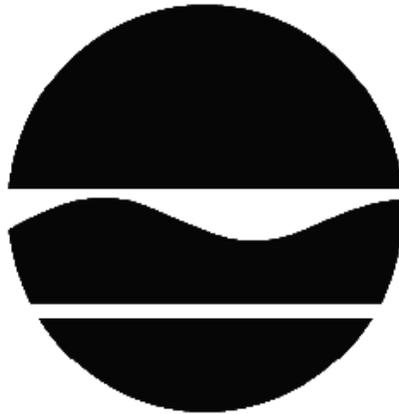


PROPOSED REMEDIAL ACTION PLAN

Former S & S Cleaners and Dyers
State Superfund Project
Cohoes, Albany County
Site No. 401063
December 2014



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

PROPOSED REMEDIAL ACTION PLAN

Former S & S Cleaners and Dyers
Cohoes, Albany County
Site No. 401063
December 2014

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 repositories 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 repositories:

Cohoes Public Library
169 Mohawk St.
Cohoes, NY 12047
Phone: (518) 235-2570

New York State Department of Environmental Conservation
Attn: Robert Filkins
625 Broadway
Albany, NY 12233
Phone: (518) 402-9768

A public comment period has been set from: December 22, 2014

to January 21, 2015

A public meeting is scheduled for the following date: January 8, 2015 at 3:00 p.m.

Public meeting location:

Cohoes Visitor Center
58 Remsen Street
Cohoes, 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:

Robert Filkins
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
robert.filkins@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 0.11 acre 13 Willow St. site (Site) is located in the City of Cohoes (City), approximately 370 yards southwest of the Mohawk River. Section, Block, Lot number of this property is 10.50-2-7.

Site Features:

The site consists of a vacant lot with a soil surface. The site is bordered by residential structures to the north and south, Willow Street to the east, and a steep slope leading to Worth Street to the west.

Current Zoning and Land Use:

The site is located in the City's multi-family residential zoning district and is currently used as an informal surface parking lot.

Past Use of the Site:

S and S Cleaners and Dyers, Inc. owned the property from May 1948 to December 1976. Subsequently, property ownership transferred multiple times and, in 1993, Beneficial Homeowners Corp. took title through foreclosure and transferred the property to The City. After a series of subsequent owners, the mortgage holder foreclosed and in 1995 transferred the property to the City in lieu of taxes and demolition costs. The City's Commissioner of Public Works deemed the on-site building unsafe and ordered its demolition in 1996. However, the building was not demolished until 2001.

The S and S Cleaners Site was selected by the City for further investigation, utilizing a U.S. Environmental Protection Agency Brownfields Assessment Grant, due to its history as a dry cleaning facility. The site was originally reported to the Department as a spill in March 2009 when levels of tetrachloroethene (PCE) and several of its breakdown chemicals were detected in the soil vapor and groundwater during a Phase II Environmental Site Assessment conducted by the City's consultant. Significant sub-slab soil vapor and indoor air concentrations were encountered in residences neighboring the site 30 feet north of the site and abutting the southern border of the site parcel. Soil vapor intrusion mitigation systems were installed in those two buildings in September 2010 by the City.

Based on the results of the Phase II Environmental Site Assessment, the site was listed as a Class 2 on the State's Registry of Inactive Hazardous Waste Disposal Sites (Registry) in June 2011.

Site Geology and Hydrogeology:

Overburden in the area consists of fill material (brick debris, concrete debris and wood) overlying clay and silty clay layers with a few thin sand lenses. Depth to bedrock ranges from 30 feet over most of the site to greater than 50 feet below ground surface in northeast corner. Groundwater flow at the site is to the northeast toward the Mohawk River. Depth to groundwater

in the area is six to eight feet below ground surface.

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

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

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers. Known past owners of the site include: S and S Cleaners and Dyers, Inc. owned the property from May 1948 to December 1976. The property was transferred to J. Stanley and Julia Doherty (1976-1977), Jean Pierre Janas (1977-1983), Richard Canny (1983-1988) and Richard Canny and George Murdza (1988-1993). Beneficial Homeowners Service Corp. foreclosed (mortgage foreclosure) on the property in 1993. In 1995, Beneficial Homeowners Service Corp. agreed to transfer the property to the City in lieu of taxes and demolition costs.

The PRPs for the site declined to implement a remedial program when requested by the Department. Therefore, the RI/FS is being completed using the State Superfund. 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:

Tetrachloroethylene (PCE)
Trichloroethene (TCE)

Vinyl chloride
cis-1,2-Dichloroethene

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

- groundwater
- soil
- soil vapor intrusion

6.2: Interim Remedial Measures

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

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

IRM Soil Removal

In May 2013 a soil removal was conducted in an attempt to remove soils contaminated by PCE in excess of the residential soil cleanup objective (SCO) of 5.5 parts per million (ppm). Approximately 100 cubic yards of soil contaminated with PCE and its breakdown products were removed from the northeast corner of the site during the IRM. The contaminated soil was properly disposed of off-site. Post-excavation sampling indicated that the residential SCO for PCE was still exceeded in 2 locations, with concentrations of 67 parts per million (10' depth) and 39 ppm (13' depth) in the northeast corner of the property.

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 (Post-IRM soil removal):

Soil: The primary contaminants of concern on-site include tetrachloroethene (PCE) and trichloroethene (TCE). Remaining PCE soil concentrations in the soil were highest in the northeast corner of the property at the base of the IRM excavation. Post-IRM confirmation soil samples concentrations exceeded Unrestricted PCE Soil Cleanup Objectives (SCOs) in six locations. Residential PCE SCOs were exceeded in two locations with concentrations of 67 ppm (10' depth) and 39 ppm (13' depth) in the northeast corner of the property. An earlier soil sample taken outside the IRM area contained 2.8 ppm (9'-11' depth) of PCE. The residential soil cleanup objective (SCO) for PCE is 5.5 mg/kg, and the protection of groundwater SCO for PCE is 1.3 mg/kg. Outside the footprint of the previous site building there were no exceedances of residential SCOs in subsurface soils. Surface soil samples were not taken due to the presence of a

six inch crushed stone cover over most of the site. No PCE or other volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, or PCB soil contamination in excess of the unrestricted SCO was found off-site.

Groundwater: Post-IRM groundwater samples were taken in five on-site and six off-site monitoring wells. Three of the four on-site shallow (20') wells exceeded groundwater standards for PCE and its breakdown products (TCE, cis-1,2-DCE, and vinyl chloride), with concentrations ranging from 5.4 ppb (PCE) to 620 ppb (cis-1,2-DCE). Two of the shallow wells also exceed TCE groundwater standards. The on-site deep well (50') did not exceed standards. Only one of the off-site wells sampled exceeded groundwater standards for PCE and TCE. The well, located approximately 20 feet downgradient of the soil removal IRM area, contained 5.4 ppb of PCE and 6.3 ppb of TCE. The groundwater standard is 5 ppb for PCE, TCE, and cis-1,2-DCE and 2 ppb for vinyl chloride. No on-site monitoring wells exceeded groundwater standards for SVOCs, metals, or pesticides/PCB.

The primary contaminants of concern off-site include PCE and TCE in the groundwater. Approximately 100 feet north of the site, PCE and TCE have been detected in groundwater at 7 ppb and 14 ppb, respectively. Due to the presence of clay and silt soils beneath the site there has been no significant migration of contaminated groundwater off-site.

Soil Vapor: Prior to the IRM, on-site soil vapor concentrations for PCE ranged from 790 to 14,000 $\mu\text{g}/\text{m}^3$. Soil vapor concentrations of TCE ranged from 21 to 370 $\mu\text{g}/\text{m}^3$. Off-site soil vapor concentrations prior to the IRM were as high as 120,000 $\mu\text{g}/\text{m}^3$ adjacent to a sewer line in the center of Willow Street. It is believed that the bedding for the sewer line acted as a conduit for PCE vapors migrating from within the foundation of the demolished building which formerly housed S&S Cleaners. Away from the sewer line maximum off-site soil vapor concentration during the RI was 23 $\mu\text{g}/\text{m}^3$. No post-IRM soil vapor samples were taken.

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 the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. However, sub-slab depressurization systems (systems that ventilate/remove the air beneath the building) have been installed in off-site buildings to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the buildings that has migrated from the site.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the site were identified, screened and evaluated in the FS report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of

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

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

The proposed remedy is referred to as the Excavation of Soils Exceeding Residential SCOs remedy.

The estimated present worth cost to implement the remedy is \$176,000. The cost to construct the remedy is estimated to be \$115,000 and the estimated average annual cost is \$8,766.

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

All on-site soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 29 cubic yards of soil will be removed from the site. On-site soil which does not exceed residential or protection of groundwater SCOs for the use of the site may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site. The vast majority of the source of groundwater contamination (PCE groundwater protection SCO is 1.3 ppm) has been or will be removed.

3. Institutional Control

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

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for residential, restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

4. 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, as described in #3 above.

Engineering Controls: continued operation of the soil vapor intrusion mitigation systems for the off-site buildings.

This plan includes, but may not be limited to:

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

- descriptions of the provisions of the environmental easement including any land use and/or groundwater use restrictions;
 - a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
 - a provision for maintaining the existing sub-slab depressurization systems in two off-site structures;
 - 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;
 - monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above; and
 - a schedule of monitoring and frequency of submittals to the Department.

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 two categories: volatile organic compounds (VOCs) 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

Post-IRM groundwater samples were collected from overburden monitoring wells on-site and overburden and bedrock monitoring wells off-site and analyzed for volatile organic compound (VOC) contamination. The samples were collected to assess groundwater conditions on and off-site. As shown in Figure 2, the results indicate that contamination in shallow groundwater at the site exceeds the SCGs for VOCs. Prior to the IRM, groundwater sampling and analysis was also conducted for other categories of contamination. At that time SCGs for inorganics were also exceeded SCGs in shallow off-site wells side gradient from the site. Contaminant levels in deep/bedrock wells did not exceed SCGs. There are no known private wells in the immediate vicinity of the site.

Table 1 - Groundwater

| Detected Constituents (Post IRM) | Concentration Range Detected (ppb) ^a | SCG ^b (ppb) | Frequency Exceeding SCG |
|--------------------------------------|--|---------------------------|-------------------------|
| VOCs | | | |
| Tetrachloroethene (PCE) | ND – 7.1 | 5 | 2 of 11 |
| Trichloroethene (TCE) | ND - 6.3 | 5 | 1 of 11 |
| cis-1,2-dichloroethene (cis-1,2-DCE) | ND - 620 | 5 | 2 of 11 |
| Vinyl chloride | ND - 110 | 2 | 2 of 11 |
| Inorganics | | | |
| Arsenic | ND - 35.1 | 25 | 1 of 8 |
| Cadmium | ND- 10.8 | 5 | 1 of 8 |
| Chromium | ND - 119 | 50 | 1 of 8 |
| Lead | 5 -162 | 25 | 1 of 8 |

| Detected Constituents (Post IRM) | Concentration Range Detected (ppb) ^a | SCG ^b (ppb) | Frequency Exceeding SCG |
|-------------------------------------|--|---------------------------|-------------------------|
| Selenium | ND - 12.6 | 10 | 1 of 8 |

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 contaminants are tetrachloroethene (PCE) and its breakdown products, trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. Prior to the IRM, PCE was the predominant contaminant in groundwater. However post-IRM maximum PCE concentrations in groundwater dropped dramatically to just above groundwater standards. Cis-1,2-DCE concentrations increased after the IRM to become the contaminant with the highest concentration, presumably due to the degradation of the remaining sub-surface PCE to DCE.

The inorganic compounds above SCGs were found off-site in shallow groundwater side gradient to the site and are not considered to be site related.

Based on the findings of the RI, the presence of PCE has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern are: PCE, TCE, cis-1,2-DCE, and vinyl chloride. Due to the presence of tight clay and silt soils which severely limit the potential for groundwater migration and a dramatic decrease in on-site groundwater contamination concentrations following the IRM, no groundwater remedy is being evaluated.

Soil

Subsurface soil samples were collected at the site during the RI prior to the soil removal IRM, and confirmatory soil samples were taken at the completion of the IRM. Subsurface soil samples were collected from a depth of 1 - 17 feet to assess soil contamination impacts to groundwater and soil vapor. The results indicate that soils at the site exceed the unrestricted SCG for volatile organics and inorganics (metals). Surface soils at the site consist of a layer of clean gravel which was used to cover the site after the demolition of the on-site building so they were not sampled, but did undergo PID screening.

Table 2 - Soil

| Detected Constituents (Post IRM) | Concentration Range Detected (ppm) ^a | Unrestricted SCG ^b (ppm) | Frequency Exceeding Unrestricted SCG | Restricted Use SCG ^c (ppm) | Frequency Exceeding Restricted SCG |
|-------------------------------------|---|--|---|--|---|
| VOCs | | | | | |
| Tetrachloroethene (PCE) | ND - 67 | 1.3 | 7 of 51 | 5.5 | 2 of 51 |
| Inorganics | | | | | |
| Arsenic | 2.7 – 18 | 13 | 1 of 13 | 16 | 1 of 13 |

| Detected Constituents (Post IRM) | Concentration Range Detected (ppm) ^a | Unrestricted SCG ^b (ppm) | Frequency Exceeding Unrestricted SCG | Restricted Use SCG ^c (ppm) | Frequency Exceeding Restricted SCG |
|-------------------------------------|---|--|---|--|---|
| Copper | 19.6 – 87.7 | 50 | 3 of 13 | 270 | 0 of 13 |
| Nickel | 15 – 35.3 | 30 | 2 of 13 | 140 | 0 of 13 |

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 Residential Use, unless otherwise noted.

The primary soil contaminant is PCE associated with the sites past use as a commercial dry cleaner. As noted on Figure 3, the primary soil contamination is within the footprint of the former site building. Sub-surface soil sampling met residential SCOs throughout the rest of the site. While much of the contamination in the building footprint was excavated and removed during the IRM, confirmatory samples indicated some PCE contamination in excess of residential SCOs remains at depth.

Inorganic soil contamination does not appear to be associated with site activities and is likely naturally occurring. Therefore, metal soil contamination is not considered a site specific contaminants of concern.

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

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 soil vapor intrusion was occurring.

Soil vapor samples were collected from the sub-slab of structures of five residential properties in the immediate vicinity of the site during the RI, and during the preceding investigation of the site as a spill. Indoor air and outdoor air samples were also collected at this time. The samples were collected to assess the potential for soil vapor intrusion. The results indicate PCE and/or TCE were detected in off-site sub-slab vapor and indoor air at several locations.

Prior to the RI, soil vapor contamination was addressed by the installation of sub-slab depressurization systems in September 2010 systems during the spill investigation of this site. No additional site-related soil vapor contamination of concern impacts were identified during the RI

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.

Alternative 2: No Further Action with Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2 and Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Present Worth: \$85,000
Capital Cost: \$40,000
Annual Costs: \$1501

Alternative 3: Excavation and Disposal of Soils Exceeding Residential SCOs and Site Management

This alternative would include, excavation and transportation for off-site disposal of all on-site soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8; and Site Management and Institutional Controls and Engineering Controls. Approximately 29 cubic yards of soil will be removed from the site. On-site soil which does not exceed SCOs for the use of the site may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site. The existing off-site sub-slab depressurization systems would be maintained. This alternative includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site.

Present Worth: \$140,000
Capital Cost: \$95,000
Annual Costs: \$1501

Alternative 4: 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 cleanup objectives listed in Part 375-6.8 (a). This alternative would include excavation and transportation for off-site disposal of all on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8; and Site Management and Institutional Controls and Engineering Controls. Approximately 295 cubic yards of soil will be removed from the site. On-site soil which does not exceed unrestricted SCOs may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site.. The existing off-site sub-slab depressurization systems would be maintained.

Capital Cost: \$463,000

Exhibit C**Remedial Alternative Costs**

| Remedial Alternative | Capital Cost (\$) | Annual Costs (\$) | Total Present Worth (\$) |
|---|--------------------------|--------------------------|---------------------------------|
| No Further Action | 0 | 0 | 0 |
| No Further Action w/Site Management | 40,000 | 1501 | 85,000 |
| Excavation and Disposal of Soils Exceeding Residential SCOs w/Site Management | 95,000 | 1501 | 140,000 |
| Restoration to Pre-Disposal or Unrestricted Conditions | 463,000 | 0 | 463,000 |

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Excavation of Soils Exceeding Residential SCOs, as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by excavation and transportation for off-site disposal of all on-site soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8; and Site Management and Institutional Controls and Engineering Controls. Approximately 29 cubic yards of soil will be removed from the site. On-site soil which does not exceed SCOs for the use of the site may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 3.

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.

The proposed remedy, Alternative 3 would satisfy this criterion by removing soils which exceed residential SCOs, which is the most significant threat to public health and the environment, and allow residential development of the property. Alternative 1 (No Further Action) and Alternative 2 (No Further Action with Site Management) do not provide any protection to public health and the environment and would not permit the residential use the property is zoned for. Therefore, Alternatives 1 and 2 will not be evaluated further. Alternative 4 (Restoration to Pre-Disposal or Unrestricted Conditions) would also be protective of public health and allow residential redevelopment.

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

Alternative 3 complies with SCGs to the extent practicable. It addresses source areas of contamination. Alternative 4 removes even more soil to meet unrestricted SCOs. However, Both Alternative 3 and Alternative 4 enhance the conditions necessary to restore groundwater quality over time by removing the remaining source of contamination. . Because Alternatives 3 and 4 both satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

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.

Both Alternative 3 and Alternative 4 accomplish a long-term and permanent remedy by removal of contaminated soil for off-site disposal. Alternative 3 leaves behind approximately 265 cubic yards of soils at depth containing contamination below residential SCOs that are removed under Alternative 4. Those soils do not present any additional risk for the potential property uses, but would require long term groundwater monitoring to verify the Department's expectation that ambient water quality standards will be achieved over time.

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.

Both Alternative 3 and Alternative 4 include excavation and off-site disposal, reducing the mobility of on-site waste by transferring the material to an approved off-site location. However, depending on the disposal facility, the toxicity and volume of the material may not be reduced. Both Alternative 3 and Alternative 4 would greatly reduce the potential for mobility in the form of vapor intrusion by removal of the higher concentrations of contamination in soil, and Alternative 4 would also remove additional soil with lower levels of contamination to protect groundwater.

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.

Alternatives 3 and 4 both have short-term impacts which could easily be controlled, however, Alternative 3 would have the smaller impact due to the smaller volume of soil needing to be excavated requiring fewer days of community disruption. Both Alternatives would achieve remediation goals for soil quickly, by the completion of excavation activities.

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.

Both Alternatives 3 and 4 are readily implementable. Alternative 4 would necessitate additional truck traffic compared to Alternative 3 due to the greater volume of both contaminated soil and backfill which would need to be transported on local roads.

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.

Due to the smaller volume of soils to be removed the capital cost of Alternative 3 is less than 1/8 that of Alternative 4. Alternative 3 does have annual cost for monitoring however, which Alternative 4 does not require. Overall the present worth cost of Alternative 3 is approximately 38% that of Alternative 4.

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.

Since the anticipated use of the site, if redeveloped, is residential, either Alternative 3 or Alternative 4 would be appropriate since both will meet residential SCOs and would allow all uses for the site permitted by current zoning. Compared to residential SCOs, unrestricted SCOs only allow additional uses such as farming which are not permitted under site zoning, so Alternative 4 provides little additional benefit over Alternative 3.

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.

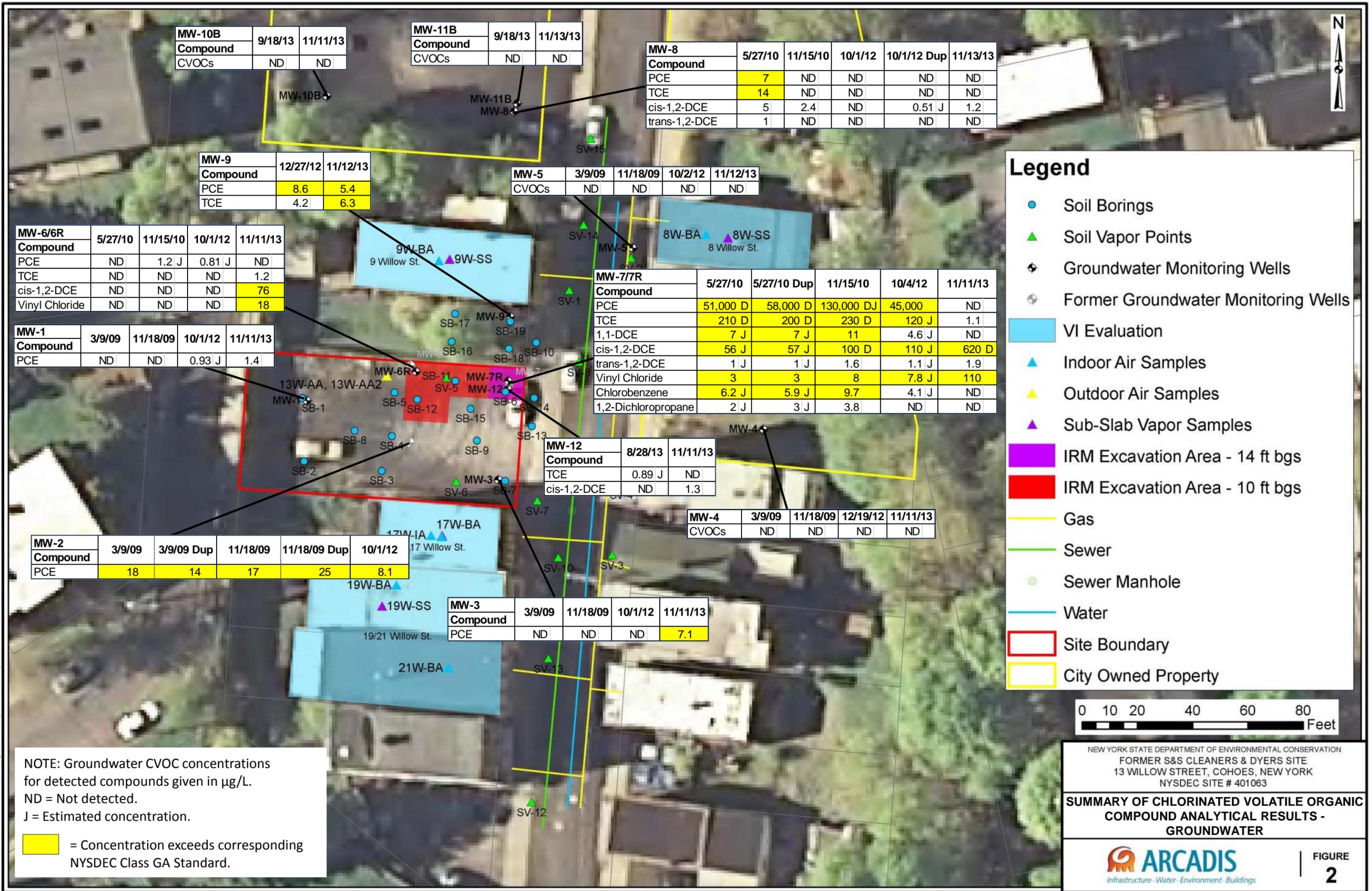
9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the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

Alternative 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



Figure 1 - S&S Cleaners & Dyers, 13 Willow St., Cohoes, NY

G:\GISMOD\100266396_0000\Figures\Proposed Sample Locations - 11x17.mxd



| MW-10B | | |
|----------|---------|----------|
| Compound | 9/18/13 | 11/11/13 |
| CVOCs | ND | ND |

| MW-11B | | |
|----------|---------|----------|
| Compound | 9/18/13 | 11/13/13 |
| CVOCs | ND | ND |

| MW-8 | | | | | |
|---------------|---------|----------|---------|-------------|----------|
| Compound | 5/27/10 | 11/15/10 | 10/1/12 | 10/1/12 Dup | 11/13/13 |
| PCE | 7 | ND | ND | ND | ND |
| TCE | 14 | ND | ND | ND | ND |
| cis-1,2-DCE | 5 | 2.4 | ND | 0.51 J | 1.2 |
| trans-1,2-DCE | 1 | ND | ND | ND | ND |

| MW-9 | | |
|----------|----------|----------|
| Compound | 12/27/12 | 11/12/13 |
| PCE | 8.6 | 5.4 |
| TCE | 4.2 | 6.3 |

| MW-5 | | | | |
|----------|--------|----------|---------|----------|
| Compound | 3/9/09 | 11/18/09 | 10/2/12 | 11/12/13 |
| CVOCs | ND | ND | ND | ND |

| MW-6/6R | | | | |
|----------------|---------|----------|---------|----------|
| Compound | 5/27/10 | 11/15/10 | 10/1/12 | 11/11/13 |
| PCE | ND | 1.2 J | 0.81 J | ND |
| TCE | ND | ND | ND | 1.2 |
| cis-1,2-DCE | ND | ND | ND | 76 |
| Vinyl Chloride | ND | ND | ND | 18 |

| MW-1 | | | | |
|----------|--------|----------|---------|----------|
| Compound | 3/9/09 | 11/18/09 | 10/1/12 | 11/11/13 |
| PCE | ND | ND | 0.93 J | 1.4 |

| MW-7/7R | | | | | |
|---------------------|----------|-------------|------------|---------|----------|
| Compound | 5/27/10 | 5/27/10 Dup | 11/15/10 | 10/4/12 | 11/11/13 |
| PCE | 51,000 D | 58,000 D | 130,000 DJ | 45,000 | ND |
| TCE | 210 D | 200 D | 230 D | 120 J | 1.1 |
| 1,1-DCE | 7 J | 7 J | 11 | 4.6 J | ND |
| cis-1,2-DCE | 56 J | 57 J | 100 D | 110 J | 620 D |
| trans-1,2-DCE | 1 J | 1 J | 1.6 | 1.1 J | 1.9 |
| Vinyl Chloride | 3 | 3 | 8 | 7.8 J | 110 |
| Chlorobenzene | 6.2 J | 5.9 J | 9.7 | 4.1 J | ND |
| 1,2-Dichloropropane | 2 J | 3 J | 3.8 | ND | ND |

| MW-12 | | |
|-------------|---------|----------|
| Compound | 8/28/13 | 11/11/13 |
| TCE | 0.89 J | ND |
| cis-1,2-DCE | ND | 1.3 |

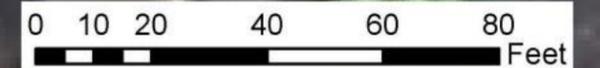
| MW-4 | | | | |
|----------|--------|----------|----------|----------|
| Compound | 3/9/09 | 11/18/09 | 12/19/12 | 11/11/13 |
| CVOCs | ND | ND | ND | ND |

| MW-2 | | | | | |
|----------|--------|------------|----------|--------------|---------|
| Compound | 3/9/09 | 3/9/09 Dup | 11/18/09 | 11/18/09 Dup | 10/1/12 |
| PCE | 18 | 14 | 17 | 25 | 8.1 |

| MW-3 | | | | |
|----------|--------|----------|---------|----------|
| Compound | 3/9/09 | 11/18/09 | 10/1/12 | 11/11/13 |
| PCE | ND | ND | ND | 7.1 |

Legend

- Soil Borings
- ▲ Soil Vapor Points
- ⊕ Groundwater Monitoring Wells
- ⊕ Former Groundwater Monitoring Wells
- VI Evaluation
- ▲ Indoor Air Samples
- ▲ Outdoor Air Samples
- ▲ Sub-Slab Vapor Samples
- IRM Excavation Area - 14 ft bgs
- IRM Excavation Area - 10 ft bgs
- Gas
- Sewer
- ⊙ Sewer Manhole
- Water
- Site Boundary
- City Owned Property



NOTE: Groundwater CVOC concentrations for detected compounds given in µg/L.
 ND = Not detected.
 J = Estimated concentration.

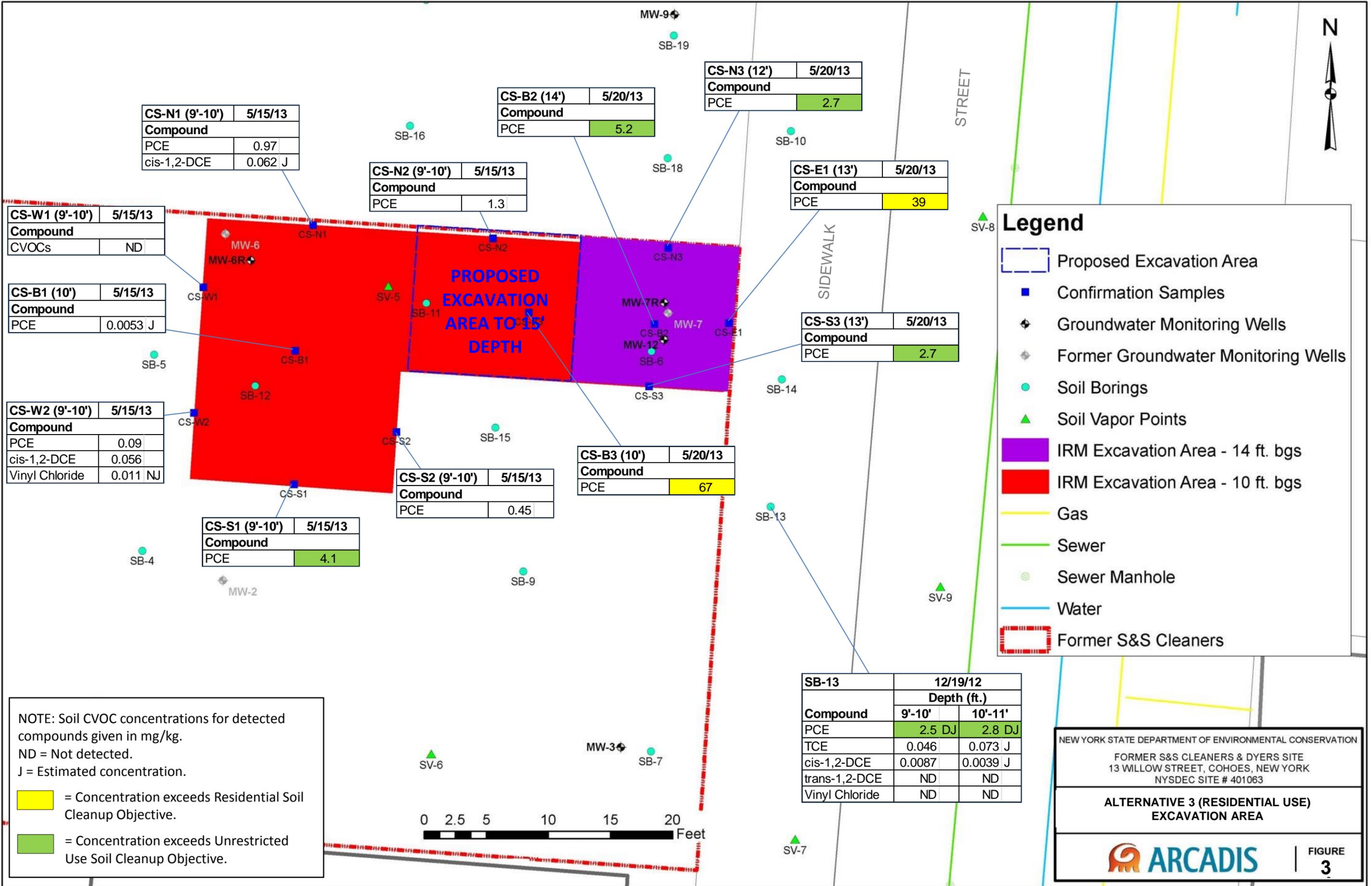
■ = Concentration exceeds corresponding NYSDEC Class GA Standard.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 FORMER S&S CLEANERS & DYERS SITE
 13 WILLOW STREET, COHOES, NEW YORK
 NYSDEC SITE # 401063

SUMMARY OF CHLORINATED VOLATILE ORGANIC COMPOUND ANALYTICAL RESULTS - GROUNDWATER



Project 00268696.0000
 G:\GIS\MD\00268696.0000\Figures\Excavation Area.mxd - 3/14/2014 @ 8:54:13 AM



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 FORMER S&S CLEANERS & DYERS SITE
 13 WILLOW STREET, COHOES, NEW YORK
 NYSDEC SITE # 401063

**ALTERNATIVE 3 (RESIDENTIAL USE)
 EXCAVATION AREA**

ARCADIS | **FIGURE 3**