2009 to concentrations below the groundwater standard in 2014.
Off-site PCE contamination in groundwater has migrated approximately 350 ft to the east and slightly to the south with only slight exceedances of the PCE standard. The maximum off-site concentration of PCE seen in 2014 was 27 ppb at approximately 15 ft below the top of the water table. No other contaminants were identified above the groundwater standard in the off-site groundwater.

Soil Vapor and Indoor Air – On-site soil vapor has been impacted by the site-related contamination as shown by two sub-slab soil vapor samples. The potential for exposures from on-site soil vapor intrusion is being mitigated by the soil vapor extraction system on-site. Off-site soil vapor intrusion has been observed at the adjacent building to the east with 253 ug/m3 of PCE in the sub-slab vapor and 21 ug/m3 of PCE in the indoor air, which is currently being monitored. SVI sampling further east than the adjacent building has shown that concentrations of PCE in soil vapor do not require further action. Soil vapor sampling to the south showed an impact to that media in 2009. The structure across the Jericho Turnpike from Beau Brummel Cleaners is currently being evaluated for 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.*

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 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. The on-site building still operates as a dry cleaner and indoor air is likely to contain site-related contaminants due the current site use of these same contaminants within the building. The soil vapor extraction system currently installed beneath the on-site building (system that removes air from beneath a building) is preventing any additional impacts to indoor air through soil vapor intrusion. Environmental sampling indicates that the potential exists for inhalation of site contaminants in indoor air in some 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 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 PROPOSED REMEDY

Based on the results of the investigations at the site, the IRM that has been performed, and the evaluation presented here, the Department is proposing No Further Action with Site Management as the remedy for the site.

This No Further Action with Site Management remedy includes continued operation of the SVE system and the implementation of ICs/ECs as the proposed remedy for the site. The Department believes that this remedy is protective of human health and the environment and satisfies the remediation objectives described in Section 6.5.

The elements of the IRM are already completed and the institutional and engineering controls are listed below:

1. Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows;

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

2. Continued operation and maintenance of the existing Soil Vapor Extraction system that was installed as described in Section 6.2.

3. A site cover currently exists and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover, which consists either of the structures such as buildings, pavement, 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).

4. 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 or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict 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
- require compliance with the Department approved Site Management Plan.

5. 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 4 above.
Engineering Controls: The Soil Vapor Extraction system discussed in Paragraph 2 above. The cover system discussed in Paragraph 3 above.
This plan includes, but may not be limited to:

- a provision for further investigation and remediation should 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 further contaminated 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 the building on the property;

- 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 in [1] the adjacent off-site building, [2] the current on-site building if use of COCs ceases of if operation of the SVE system is discontinued, and [3] future buildings developed on the site, including a provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- Any additional work to delineate the extent of off-site soil vapor contamination, and implementation of monitoring and/or mitigation actions if necessary for off-site buildings;
- provisions for the management and inspection of the identified engineering controls;
- maintaining 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 and sub-slab vapor/indoor air/outdoor air in the on-site building and adjacent off-site building to the east to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings, 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:

- procedures for operating and maintaining the remedy;
- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining 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 are arranged into four categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). 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

Groundwater samples were collected from upper glacial wells screened at three depths, top of the water table (shallow-98 ft below grade), 15 ft. below that (intermediate) and 30 ft. below that (deep). The samples were collected to assess groundwater conditions both on-site and off-site. The results indicate that SCGs were only exceeded in groundwater for a VOC, specifically tetrachloroethylene (PCE) and metals, specifically, sodium. On-site groundwater exceeded the SCG for PCE only in the shallow zone (top of the water table) both north and south of the building. On-site groundwater exceeded the SCG for sodium, a metal, however this is not a contaminant of concern and will not be considered further. Off-site and downgradient (to the east) groundwater exceeded the SCG for PCE in the shallow and intermediate zone, however the contamination has not sunk to the deep zone. South of the site across Jericho Turnpike, groundwater exhibited a small exceedance for PCE above the groundwater standard in the shallow and intermediate zones. The deep zone exhibited no detections for PCE or any of its degradation products. The results of the groundwater sampling are presented in Figure 2.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethylene	ND to 99 ppb	5 ppb	6 out of 23
SVOCs			
None	NA	NA	0 out of 1
Inorganics			
Sodium	74 ppb	20 ppb	1 out of 1
Pesticides/PCBs			
None	NA	NA	0 out of 1

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).

The primary groundwater contaminant is PCE, associated with the dry-cleaning operation.

Groundwater contamination identified during the RI is currently being addressed by the IRM described in Section 6.2. As the SVE system treats the source area the levels of PCE in the groundwater will continue to drop and no further action is necessary.

Soil

Thirty-two subsurface soil samples were collected at eight locations both on and off-site as part of the site characterization and analyzed for VOCs. Two soil samples were collected as part of the RI and analyzed for the entire suite. On-site soil samples were collected from a depth of 1.5 ft to 120.5 ft below ground surface to assess impacts to groundwater. The results indicate that shallow soils (<10 ft bgs) were impacted but results were below unrestricted SCGs for PCE. Deep soils (> 10 ft bgs) results indicate that PCE was non-detect. Off-site soils were tested to gauge impacts to soil vapor at a depth of 0.5 to 1 ft bgs down to 8 ft bgs. All results indicate that PCE was below its respective unrestricted SCGs or non-detect.

During the Remedial Investigation, two soil samples were collected. One surficial soil sample was collected, but due to the conditions of the site (entirely paved) the sample was collected at the base of a utility pole. Due to the nature of the chemicals used to preserve the utility pole, the contamination in the soil (high SVOCs) is attributable to the utility pole and can be discounted as not representative of the soil of the whole site. Subsurface soil samples were collected on-site during the RI and analyzed for VOC, SVOCs, PCBs, pesticides, and metals. The subsurface soil sample was collected from a depth of 0.5 to 1 ft to assess soil contamination. The results indicate that soils at the site exceed the standard for benzo(a)pyrene (1 ppm) with 1.1ppm. The results of the soil sampling are presented in Figure 3.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Acetone	ND to 0.14J	0.05	1 out of 32	0.5	0 out of 32
Tetrachloroethylene	ND to 1.3J	1.3	1 out of 32	150	0 out of 32
SVOCs					
Anthracene	0.110 J	100	0 out of 1	500	0 out of 1
Benzo(a)anthracene	0.980	1	0 out of 1	5.6	0 out of 1
Benzo(a)pyrene	1.1	1.0	1 out of 1	1	1 out of 1
Benzo(b)fluoranthene	1.8	1.0	1 out of 1	5.6	0 out of 1
Benzo(g,h,i)perylene	0.99	100	0 out of 1	500	0 out of 1
Benzo(k)fluoranthene	0.62	0.8	0 out of 1	56	0 out of 1
Bis(2-ethylhexyl)phthalate	0.18	NA	NA	NA	NA
Chrysene	1.3	1	1 out of 1	56	0 out of 1
Dibenzo(a,h)anthracene	0.22	0.33	0 out of 1	0.56	0 out of 1

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Fluoranthene	1.8	100	0 out of 1	500	0 out of 1
Indeno(1,2,3-cd)pyrene	1.4	0.5	1 out of 1	5.6	0 out of 1
Phenanthrene	0.62	100	0 out of 1	500	0 out of 1
Pyrene	2.0	100	0 out of 1	500	0 out of 1
Inorganics					
Arsenic	6.3	13	0 out of 1	16	0 out of 1
Barium	50 B	350	0 out of 1	400	0 out of 1
Beryllium	0.29	7	0 out of 1	590	0 out of 1
Cadmium	0.26 J	2.5	0 out of 1	9.3	0 out of 1
Chromium	15 B	30	0 out of 1	1500	0 out of 1
Copper	29 B	50	0 out of 1	270	0 out of 1
Lead	69	63	1 out of 1	1,000	0 out of 1
Manganese	160	1,600	0 out of 1	10,000	0 out of 1
Mercury	0.15 B	0.18	0 out of 1	2.8	0 out of 1
Nickel	9.6	30	0 out of 1	310	0 out of 1
Silver	0.28 JB	2	0 out of 1	1,500	0 out of 1
Zinc	79	109	0 out of 1	10,000	0 out of 1
Pesticides/PCBs					
4,4'-DDE	0.150	0.0033	1 out of 1	62	0 out of 1
4,4'-DDT	0.360	0.0033	1 out of 1	47	0 out of 1

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.

The primary soil contaminants are PCE and its degradation products. This soil contamination is associated with the operation of the dry-cleaners and inappropriate disposal of PCE-containing products. Benzo(a)pyrene is a background contaminant and is not associated with the operation of the dry cleaners.

VOC-contamination identified in soil during the site characterization and RI is being addressed by the IRM described in Section 6.2.

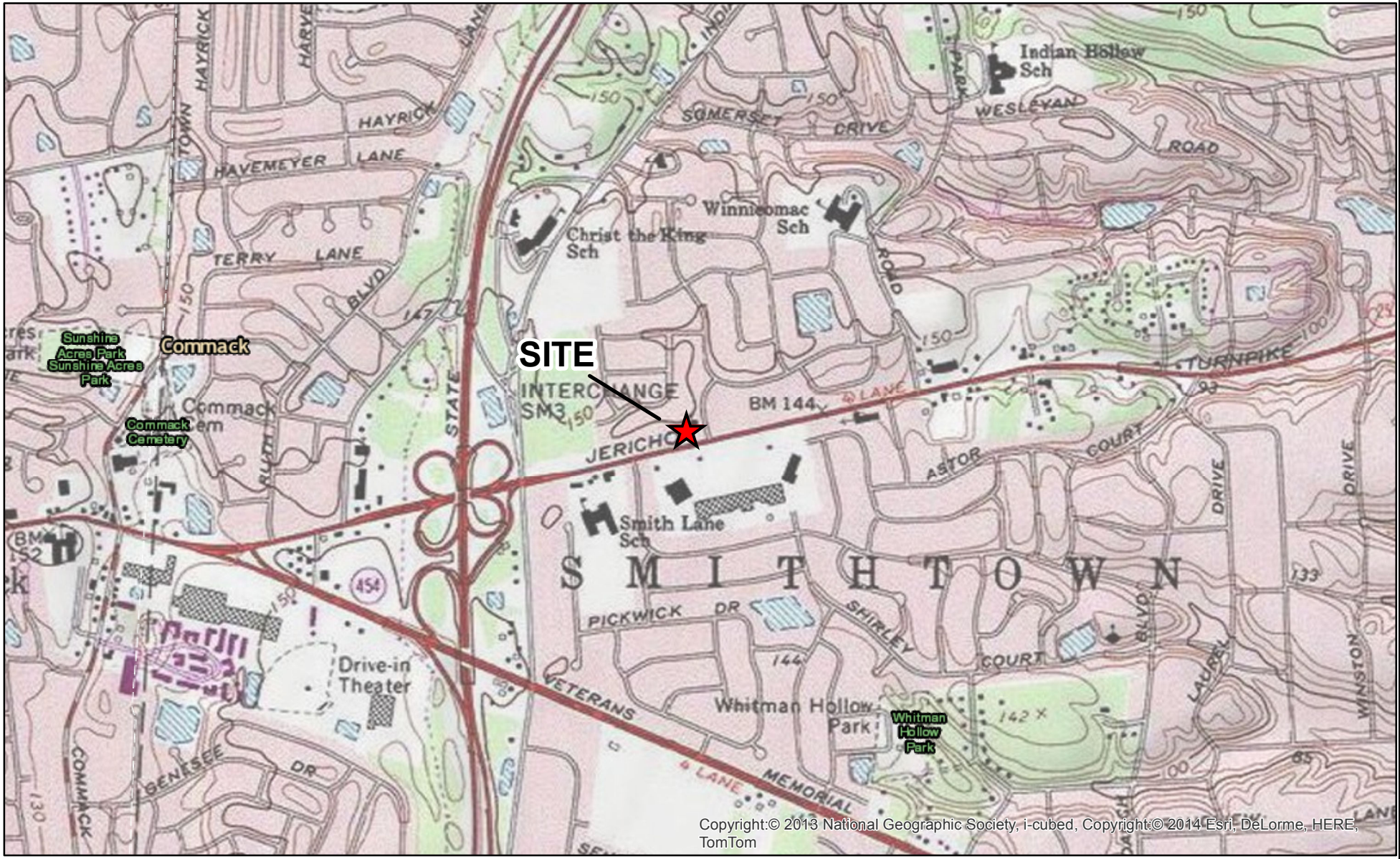
Soil Vapor

The evaluation of 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, sub-slab soil vapor under structures and indoor air inside structures. At this site, due to the presence of buildings in the impacted area, a full suite of samples were collected to evaluate whether actions are needed to address exposures related to soil vapor intrusion.

No soil vapor samples were collected on-site as part of the RI due to the IRM –SVE system operating presently. Sub-slab Soil vapor samples and indoor air samples were collected at structures located adjacent and further off-

site. Outdoor air samples were collected concurrently with the sub-slab and indoor air samples. The results indicate that PCE was detected at levels at the adjacent building to the east that recommend monitoring/mitigation. It is currently being monitored until a pressure field test can be performed to determine if the SVE system on-site is exerting vacuum as far as the adjacent building. Other structures sampled indicate that no further action is necessary to address soil vapor intrusion. Additional buildings in the area of the Beau Brummel Cleaners have been sampled. The results are shortly forthcoming. The results of the SVI study are shown on Figure 4 and 5.

Based on the concentration detected, and in comparison with the state's Soil Vapor Intrusion Guidance (NYSDOH 2006), on-site soil vapor contamination identified during the Site Characterization and during the RI is being addressed by the IRM described in Section 6.2 and as shown on Figure 6 and 7.



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NYSDEC Site No. 152211
Beau Brummel Cleaners
2049 Jericho Turnpike, Commack, New York
REMEDIAL INVESTIGATION

SITE LOCATION

ARCADIS

FIGURE 1

G:\GISMOD\00266423.0000\Site Map.mxd

Sample ID	MW-1S	MW-1I	MW-1D
Sample Date	12/7/2014	12/7/2014	12/7/2014
Units	ug/L	ug/L	ug/L
Volatile Organic Compounds			
Acetone	5 U	5 U	5 U
cis-1,2-Dichloroethylene	1 U	1 U	1 U
Isopropylbenzene	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U

Sample ID	MW-2S	MW-2I
Sample Date	12/7/2014	12/7/2014
Units	ug/L	ug/L
Volatile Organic Compounds		
Acetone	4.2 J	5 U
cis-1,2-Dichloroethylene	1 U	1 U
Isopropylbenzene	1 U	1 U
Tetrachloroethene	**16**	1 U
Trichloroethene	1 U	1 U

Sample ID	MW-8S	MW-8D
Sample Date	8/18/2015	8/18/2015
Units	ug/L	ug/L
Volatile Organic Compounds		
Acetone	5 U	5 U
cis-1,2-Dichloroethylene	1 U	1 U
Isopropylbenzene	1 U	1 U
Tetrachloroethene	**22**	1 U
Trichloroethene	1 U	1 U

Sample ID	MW-6S	MW-6I	MW-6D
Sample Date	12/7/2014	12/7/2014	12/7/2014
Units	ug/L	ug/L	ug/L
Volatile Organic Compounds			
Acetone	5 U	5 U	5 U
cis-1,2-Dichloroethylene	1 U	1 U	1 U
Isopropylbenzene	1 U	1 U	2
Tetrachloroethene	1 U	**27**	2.3
Trichloroethene	1 U	1 U	1 U

Sample ID	MW-3S	MW-3I	MW-3D
Sample Date	12/7/2014	12/7/2014	12/7/2014
Units	ug/L	ug/L	ug/L
Volatile Organic Compounds			
Acetone	5.5	5 U	5 U
cis-1,2-Dichloroethylene	4.4	1 U	1 U
Isopropylbenzene	1 U	1 U	1 U
Tetrachloroethene	**99**	2.4	1 U
Trichloroethene	2.3	1 U	1 U

Sample ID	MW-5S	MW-5I	MW-5D
Sample Date	12/7/2014	12/7/2014	12/7/2014
Units	ug/L	ug/L	ug/L
Volatile Organic Compounds			
Acetone	5 U	5 U	5 U
cis-1,2-Dichloroethylene	1 U	1 U	1 U
Isopropylbenzene	1 U	1 U	1 U
Tetrachloroethene	1 U	3.6	4.8
Trichloroethene	1 U	1 U	1 U

Sample ID	MW-4S	MW-4I	MW-4D
Sample Date	12/7/2014	12/7/2014	12/7/2014
Units	ug/L	ug/L	ug/L
Volatile Organic Compounds			
Acetone	5 U	5 U	5 U
cis-1,2-Dichloroethylene	1 U	1 U	1 U
Isopropylbenzene	1 U	1 U	1 U
Tetrachloroethene	**14**	**7.2**	1 U
Trichloroethene	1 U	1 U	1 U

Sample ID	MW-7S	MW-7I	MW-7D
Sample Date	12/7/2014	12/7/2014	12/7/2014
Units	ug/L	ug/L	ug/L
Volatile Organic Compounds			
Acetone	5.4	7.1	5 U
cis-1,2-Dichloroethylene	1 U	1 U	1 U
Isopropylbenzene	1 U	1 U	1 U
Tetrachloroethene	2.2 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U

Beechwood Lane

Jericho Turnpike

Note: Highlighted concentrations exceed the respective NYSDEC Class GA Standard.
December 2014 and February 2015 results have been validated by a third party validation service while the August 2015 (MW-8 cluster) results have not.

Legend

- Monitoring Well
- Approximate Site Boundary

DRAFT

N

NYSDEC Site No. 152211
Beau Brummel Cleaners
2049 Jericho Turnpike, Commack, New York

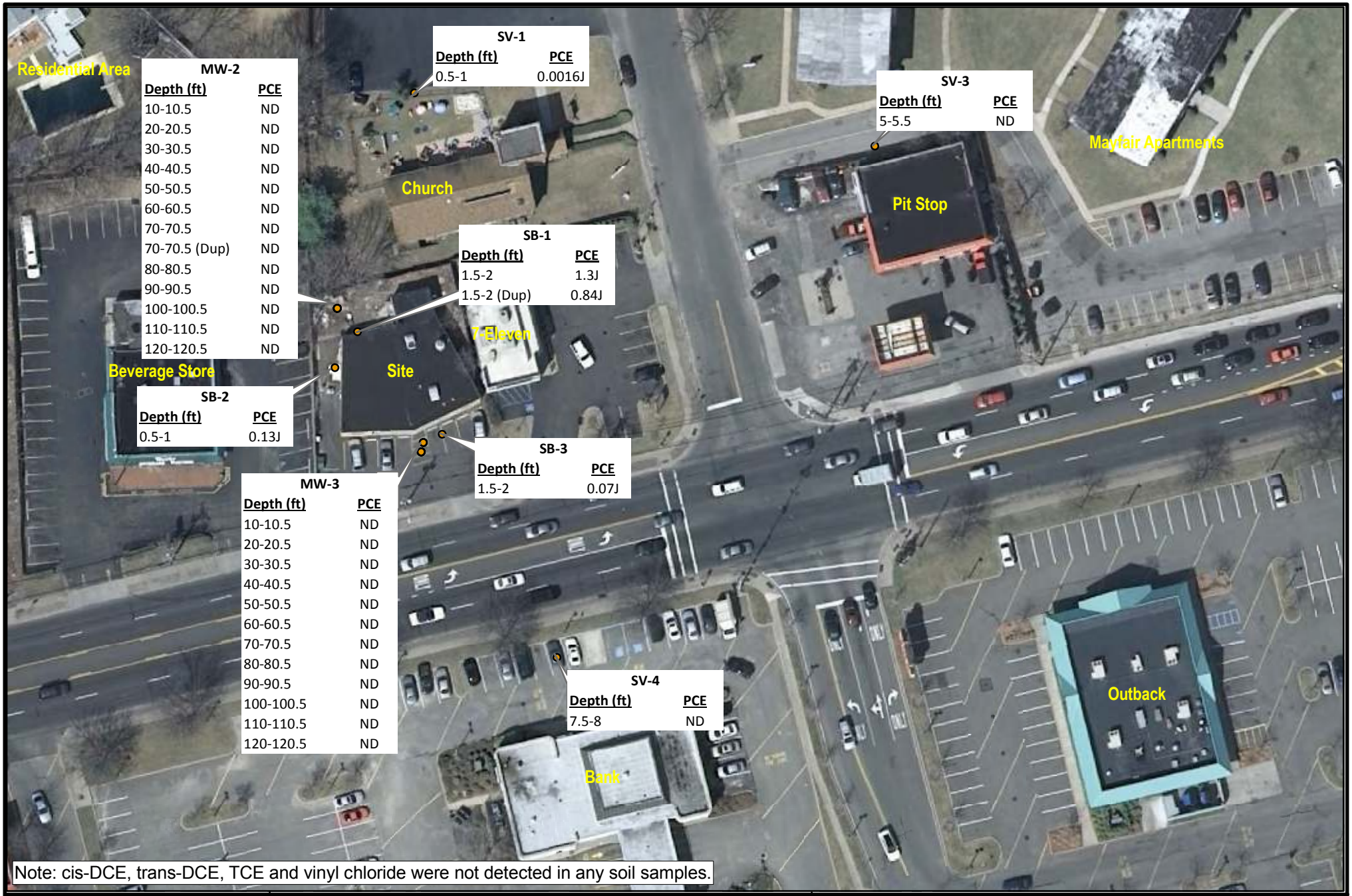
REMEDIAL INVESTIGATION

CONCENTRATIONS OF DETECTED VOCS IN GROUNDWATER

ARCADIS

FIGURE
2

Document Path: G:\GISMOD\00266423.0000\GW Hitbox Map.mxd



NYSDEC Site No. 1-52-211

Beau Brummel Cleaners
2049 Jericho Turnpike
Commack, New York

0 25 50 100 Feet

Soil

Units: mg/kg

Prepared for:

Prepared by:

AECOM

Soil Concentrations
PCE and Breakdown Products

Project No: 106123

Figure No: 3

Sample ID	IA-3
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	21.0
Trichloroethene	0.48

Sample ID	SS-3
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	253
Trichloroethene	2.42

Sample ID	IA-2
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	0.68
Trichloroethene	0.21 J

Sample ID	SS-2
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	3.46
Trichloroethene	0.21 J

Sample ID	IA-4
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	0.95
Trichloroethene	0.21 J

Sample ID	SS-4
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	8.95
Trichlorofluoromethane	18.2

Sample ID	OA-1
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	1.49
Trichloroethene	0.21 J

Sample ID	IA-1
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	0.95
Trichloroethene	0.21 J

Sample ID	SS-1
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	33.9
Trichlorofluoromethane	1.40

Sample ID	OA-2
Sample Date	2/4/2015
Units	ug/m3
Tetrachloroethene	0.25 U
Trichloroethene	0.25 U

DRAFT

0 100 200 400 600 800 Feet

Legend

- Sub-slab
- Outdoor Air
- Indoor Air
- Approximate Site Boundary
- Mitigation potentially required based on NYSDOH recommendations

N

NYSDEC Site No. 152211
Beau Brummel Cleaners
2049 Jericho Turnpike, Commack, New York

FEASIBILITY STUDY

CONCENTRATIONS OF CONTAMINANTS OF CONCERN IN SOIL VAPOR INTRUSION SAMPLES

ARCADIS

FIGURE 4

Document Path: G:\GISMOD\00266423.0000\Air Hitbox Map Alternate.mxd

Note: trans-DCE and vinyl chloride were not detected in any soil samples.

NYSDEC Site No. 1-52-211

Beau Brummel Cleaners
2049 Jericho Turnpike
Commack, New York

0 25 50 100 Feet

▲ Soil Gas
▲ Outdoor Air

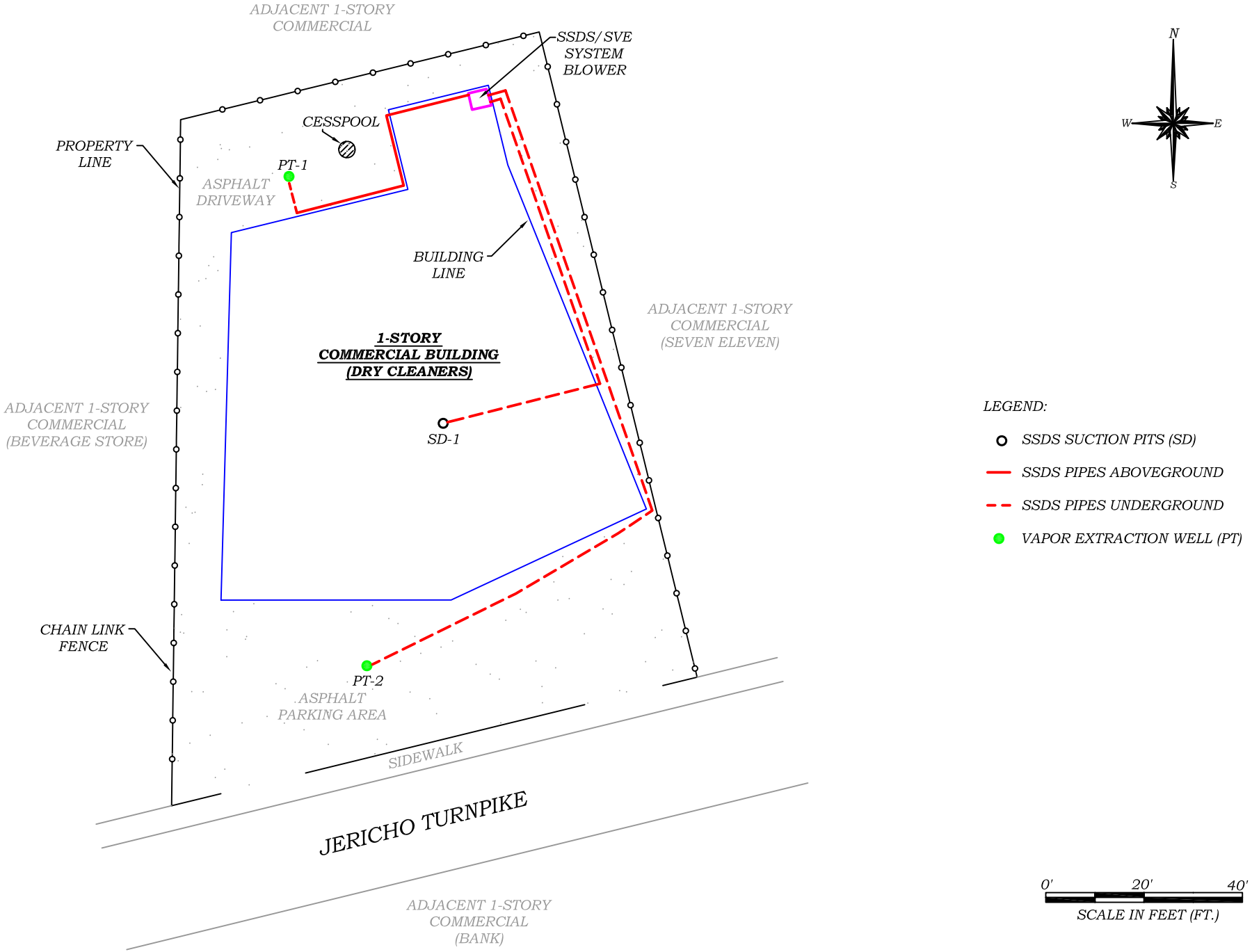
Units: ug/m^3

Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Prepared by: AECOM

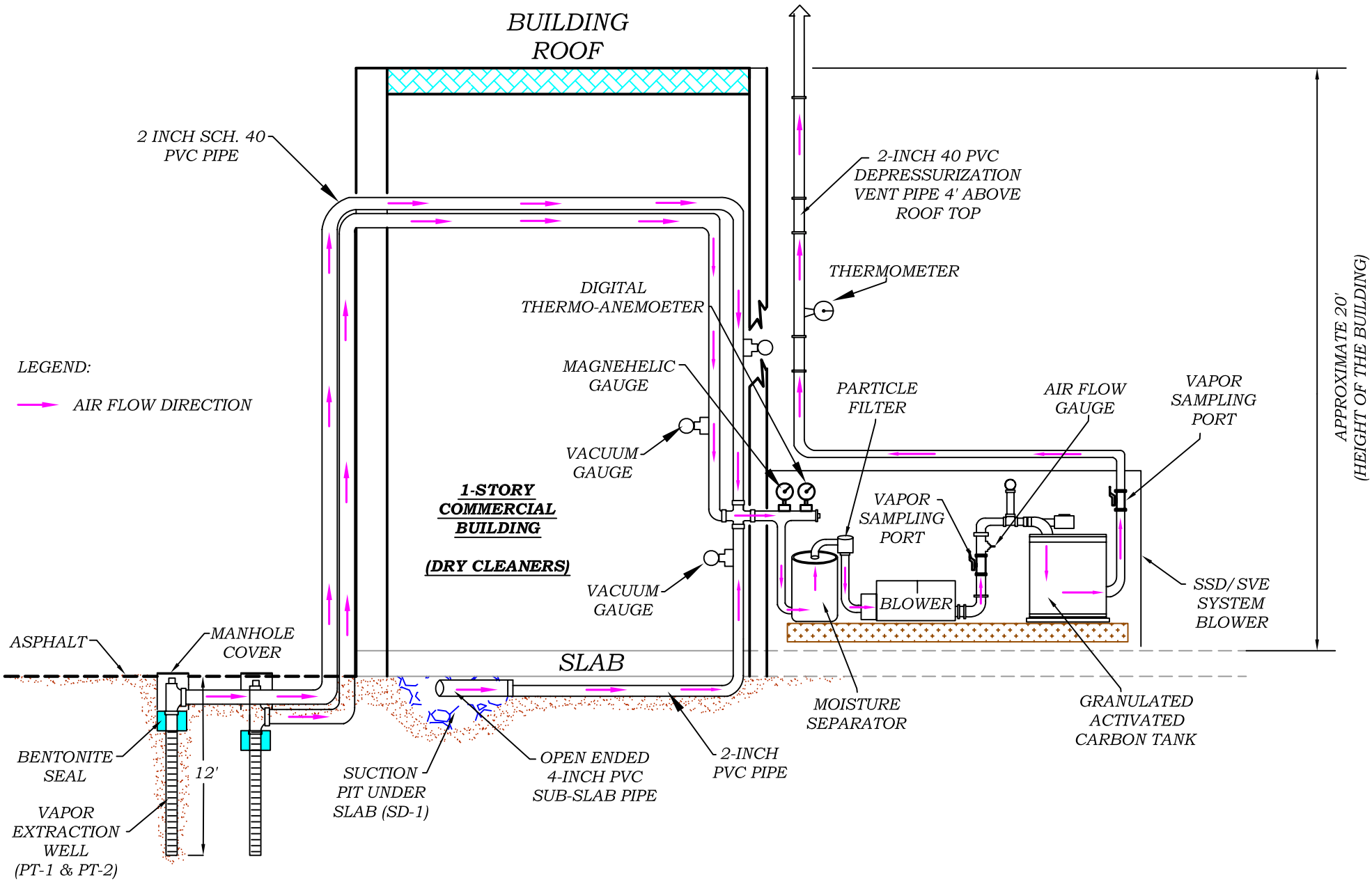
Soil Gas Concentrations
PCE and Breakdown Products

Project No: 106123
Figure No: 5



2049 Jericho Tpke, Commack, NY.

FIGURE 6: AS-BUILD PLAN OF SSDS/SVE SYSTEM NETWORK
BEAU BRUMMEL CLEANERS
SITE ID # 152211



2049 Jericho Tpke, Commack, NY.

FIGURE 7: AS-BUILD VAPOR EXTRACTION WELL & SUCTION PITS DETAILS
OF SSDS/SVE SYSTEMS
BEAU BRUMMEL CLEANERS
SITE ID # 152211