PROPOSED REMEDIAL ACTION PLAN

Ronhill Cleaners
State Superfund Project
Glen Cove, Nassau County
Site No. 130071
February 2014

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 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:

GLEN COVE PUBLIC LIBRARY
Attn: Reference Librarian
4 GLEN COVE AVENUE
GLEN COVE, NY 11542
Phone: 516-676-2130

Glen Cove City Hall
Attn: City Clerk
9 Glen Street
Glen Cove, NY 11542
Phone: 516-676-3357

A public comment period has been set from:

2/26/2014 to 3/28/2014

A public meeting is scheduled for the following date:

3/19/2014 at 7:00 PM

Public meeting location:

Glen Cove City Hall, 9 Glen Street, Glen Cove

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 3/28/2014 to:

Nathan Putnam
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
neputnam@gw.dec.state.ny.us

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 Ronhill Cleaners site is located in a commercial/residential area of Glen Cove, Nassau County, at the corner of Forest and Bryce Avenue.

Site Features: The half-acre site features include a one-story commercial building surrounded by asphalt parking areas.

Current Zoning and Land Uses: The site is currently used as a retail shoe store. The site is zoned for commercial use. Surrounding land uses are residential and commercial.

Past use of the Site: The site was used as a retail dry cleaning facility from 1963 to 1993. Improper disposal of used tetrachloroethene (PCE) resulted in contamination of the soil and groundwater.

An Environmental Assessment was completed in 1990. A Preliminary Site Assessment was completed in 1995 under a State Superfund (SSF) Order on Consent with the responsible party. An initial Remedial Investigation/Feasibility Study (RI/FS) was completed in 2001 under a SSF Order on Consent with the responsible party. A State Superfund RI/FS referral was issued in 2003.

Site Geology and Hydrogeology: The site is 1,200 feet southwest from a Glen Cove Water District public supply well. Groundwater flow direction is to the southwest generally along Forest Avenue and is about 80 feet below grade. The soils at the site are generally sand with some silt and a clay confining layer at about 200 feet below 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 commercial use (which allows for industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a

site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Bedford Affiliates

Richard Sills & Henry Oh

The PRPs for the site declined to implement a remedial program when requested by the Department. 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)
DICHLOROETHYLENE

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 Vapor Extraction

In 1995, the responsible party installed and operated the Soil Vapor Extraction (SVE) system. The Department took over operation of the system in 2005. The system has been used to remove volatile organic compounds (VOCs) from the subsurface soils. VOCs are physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the

area below the ground but above the water table). The vacuum draws air through the soil which carries the VOCs from the soil to the SVE well. The air collected from the SVE wells is then treated prior to being discharged to the atmosphere. This on-site system also addresses the potential for soil vapor intrusion at the on-site structure.

Five SVE wells have been installed into the vadose zone at the site. Three of these wells collect soil vapor from about ten feet below grade and two of the wells collect soil vapor from about forty feet below grade. The soil vapor containing VOCs extracted from the SVE wells is being treated by passing the soil vapor stream through activated carbon, which removes the VOCs from the soil vapor, prior discharging it to the atmosphere.

IRM Sub-slab Depressurization Systems and Monitoring

The Department installed eight sub-slab depressurization systems, in late 2005 through early 2006, at off-site structures near Bryce and Forest Avenue, to prevent the migration of vapors into the buildings from contaminated soil and/or groundwater. Additionally, a sub-slab vapor and indoor air monitoring program is being implemented at two off-site buildings to confirm mitigation actions are not needed.

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: The primary contaminants of concern are Tetrachloroethene (also known as PCE or Perc), Trichloroethene (TCE), and Dichloroethene (DCE). Soils beneath and adjacent to the on-site structure are contaminated with PCE, TCE, DCE from past dry cleaning operations. The soil contamination is not exposed at the surface and does not extend off-site, but is present in the subsurface soil to the groundwater table. Concentrations up to 18ppm of PCE, up to 1.4ppm of TCE, and up to 1.0ppm of DCE have been detected in the on-site soils. Groundwater samples show that PCE contamination has reached the aquifer. Groundwater is contaminated with PCE up to 37,000 ppb in the shallow groundwater (within ten feet of the water table) on-site about 80 feet below grade. PCE is present in the groundwater off-site up to 990 ppb at 200 feet below grade. TCE and DCE are not present in the groundwater above the public drinking water standard. Soil vapor contamination has been found on- and off-site. Sub-slab soil vapor contamination, PCE, on-site was found at a maximum concentration of 1.3 million micrograms per cubic meter while off-site maximum was 160,000 micrograms per cubic meter. Indoor air concentrations of PCE were found at concentrations of 1,000 micrograms per cubic meter on-site and 140 micrograms per cubic meter off-site. Soil, indoor air, and groundwater contamination exceeds SCGs, protection of groundwater soil clean up objective is 1.3ppm for PCE, 0.47ppm for TCE, and 0.19ppm for DCE, the indoor air

guideline for PCE is 30 micrograms per cubic meter, and the public drinking water standard is 5 ppb for all three contaminants. A public water supply well about 1,200 feet upgradient is contaminated by PCE.

6.4: Summary of Human Exposure Pathways

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

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. People are not drinking contaminated groundwater because the public water supply that serves the area is treated to remove contaminants before the water is distributed to consumers. 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. A soil vapor extraction system (a system that removes air from subsurface soil) was installed on-site that will prevent vapors from entering the on-site building. Sub-slab depressurization systems (systems that ventilate/remove the air beneath the building) have been installed on off-site buildings to prevent indoor air quality from being affected by contamination in soil vapor beneath the 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 THE PROPOSED REMEDY

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

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

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

The proposed remedy is referred to as the Soil Vapor Extraction and Shallow In-situ Chemical Reduction remedy.

The estimated present worth cost to implement the remedy is $1,610,000. The cost to construct the remedy is estimated to be $1,250,000 and the estimated average annual cost is $23,000.

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 off-site disposal of contaminant source areas, including:

- soil containing VOCs exceeding protection of groundwater (soil at the site does not exceed commercial use cleanup criteria) as defined in 6 NYCRR Part 375-6.8(b).

While approximately 250 cubic yards of soil exceeding protection of groundwater SCOs will be removed from the site near the northwest corner of the on-site building for off-site disposal, the soil does not exceed commercial use SCOs. The contaminated soil is below the surface and the proposed excavation is not planned to exceed about ten feet below grade. The actual volume of soil removed will depend on the pre-design investigation and confirmatory samples collected during the excavation. The contaminated soil would be properly disposed off-site. 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.

3. Soil Vapor Extraction (SVE)

Soil vapor extraction (SVE) will continue to be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been or will be installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil which carries the VOCs from the soil to the SVE well. The air collected from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

Additional SVE wells will be installed as necessary to treat the full area of soil contamination on-site to supplement those installed as part of an IRM. The screened depths, locations, and number of wells will be determined during the pre-design evaluation (there are currently five SVE wells collecting contaminants from the on-site soil). The air collected from the additional SVE wells is then treated as necessary prior to being discharged to the atmosphere.

4. In-Situ Chemical Reduction

In-situ chemical reduction (ISCR) will be implemented to treat contaminants in the shallow groundwater. A chemical reducing agent will be injected into the subsurface to destroy the contaminants where drycleaner-related compounds were elevated in the shallow groundwater. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. The pre-design activities will evaluate the potential for the upgradient public water supply operations to influence (or be influenced by) the contamination related to the site and/or the planned injection activities. Between the pilot and the full scale implementations, it is estimated that 14 shallow (less than 100 feet below grade) groundwater injection points will be installed. It is estimated that the chemical reducing agent will be injected during approximately two separate events over several months.

Although two upgradient monitoring wells are not currently being impacted by the site and the upgradient public water supply is currently off-line, the potential exists for water quality issues when reactivating and operating this public water supply well, in part due to the presence of VOCs and the potential to pull site-related contamination to it. Groundwater monitoring will be implemented as part of the remedial design and water quality data and groundwater flow conditions will be monitored. An evaluation of the potential impacts of remedy implementation along with groundwater supply well reactivation will be closely coordinated with NYSDOH, NCHD and the water district moving forward.

5. 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 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.

6. 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 above.

Engineering Controls: The Soil Vapor Extraction system discussed above and the Sub-slab Depressurization Systems installed as IRMs.

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 to refine the nature and extent of contamination in the following areas where access was previously hindered: under the on-site building if the building is demolished
- a provision for removal or treatment of the contaminated soil area located under the onsite building if the building is demolished
- 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 buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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, soil vapor, and soil to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- soil sampling on-site to confirm commercial use (which would also allow for industrial use);
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.
- monitoring of soil vapor intrusion at off-site locations where RI samples indicate monitoring is recommended.

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:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintenance on the off-site SSD systems installed as IRMs;
- 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 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 lower of the protection of groundwater or Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Groundwater

Groundwater samples were collected from different depths to assess the groundwater conditions on and off-site. The samples were analyzed for volatile organic compounds to determine the nature and extent of contamination related to the operation of the drycleaners. The results indicate that contamination in the groundwater at the site exceeds the SCGs for volatile organic compounds. There is also a plume of contaminated groundwater emanating from the site toward the southwest, generally underlying Forest Avenue. The groundwater contamination extends approximately 2,000 feet downgradient from the site to a depth of about 200 feet below grade. See Figures 4A and 4B for a generalized representation of the area of groundwater contamination that exceeds drinking water standards.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene	ND – 37000	5	24 of 50
Trichloroethene	ND – 2.9	5	0 of 50

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 contaminant that is considered to be the primary contaminant of concern which will drive the remediation of groundwater to be addressed by the remedy selection process is tetrachloroethene.

Soil

Soil samples were collected to delineate the extent of the impacted soil at the site. The samples were analyzed for volatile organic compounds to determine the nature and extent of contamination related to the operation of

the drycleaner. Soil samples were collected at different depths from the surface to the groundwater table on-site. The results of these samples indicate that soil contamination exceeds the unrestricted SCGs for volatile organic compounds under the on-site structure and adjacent to the northwest corner of the on-site structure (former drycleaner). There is contaminated soil from about two feet below the surface to the groundwater table. Contaminated soil is not exposed at the surface. Figure 3 shows the location of soil samples collected during the remedial investigation.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm) Protection of Groundwater	Frequency Exceeding Restricted SCG
VOCs					
Tetrachloroethene	ND - 18	1.3	4 of 55	1.3	4 of 55
Trichloroethene	ND – 1.4	0.47	2 of 55	0.47	2 of 55
1,2-Dichloroethene	ND – 1.0	0.19	2 of 55	0.19	2 of 55

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

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 tetrachloroethene, trichloroethene, and 1,2-dichloroethene.

Soil Vapor

The potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. Due to the presence of buildings in the impacted area, a full suite of samples was collected to evaluate whether soil vapor intrusion was occurring.

Soil vapor intrusion evaluation samples were collected from the sub-slab and indoor air of 32 off-site residential and commercial structures. The results from these samples showed that contamination related to the on-site disposal of hazardous wastes was detected in the indoor air of several structures. At eight structures, sub-slab depressurization systems were installed. Indoor air was impacted above air guidelines at two locations, the other six locations received systems based on the potential for sub-slab vapor to impact the indoor air. Two structures were recommended for a monitoring program based on sub-slab soil vapor contamination. The remaining structures were not recommended for further monitoring or refused to have additional work done on their properties.

Based on the concentration detected, and in comparison with the New York State's Soil Vapor Intrusion Guidance, 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.

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 that 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.

Site Management (SM) would include maintenance and monitoring of off-site sub-slab depressurization (SSD) systems, monitoring of groundwater, sub-slab vapor, and indoor air on and off-site. . In addition, the SVE system would be decommissioned and replaced with an SSD system for the on-site structure along with sealing preferential pathways and ancillary work to maintain the system.

Present Worth: ..... *$*663,000
Capital Cost: ..... *$*276,000
Annual Costs: ..... *$*25,200

Alternative 3: Air Sparge with Soil Vapor Extraction (SVE)

This alternative would include Soil Excavation, Soil Vapor Extraction, and Air Sparging to remove contamination from the soils and shallow groundwater at the site as described in the paragraphs below. This alternative will also include Site Management, which includes institutional controls; groundwater, soil, and soil vapor monitoring; and continued maintenance and monitoring of SSD systems installed as IRMs.

While approximately 250 cubic yards of soil exceeding protection of groundwater SCOs will be removed from the site near the northwest corner of the on-site building for off-site disposal, the soil does not exceed commercial use SCOs. The contaminated soil is below the surface and the proposed excavation is not planned to exceed about ten feet below grade. The actual volume of soil removed will depend on the pre-design investigation and confirmatory samples collected during the excavation. The contaminated soil would be properly disposed off-site. 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.

Air Sparging will be implemented to address the shallow groundwater contaminated by volatile organic compounds (VOCs). VOCs will be physically removed from the groundwater and soil below the water table

(saturated soil) by injecting air into the shallow groundwater. As the injected air rises through the groundwater, the VOCs volatilize and transfer from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system applies a vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air collected from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

The air injection wells will be installed adjacent to the on-site building where the highest concentrations of groundwater contamination have been identified. The injection wells will be installed to a depth of approximately 100 feet, which is about 20 feet below the water table. To capture the volatilized contaminants, additional SVE wells will be installed in the vadose zone at a depth determined by pre-design/design evaluations. The air containing VOCs collected from the SVE wells will be treated as necessary to remove the VOCs from the air prior to it being discharged to the atmosphere.

Present Worth: ..... *$*934,000
Capital Cost: ..... *$*568,000
Annual Costs: ..... *$*23,800

Alternative 4: Soil Vapor Extraction and Shallow In-situ Chemical Reduction

This alternative would include Soil Excavation, Soil Vapor Extraction, and In-situ Chemical Reduction as described in the following paragraphs below. This alternative will also include Site Management, which includes institutional controls; requiring 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 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 which describes the groundwater, soil, and soil vapor monitoring; and continued maintenance and monitoring of SSD systems installed as IRMs.

While approximately 250 cubic yards of soil exceeding protection of groundwater SCOs will be removed from the site near the northwest corner of the on-site building for off-site disposal, the soil does not exceed commercial use SCOs. The contaminated soil is below the surface and the proposed excavation is not planned to exceed about ten feet below grade. The actual volume of soil removed will depend on the pre-design investigation and confirmatory samples collected during the excavation. The contaminated soil would be properly disposed off-site. 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.

Soil vapor extraction (SVE) will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been or will be installed into the vadose zone (the area below the ground surface but above the water table). The vacuum draws air through the soil which carries the VOCs from the soil to the SVE well. The air collected from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

Additional SVE wells will be installed into the vadose zone and screened at depths and in numbers determined in the pre-design evaluation (there are currently five SVE wells extracting contaminants from the on-site soil).

The air containing VOCs collected from the SVE wells will be treated as necessary to remove the VOCs from the air prior to it being discharged to the atmosphere.

In-situ chemical reduction (ISCR) will be implemented to treat contaminants in the shallow groundwater. A chemical reducing agent will be injected into the subsurface to destroy the contaminants in the shallow groundwater on-site and off-site where drycleaner-related compounds are elevated. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. Between the pilot and the full scale implementations, it is estimated that 14 shallow (less than 100 feet below grade) groundwater injection points will be installed. It is estimated that the chemical reducing agent will be injected in two separate events over several months.

Present Worth: ..... *$*1,610,000
Capital Cost: ..... *$*1,250,000
Annual Costs: ..... *$*23,000

Alternative 5: Soil Vapor Extraction, Air Sparge, Deep Groundwater In-Situ Chemical Reduction

This alternative would include, Soil Excavation, Soil Vapor Extraction, Air Sparge, and Deep Groundwater In-Situ Chemical Reduction as described in the paragraphs below. This alternative will also include Site Management, which includes institutional controls; groundwater, soil, and soil vapor monitoring; and continued maintenance and monitoring of SSD systems installed as IRMs.

While approximately 250 cubic yards of soil exceeding protection of groundwater SCOs will be removed from the site near the northwest corner of the on-site building for off-site disposal, the soil does not exceed commercial use SCOs. The contaminated soil is below the surface and the proposed excavation is not planned to exceed about ten feet below grade. The actual volume of soil removed will depend on the pre-design investigation and confirmatory samples collected during the excavation. The contaminated soil would be properly disposed off-site. 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.

Soil vapor extraction (SVE) will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been or will be installed into the vadose zone (the area below the ground surface but above the water table). The vacuum draws air through the soil which carries the VOCs from the soil to the SVE well. The air collected from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

Additional SVE wells will be installed into the vadose zone and screened depths and numbers determined in the pre-design evaluation (there are currently five SVE wells extracting contaminants from the on-site soil). The air containing VOCs collected from the SVE wells will be treated as necessary to remove the VOCs from the air prior to it being discharged to the atmosphere.

Air Sparging will be implemented to address the groundwater contaminated by volatile organic compounds (VOCs). VOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the shallow groundwater. As the injected air rises through the groundwater, the VOCs volatilize and transfer from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil

vapor extraction (SVE) system is used to remove the injected air. The SVE system applies a vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

At this site, air injection wells will be installed in the portion of the site to be treated, which is located on-site adjacent to the on-site building, where the highest concentrations of groundwater contamination are located. The injection wells will be installed to a depth of about 100 feet, which is about 20 feet below the water table. To capture the volatilized contaminants, additional SVE wells will be installed in the vadose zone at a depth determined by pre-design/design evaluations. The air containing VOCs collected from the SVE wells will be treated as necessary to remove the VOCs from the air prior to it being discharged to the atmosphere.

In-situ chemical reduction (ISCR) will be implemented to treat contaminants in the deep groundwater. A chemical reducing agent will be injected into the subsurface to destroy the contaminants in the deep groundwater (about 180 to 200 feet below grade) off-site where drycleaner-related compounds were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. Between the pilot and the full scale implementations, it is estimated that 25 deep groundwater injection points will be installed. It is estimated that the chemical reducing agent will be injected in two separate events over several months.

Present Worth: ..... *$*2,100,000
Capital Cost: ..... *$*1,730,000
Annual Costs: ..... *$*23,800

Alternative 6: Soil Vapor Extraction, Shallow and Deep In-Situ Chemical Reduction

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 the utilization of the remedial technologies described below:

While approximately 250 cubic yards of soil exceeding protection of groundwater SCOs will be removed from the site near the northwest corner of the on-site building for off-site disposal, the soil does not exceed commercial use SCOs. The contaminated soil is below the surface and the proposed excavation is not planned to exceed about ten feet below grade. The actual volume of soil removed will depend on the pre-design investigation and confirmatory samples collected during the excavation. The contaminated soil would be properly disposed off-site. 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.

Soil vapor extraction (SVE) will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been or will be installed into the vadose zone (the area below the ground surface but above the water table). The vacuum draws air through the soil which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

Additional SVE wells will be installed into the vadose zone and screened depths and numbers determined in the pre-design evaluation (there are currently five SVE wells extracting contaminants from the on-site soil). The air

containing VOCs collected from the SVE wells will be treated as necessary to remove the VOCs from the air prior to it being discharged to the atmosphere.

In-situ chemical reduction (ISCR) will be implemented to treat contaminants in the shallow and deep groundwater. A chemical reducing agent will be injected into the subsurface to destroy the contaminants in the shallow and deep groundwater on-site and off-site where drycleaner-related compounds were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. Between the pilot and the full scale implementations, it is estimated that 14 shallow groundwater injection points will be installed. It is estimated that the chemical reducing agent will be injected in two separate events over several months. Between the pilot and the full scale implementations, it is estimated that 25 deep groundwater injection points will be installed. It is estimated that the chemical reducing agent will be injected in two separate events over several months.

Present Worth: ..... *$*2,870,000
Capital Cost: ..... *$*2,510,000
Annual Costs: ..... *$*23,500

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1. No Further Action	0	0	0
2. No Further Action with SM	276,000	25,200	663,000
3. Air Sparge with SVE	568,000	23,800	934,000
4. SVE, Shallow ISCR	1,260,000	23,000	1,610,00
5. SVE, Air Sparge, Deep ISCR	1,730,000	23,800	2,100,000
6. SVE, Shallow and Deep ISCR	2,510,000	23,500	2,870,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4, Soil Vapor Extraction and Shallow In-situ Chemical Reduction as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by removing the contamination from the soil, destroying the contamination in the groundwater, and monitoring the soil vapor and the groundwater to ensure the concentration of contaminants continues to decrease and managing remaining contamination and associated human exposures. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 5.

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 4, Soil Vapor Extraction and Shallow In-situ Chemical Reduction) would satisfy this criterion by removing the soil contamination, destroying the groundwater contamination in-situ, and intercepting soil vapor contamination beneath structures, and managing remaining contamination and associated human exposures. This alternative removes contamination and uses Site Management to provide long term monitoring. Alternative 1 provides for no further action which means the risk for soil exposure, soil vapor intrusion into the former Ronhill Cleaners building and shallow/deep groundwater impacts will remain, and the alternative will provide no additional protection of human health and the environment. Alternative 2 through 6 provides protection of human health using SSD systems as a means of keeping contaminated soil vapor away from building occupants. However, Alternative 2 does not provide any additional benefit to environmental protection. Alternative 3 provides an enhanced level of protection for the environment over Alternative 2 through the upgrade of the existing SVE system with Air Sparge Wells, and additional vapor extraction wells. Alternative 3 could meet the threshold criteria, but would treat a smaller area of groundwater contamination than Alternative 4. Alternative 5 provides the same level of protection for the environment for soil, soil vapor and shallow groundwater as Alternative 3. Additionally, Alternative 5 proposes ISCR treatment of deep groundwater to address deep groundwater impacts. Alternative 6 provides the same level of protection for the environment as Alternative 4 and additionally treats deep groundwater with ISCR.

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 4 complies with SCGs to the extent practicable. It addresses areas of contamination and complies with the soil cleanup objectives through construction of the remedial system. It also creates the conditions necessary to restore groundwater and soil vapor quality to the extent practicable. Alternatives 1 and 2 do not

comply with chemical specific SCGs because contaminated shallow and deep groundwater would remain at levels above NYSDEC guidance criteria, and will not be evaluated further. Alternatives 3 through 6 provide similar levels of compliance with soil cleanup objects as they all employ excavation and SVE to address soil contamination. Alternative 3 provides treatment for shallow groundwater through the installation and operation of Air Sparge Wells. However, due to the extent of elevated shallow groundwater impacts, meeting chemical specific SCGs will most likely be difficult to achieve. Alternative 5 provides the same level of shallow groundwater treatment as described in Alternative 3 and additionally provides treatment of deep groundwater using ISCR technology. Alternative 6 provides the greatest possibility of meeting chemical specific SCGs for all matrices as it treats both shallow and deep groundwater with ISCR.

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

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

Alternatives 3 and 4 will provide long term effectiveness for soil remediation, soil vapor “mass” removal and shallow groundwater treatment, through contamination removal. In addition to the remedial actions described in Alternatives 3 and 4, Alternatives 5 and 6 propose deep groundwater treatment. Alternative 6 proposes ISCR treatment for both shallow and deep groundwater and is anticipated to provide the greatest long-term effectiveness for both on and off-site impacts. Alternatives 3 through 6 require groundwater use restrictions until groundwater contamination is reduced to drinking water standards. Alternatives 3 through 6 all reduce the potential for soil vapor intrusion with Alternatives 3 through 6 actively addressing soil vapor contamination.

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.

Alternatives 3 and 4 would significantly reduce the toxicity, mobility, and volume of contaminated soil, soil vapor and shallow groundwater at the site by removing contamination. Alternatives 5 and 6 provide the highest level of reduction in toxicity, mobility and volume through the additional treatment of deep groundwater impacts. Alternatives 3 through 6 require groundwater use restrictions until groundwater contamination is reduced to drinking water standards. Alternatives 3 through 6 all reduce the potential for soil vapor intrusion with Alternatives 3 through 6 actively addressing soil vapor contamination.

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 would incur dust, noise and traffic impacts on the site during soil excavation, drilling and installation of wells and AS/SVE system upgrades. Additionally, Alternatives 3 and 4 may have the potential to cause minimal community disturbance with mobilization and operation of equipment during the installation of off-site monitoring/observation wells. Alternatives 5 and 6 would incur the greatest short-term impact(s) as they involve construction work using larger drilling equipment for the longest period of time and disturb the largest areas both on and off the site. Community air monitoring would be implemented during any intrusive

work conducted at the site to ensure contamination does not migrate due to installation of the remedy. Upon installation and start-up, Alternatives 3 and 4 provide short-term effectiveness and are effective in the short-term for remediating the contaminated areas on-site and shallow groundwater, with Alternative 4 treated a larger area of contamination than Alternative 3. With Alternatives 3 and 4 the deeper contamination will be monitored as it is expected to more slowly reach groundwater standards. Alternatives 5 and 6 provide the highest means of short-term effectiveness for all matrices, and are expected to most quickly reach the remedial action objectives for all areas of contamination.

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.

Alternatives 3 through 6 can be readily implemented using standard construction means and methods, with Alternative 3 requires less effort to implement than Alternative 4. The implementation of Alternatives 5 and 6 will be the most difficult as these remedies disturb the greatest area over the longest period of time.

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. Alternative 3 has the lowest cost and removes substantial contamination from the site. Alternative 4 has a higher cost than 3 with a greater potential to meet the remedial action objectives. Alternative 5 has the second highest cost and treats contamination on and off-site. Alternative 6 has the highest cost and removes the contamination with the greatest effectiveness. Alternatives 3 through 6 all have costs for Site Management.

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 is commercial and the soil contamination concentrations are below commercial soil clean up objectives any alternative would meet the requirements for the anticipated site use. The soil contamination exceeds the groundwater protection criteria and groundwater contamination exceeds the public drinking water standard. The presence of the groundwater contamination will drive the selection of the alternative over the anticipated land use.

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 4 Soil Vapor Extraction and Shallow In-situ Chemical Reduction is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

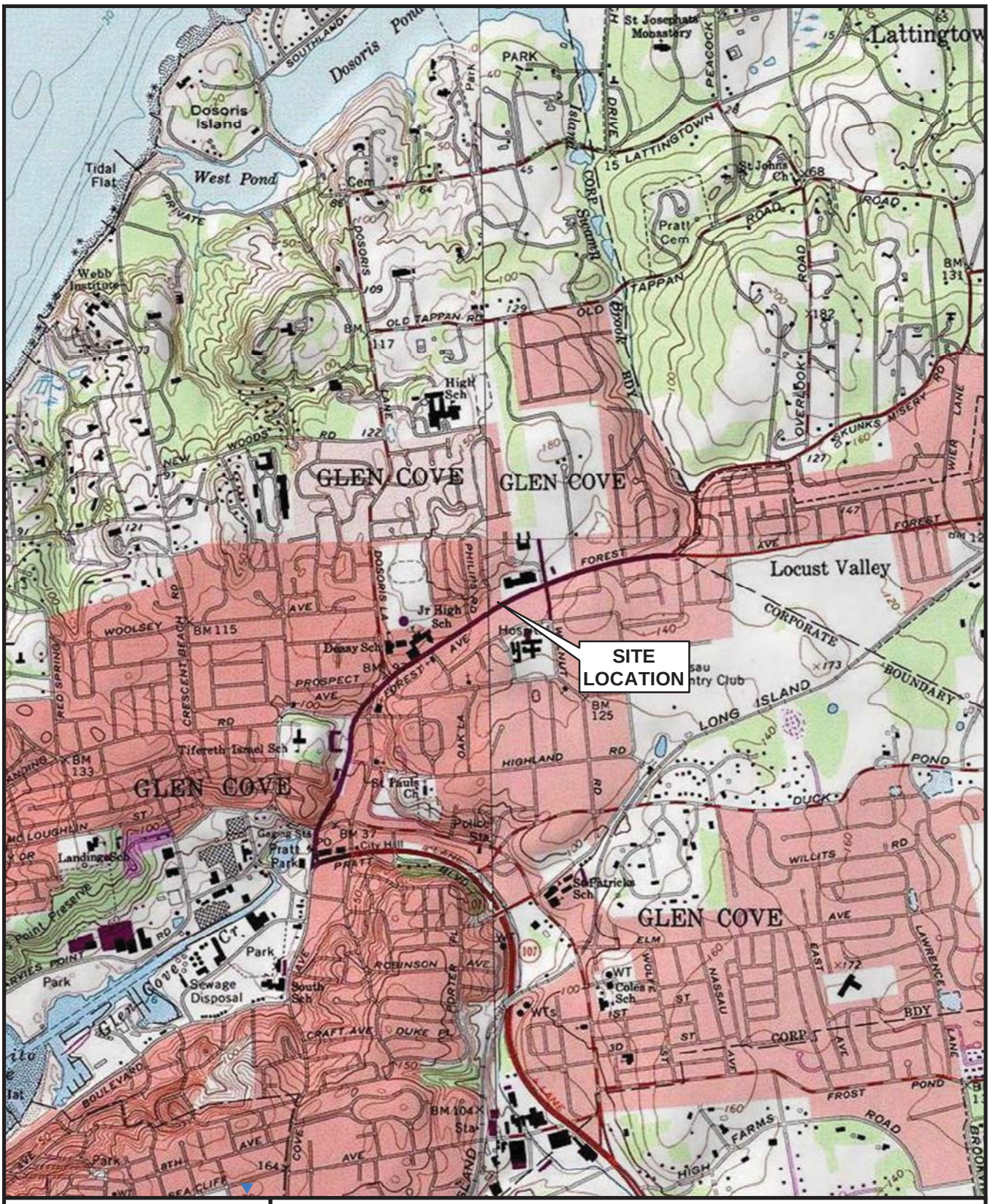


Figure 1

Site Location Map

Ronhill Cleaners

City of Glen Cove, Nassau County

Site No. 130071

DEPARTMENT OF ENVIRONMENTAL CONSERVATION · NEW YORK STATE ·

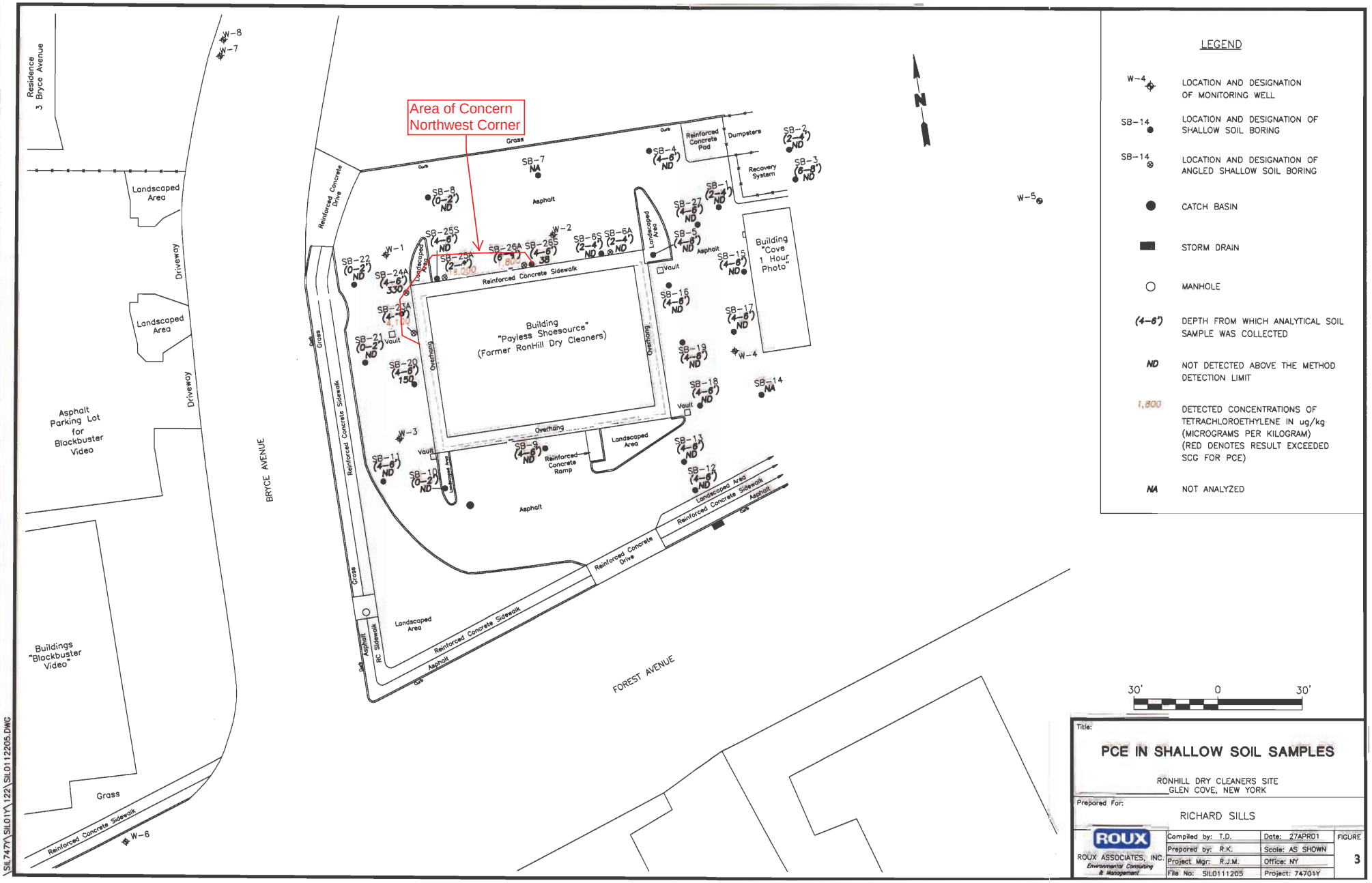
N
W E
S

0 100 200
Feet

Figure 2
Site Map

Ronhill Cleaners
City of Glen Cove, Nassau County
Site No. 130071

DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •



LEGEND

W-4	LOCATION AND DESIGNATION OF MONITORING WELL
SB-14 ●	LOCATION AND DESIGNATION OF SHALLOW SOIL BORING
SB-14 ⊗	LOCATION AND DESIGNATION OF ANGLED SHALLOW SOIL BORING
●	CATCH BASIN
▬	STORM DRAIN
○	MANHOLE
(4-6')	DEPTH FROM WHICH ANALYTICAL SOIL SAMPLE WAS COLLECTED
ND	NOT DETECTED ABOVE THE METHOD DETECTION LIMIT
1,800	DETECTED CONCENTRATIONS OF TETRACHLOROETHYLENE IN ug/kg (MICROGRAMS PER KILOGRAM) (RED DENOTES RESULT EXCEEDED SCG FOR PCE)
NA	NOT ANALYZED

Title:

PCE IN SHALLOW SOIL SAMPLES

RONHILL DRY CLEANERS SITE
GLEN COVE, NEW YORK

Prepared For:
RICHARD SILLS

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: T.D.	Date: 27APR01	FIGURE
Prepared by: R.K.	Scale: AS SHOWN	3
Project Mgr: R.J.M.	Office: NY	
File No: SIL0111205	Project: 74701Y	

\SIL7477Y\SIL01Y\122\SIL0112205.DWG

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
LATHAM, NY	10/01/13	SJW	SJW	MJS	MJS	134685-29B2

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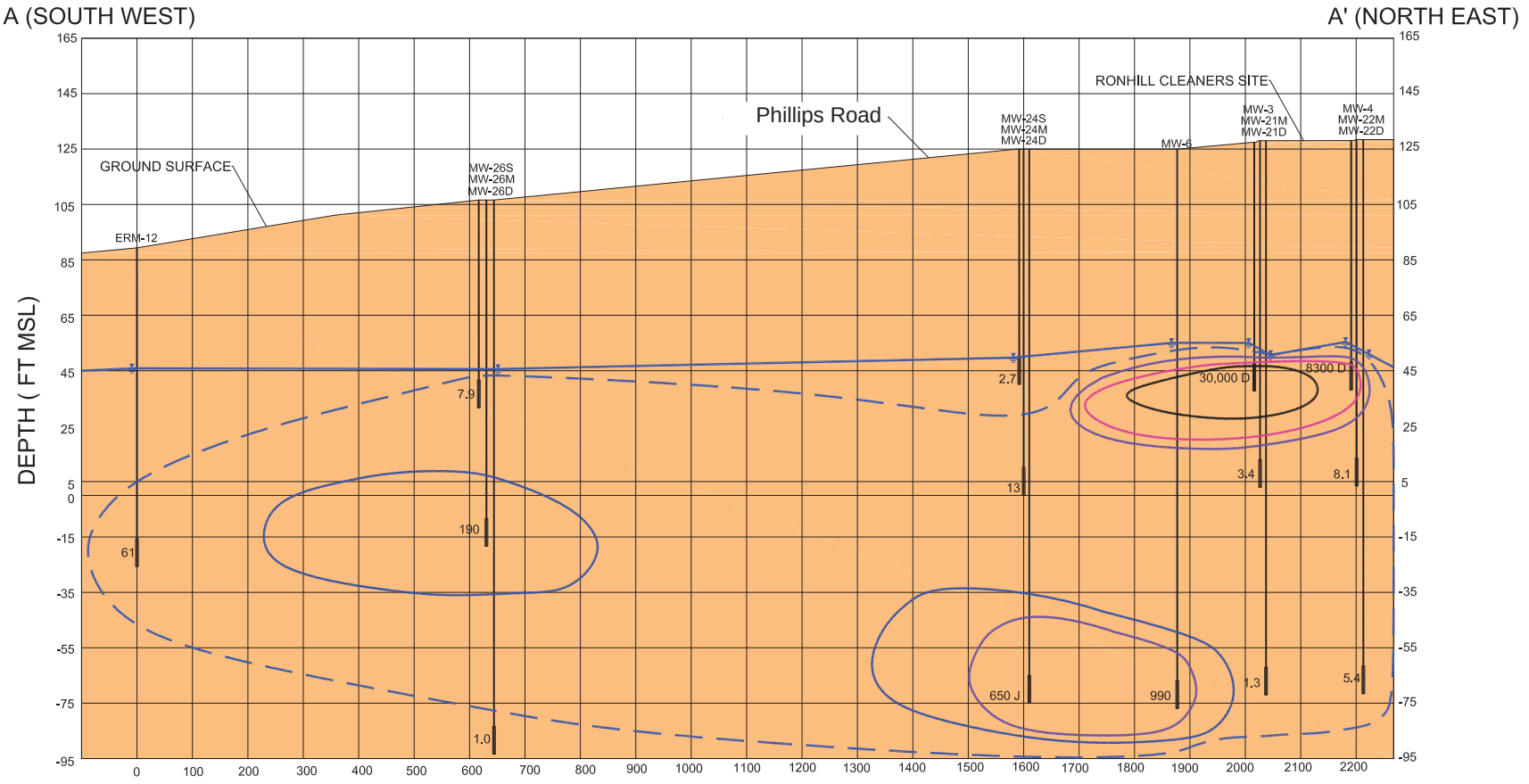
Plot Date/Time: Oct 02, 2013 - 3:17pm Image :
Plotted By: steven.walsh



NOTES:
1) CONCENTRATIONS SHOWN ARE IN PARTS PER BILLION (PPB) OR MICROGRAMS PER LITER (UG/l).
2) FT MSL - FEET ABOVE OR BELOW MEAN SEA LEVEL
3) THE 5PPPB CONTOUR IS INFERRED BASED ON SITE DATA

LEGEND:
- 5ppb PCE Isocon
- 100ppb PCE Isocon
- 500ppb PCE Isocon
- 1000ppb PCE Isocon
- 10,000ppb PCE Isocon
- SANDY SOIL INTERSPERSED WITH GRAVEL DEPOSITS THROUGHOUT

Shaw Environmental, Inc.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SITE NO. 130071

FIGURE 4A

CROSS-SECTION OF GROUNDWATER VOC RESULTS

RONHILL CLEANERS SITE
NASSAU COUNTY, GLEN COVE, NEW YORK

Shaw Environmental & Infrastructure, Inc.

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
SITE NO: 130071

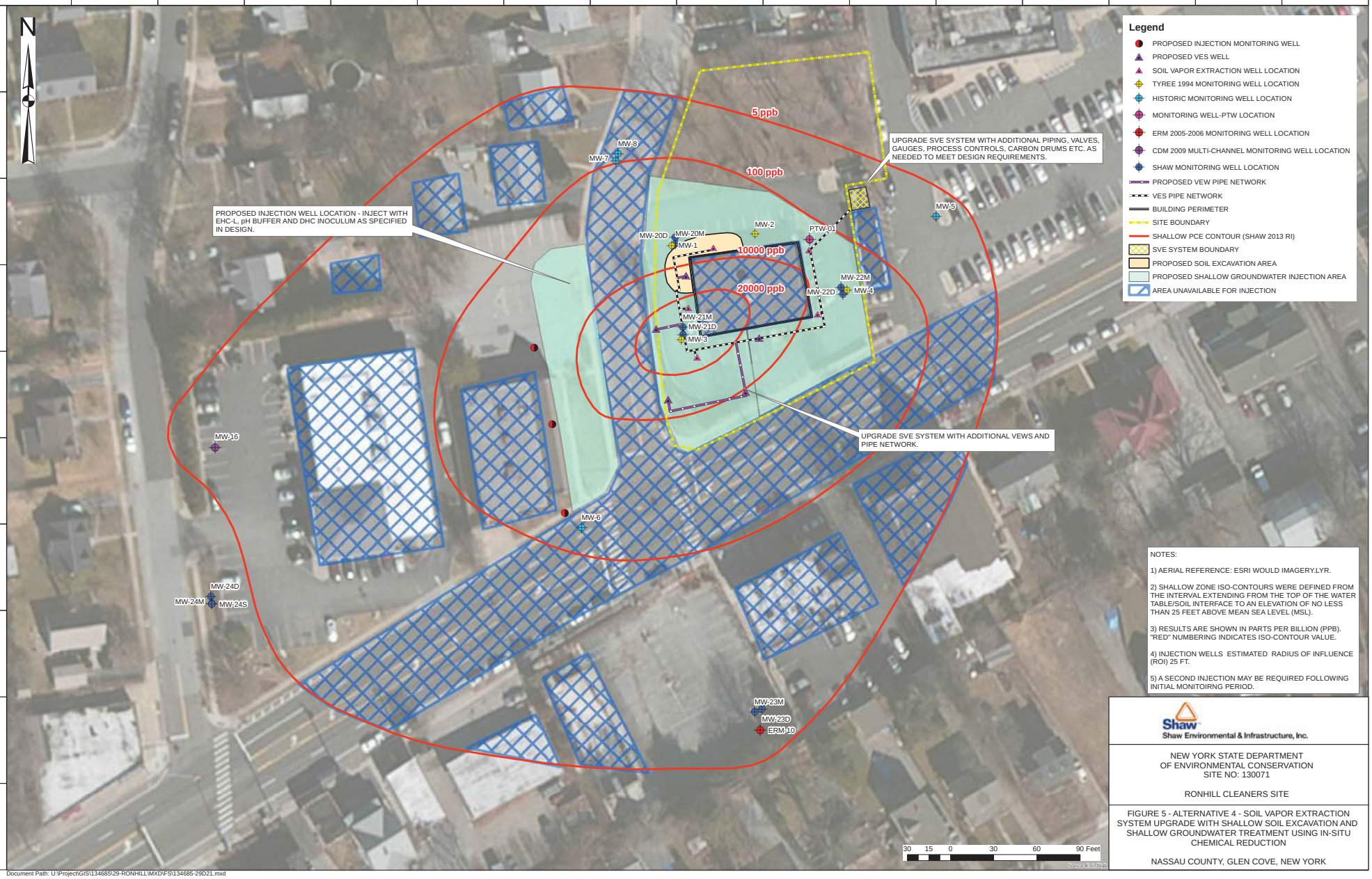
RONHILL CLEANERS SITE

FIGURE 4B
General Area of Groundwater Contamination

NASSAU COUNTY, GLEN COVE, NEW YORK

DRAWING NUMBER 134685-29D8
APPROVED BY DCS
CHECKED BY SJW
DRAWN BY MJS
DESIGNED BY MJS
DATE 09/30/13
OFFICE LATHAM, NY

Document Path: U:\Project\GIS\134685\29-RONHILL\MXD\134685-29D8.mxd



NOTES:

1) AERIAL REFERENCE: ESRI WOULD IMAGERY.LYR.

2) SHALLOW ZONE ISO-CONTOURS WERE DEFINED FROM THE INTERVAL EXTENDING FROM THE TOP OF THE WATER TABLE/SOIL INTERFACE TO AN ELEVATION OF NO LESS THAN 25 FEET ABOVE MEAN SEA LEVEL (MSL).

3) RESULTS ARE SHOWN IN PARTS PER BILLION (PPB). "RED" NUMBERING INDICATES ISO-CONTOUR VALUE.

4) INJECTION WELLS ESTIMATED RADIUS OF INFLUENCE (ROI) 25 FT.

5) A SECOND INJECTION MAY BE REQUIRED FOLLOWING INITIAL MONITOIRNG PERIOD.

Shaw
Shaw Environmental & Infrastructure, Inc.

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
SITE NO: 130071

RONHILL CLEANERS SITE

FIGURE 5 - ALTERNATIVE 4 - SOIL VAPOR EXTRACTION SYSTEM UPGRADE WITH SHALLOW SOIL EXCAVATION AND SHALLOW GROUNDWATER TREATMENT USING IN-SITU CHEMICAL REDUCTION

NASSAU COUNTY, GLEN COVE, NEW YORK

DRAWING NUMBER: 134685-29D21
APPROVED BY: MJS
CHECKED BY: NR
DRAWN BY: MJS
DESIGNED BY: MJS
DATE: 01-17-14
OFFICE: LATHAM, NY

Document Path: U:\Project\GIS\134685\29-RONHILL\MXD\FS\134685-29D21.mxd