PROPOSED REMEDIAL ACTION PLAN

Former Garden Photoengraving Co., Inc.
Operable Unit Number 01: Source Area Remedial Investigation
State Superfund Project
Mineola, Nassau County
Site No. 130174
February 2017

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

PROPOSED REMEDIAL ACTION PLAN

Former Garden Photoengraving Co., Inc.
Mineola, Nassau County
Site No. 130174
February 2017

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

Mineola Memorial Library
Attn: Pat Lackner
195 Marcellus Road
Mineola, NY 11501
Phone: (516) 746-8488

A public comment period has been set from:

02/27/17 to 03/29/17

A public meeting is scheduled for the following date:

03/15/17 at 7:00PM

Public meeting location:

Mineola Middle School Auditorium, 200 Emory St, Mineola, NY 11501

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 03/29/17 to:

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

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

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Former Garden Photoengraving Site is located in a light industrial area at 40

Roselle Street, Mineola, NY in Nassau County.

Site Features: The site consists of a 2-story commercial building and a parking lot to the east and west with no exposed soil. The site is 0.394 acres. Roselle Street is south of the property and a county recharge basin to the north. The surrounding parcels are used for light industrial and commercial activities.

Current Zoning/Use(s): The site is currently active. It is zoned industrial. Currently, the building is occupied by a dental implants fabrication business, a cabinet maker, and an insulation company. The closest residences are located in an apartment complex 200 feet to the east.

Historic Use(s): The building was built in 1953 and has been used as office space, pesticide storage, and as a photoengraving facility. Fumex Pest Control reportedly stored pesticides and herbicides in cargo containers within the building and in sheds in the parking lot from 1992 until 1997. The photoengraving facility, Garden Photoengraving Co., Inc. operated here from 1955 until at least 1977 and would have made extensive use of chemicals, such as metals and solvents.

A 2001 Phase II subsurface soil and groundwater investigation found that there were three cesspools in the western parking lot, two in the eastern parking lot, two floor drains within the building, one leading to the recharge basin. Groundwater in the western parking lot did not exceed the groundwater standards, however trichloroethene (TCE), naphthalene, and silver exceeded the groundwater standard south of the building on-site, downgradient of the eastern parking lot.

An environmental audit performed in May 2002, detected elevated levels of total petroleum hydrocarbons (TPH), chromium, and mercury in the eastern cesspools. A cleanup, under the oversight of Nassau County Department of Health (NCDH), was performed in the five cesspools with removal of 149.81 tons of contaminated sediments and soils. The endpoint samples showed exceedances of the standards for silver, chromium, and mercury, and TPH including naphthalene.

A 2004 Site Investigation was performed of the eastern parking lot cesspools. The results showed that there was TPH, as well as chlorinated volatile organic compounds (VOCs) exceeding the standards in soil near and within two of the previously cleaned out cesspools. A smear zone and evidence of petroleum compounds were present in the groundwater. Monitoring wells were installed within the eastern parking lot which showed exceedances for naphthalene, TPH, tetrachloroethene (PCE), and TCE in the groundwater.

The Department completed a Site Characterization(SC) on this site and the adjacent 50 Roselle Street property in 2009. The results of the investigation indicated that there were low concentrations of PCE and TPH in soil and PCE, TCE, and naphthalene exceeded the standard for groundwater. The most likely source of these contaminants were the former cesspools in the eastern parking lot with the source material continuing to impact the groundwater.

In November 2009, 40 Roselle Street was added to the New York State Registry of Inactive Hazardous Waste Disposal Sites as Class 2 (i.e., poses a significant threat to public health and/or

the environment) due to the results of the Department SC. In 2012, a supplemental investigation was completed on 50 Roselle Street. The results indicated 50 Roselle was reclassified to Class N (i.e., no further action required) since contamination was attributable to 40 Roselle.

Operable Units: The site was divided into two operable units.

An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

Operable Unit 1 (OU1) includes the on-site source area - the building and eastern parking lot as well as the soil vapor intrusion issue for 40 and 50 Roselle Street.

Operable Unit 2 (OU2) includes all of the off-site groundwater plume as well as soil vapor intrusion evaulations for properties aside from 40 and 50 Roselle Street.

Site Geology and Hydrogeology: Depth to groundwater is approximately 40 ft below ground surface (bgs). The wells screened at the top of the water table are within the upper glacial aquifer. Groundwater flow direction is to the south-southwest. Soil is composed mostly of sand and some gravel. Public supply wells N0097 and N08576 are located approximately 2,500 feet downgradient of the site. The water district has alerted the Department to the impact of Well N0097 with PCE, TCE, and DCE, the same contaminants seen at the site, however it cannot be determined at this time if the site is the source of contamination. This well has been shut down. This issue will be addressed in OU2.

Operable Unit (OU) Number 01 is the subject of this document.

A Record of Decision will be issued for OU 02 in the future.

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:

Komar Products GMBH

Garden Photo-Engraving Co., Inc.

RE-KO Enterprises, Ltd.

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 for this Operable Unit at this site is/are:

trichloroethene (TCE)
naphthalene
tetrachloroethene (PCE)
1,2-dichloroethene
aldrin
heptachlor epoxide
dieldrin

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

- groundwater
- soil
- soil vapor intrusion

6.2: Interim Remedial Measures

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

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

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

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

OU 1: Source Areas and 40 and 50 Roselle Soil Vapor Intrusion

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. Based upon investigations conducted to date, the primary contaminants of concern for OU 1 include the VOCs, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), SVOC, naphthalene, and the pesticides, Aldrin, Heptachlor, and Dieldrin.

Soil – The 2009 Site Characterization (SC) identified unrestricted soil cleanup objectives (SCOs) in soil were exceeded for chromium (max 30.6 part per million [ppm]) on-site.

During the Remedial Investigation, dieldrin (0.039 ppm) was found in shallow soil in the eastern parking lot just beneath the asphalt, however it does not exceed the residential SCO(0.039 ppm), restricted residential (0.2 ppm), or commercial SCOs (1.4 ppm), only the unrestricted SCO (0.05 ppm). Chromium (maximum 33.3 ppm) and Silver (maximum 9.1 ppm) were also found during the remedial investigation to exceed the unrestricted SCO (respectively 30 ppm and 2 ppm) at approximately 40 feet below ground surface (bgs), which was sampled to assess soil impacts to groundwater. However, chromium was detected in water at levels below the standard and silver was not detected in groundwater at all. Therefore the protection of groundwater SCO is not applicable. PCBs, SVOCs, and mercury were not detected in soil above the unrestricted SCOs. Data does not indicate any off-site contamination in soil related to this site.

Groundwater – During the 2009 SC, concentrations of up to 1,000 parts per billion (ppb) TCE, 230 ppb PCE, 890 ppb DCE, and 3200 ppb naphthalene were found in on-site groundwater.

During the Remedial Investigation, PCE and its associated degradation products (TCE and DCE) were found in groundwater in the eastern parking lot, moderately exceeding groundwater standards (5 ppb), with a maximum concentration of 190 ppb at the top of the groundwater table. Dense Non-Aqueous Phase Liquid (DNAPL) was also found in one monitoring well (MW-2) on-site with a groundwater concentration of 33,000 ppb of PCE. The DNAPL's thickness was not measurable however it was found to be a thin lens of material. The DNAPL has been observed in MW-2 only since 2014, although the well was installed in 2004. In 2004, NAPL was observed in a former cesspool soil boring. It cannot be concluded with the data available if the DNAPL is migrating.
Naphthalene was present in the eastern parking lot exceeding the standard (10 ppb) with a maximum concentration of 2,100 ppb, typically seen slightly below the top of the groundwater table. The pesticides, aldrin and heptachlor, were found slightly exceeding the standard (0.067 ppb[ND] and 0.04 ppb, respectively) with 0.31 ppb and 0.16 ppb.
PCBs and SVOCs(other than naphthalene) were not detected in the groundwater above the standard.

Soil Vapor - Soil Vapor was tested during the remedial investigation in the eastern (SV-10) and western (SV-11) parking lots to evaluate the potential for off-site migration of soil vapors. The concentrations in the eastern parking lot for PCE and TCE were 240 ug/m3 and 55 ug/m3 respectively. The concentrations in the western parking lot were 71 ug/m3 and 41 ug/m3 respectively. There are not standards to evaluate this medium.

Sub-slab vapor and Indoor Air – PCE and TCE were detected in sub-slab soil vapor and indoor air at 40 and 50 Roselle Streets at elevated concentrations during both samples rounds taken during February 2014 and June 2014. A maximum of 9,600 micrograms per cubic meter (ug/m3) of PCE was found in the sub-slab vapor and in the indoor air up to a maximum of 60 ug/m3. A maximum of 5,900 ug/m3 of TCE was found in the sub-slab vapor and 34 ug/m3 was found in the indoor air. The results of the soil vapor intrusion study indicate actions are recommended to mitigate exposures from soil vapor intrusion at both properties. In addition, the NYSDOH air guideline was exceeded for both PCE and TCE (30 ug/m3 and, currently, 2 ug/m3 respectively) at both the properties.

OU 2: Off-site Areas

The primary contaminants of concern for OU 2 are PCE, TCE, and DCE.

Soil - Unrestricted SCOs were not exceed in OU 2.

Groundwater – The Remedial Investigation in the OU-2 (i.e., the off-site area) is on-going. To date, PCE is present at a maximum of 36 ppb, TCE is present at a maximum concentration of 120 ppb, and DCE is present at a maximum of 660 ppb. PCE, TCE, and DCE have been detected in public supply wells approximately 2,500 feet downgradient of the site, however, at this time they cannot be definitely attributable to the site.

Soil Vapor and Indoor Air - Soil vapor was sampled and analyzed for the OU-2 area and found to be elevated for both PCE and TCE. Groundwater at the top of the water table was slightly impacted in the off-site area with PCE and TCE, indicating there is potential for soil vapor intrusion in the off-site area. No sub-slab vapor samples were collected in the OU-2 and one indoor air samples was collected which exhibited PCE at 5.4 ug/m3 and TCE at 0.36 ug/m3, which were both below the NYSDOH Air Guideline Value of 30 ug/m3 and 2 ug/m3, respectively.

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.*

The site is covered by pavement and a building, people will not come into contact with contaminated groundwater and contaminated soils unless they dig below the surface. A downgradient public water supply well has been affected by contaminants but the source of the contaminants has not been identified. However, municipal water suppliers have taken

appropriate actions (such as removing the well from service) to ensure that the public water supply continues to meet drinking water standards prior to distribution to the consumers. Volatile organic compounds in contaminated soils or contaminated groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Soil vapor intrusion sampling identified impacts to indoor air quality in the on-site structure and one building adjacent to the site. Additional off-site soil vapor intrusion evaluations are recommended.

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.

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 In-Situ Chemical Oxidation, Soil Cover, and SSDS remedy.

The estimated present worth cost to implement the remedy is $1,049,000. The cost to construct the remedy is estimated to be $564,000 and the estimated average annual cost is $34,000.

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. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater on-Site in the source area (the former cesspool) as well as DNAPL. A chemical oxidant will be injected into the subsurface to destroy the contaminants in an area located in the eastern parking lot of the Site where contaminants were elevated in the groundwater (approximately 600 sq ft in the area of MW-2). The method and depth of injection will be determined during the remedial design. It is estimated that the chemical oxidant will be injected during approximately two separate events over several months.

Prior to the full implementation of this technology, laboratory pilot studies will be conducted to more clearly define design parameters.

3. Cover System

A site cover currently exists on the Site and consists of the asphalt parking lot and building slab. It will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

4. Vapor Mitigation

The building situated on the site - 40 Roselle St, and the adjacent off-site building - 50 Roselle St., impacted by the site, will be required to have a sub-slab depressurization system, to mitigate the potential for exposure to contaminated sub-slab soil vapor into the indoor air of the building.

5. Institutional Control

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

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

6. Site Management Plan

A Site Management Plan is required, which includes the following:

1. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Item 5 above.

Engineering Controls: The soil cover discussed in Item 3 and the vapor mitigation in Item 4.

This plan includes, but may not be limited to:

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

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

o a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures.

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

o a provision for evaluation of the potential for soil vapor intrusion of future buildings developed on the site and on the adjacent off-site parcel that is impacted, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

o a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Item 4 above will be placed in any areas where the upper one foot of exposed surface soil exceed the applicable soil cleanup objectives (SCOs)

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

o maintaining site access controls and Department notification; and

o the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

2. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

o monitoring of groundwater to assess the performance and effectiveness of the remedy;

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

o monitoring for vapor intrusion, as may be required by the Institutional and Engineering Control Plan discussed above.

3. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

o procedures for operating and maintaining the system(s); and

o compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Exhibit A

Nature and Extent of Contamination

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

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Waste/Source Areas

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

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas were identified at the site.

A source area was identified at the site, within 20 feet of the former Cesspool CP-4, in MW-02. DNAPL (Dense Non-Aqueous Phase Liquid) was observed at the bottom of the screened interval. The thickness of the DNAPL could not be determined. It is, however, a thin lens of material. The product was analyzed for VOCs and hydrocarbon fingerprinting. Tetrachloroethene (PCE) was detected at a concentration of 33,000 ppb. All other VOCs were non-detect. The fingerprint analysis yielded a concentration of 230,000,000 ppb
for unknown hydrocarbons, but showed no detection for gasoline components, kerosene, motor oils, or petroleum hydrocarbons such as diesel, or #2, 4, 5, or 6 fuel oils. The unknown hydrocarbons detection is assumed to be the result of PCE. The DNAPL has only been observed in MW-02 since 2014, although the well has been sampled periodically since 2004 with no DNAPL observed prior to 2014. DNAPL has not been observed in any other on-site or off-site wells, however, NAPL was observed at the water table in a soil boring in 2004 through the CP-4 cesspool.

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

Groundwater

Groundwater samples were collected from on-site (OU-1) monitoring wells at depths ranging from the top of the water table (approximately 40 ft below ground surface) to 85 ft below ground surface (bgs) from several wells in the eastern parking lot. Off-site (OU-2) groundwater is being assessed in a separate investigation. The results of the OU-1 investigation indicate that the contamination in the shallow groundwater exceeds the Standards, Criteria, and Guidance values (SCGs) for the volatile organic compounds (VOCs), PCE and its breakdown products,

trichloroethene (TCE) and cis-1,2-dichloroethene (DCE) (however not vinyl chloride), as well as the semi-volatile organic compound (SVOC), naphthalene.
In addition, the SCGs were exceeded in groundwater at deeper depths for the inorganic metals iron, sodium, and aluminum and the pesticides, aldrin and heptachlor, as well as the SVOC, naphthalene.

There are no private wells in the vicinity of the site. There are two public supply wells approximately 2,500 ft downgradient of the site. Both wells have detections of similar compounds found at the site. It however, cannot be assumed that these are a result of migration from the site nor can it be ruled out at this point in time. This is being studied in the OU-2 investigation. The data for the first phase of groundwater sampling is show in Figure 2 and the second phase of groundwater sampling on Figure 3.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene	ND – 33,000 ug/L	5 ug/L	6/19
Trichloroethene	ND – 260 ug/L	5 ug/L	6/18
1,1,1-Trichloroethane	ND - 6.9 ug/L	5 ug/L	1/18
Cis-1,2-dichlorethene	ND – 130 ug/L	5 ug/L	2/18
SVOCs			
Naphthalene	ND – 3,000 ug/L	10 ug/L	4/8
Inorganics			
Aluminum	190 ug/L	100 ug/L	1/1
Iron	2,000 ug/L	300 ug/L	1/1
Sodium	41,700 ug/L	20,000 ug/L	1/1
Pesticides/PCBs			
Aldrin	0.31J ug/L	ND	1/1
Heptachlor	0.16J ug/L	0.04 ug/L	1/1

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

The primary groundwater contaminants are PCE, TCE, DCE, naphthalene, aldrin and heptachlor all associated with disposal through the former cesspool in the eastern parking lot on the Site. The inorganic contaminants, iron, aluminum, and sodium, although exceeding their SCGs, are considered to represent naturally occurring compounds in Long Island groundwater and will not be addressed by the remedy.

Based on the findings of the RI, the past disposal of hazardous waste resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: PCE, TCE, DCE, naphthalene, aldrin, and heptachlor.

Soil

Surface and subsurface soil samples were collected during the Remedial Investigation both on-site and in the recharge basin adjacent to the site of which a floor drain discharged to. Shallow soils samples were collected from a depth of 0-2 inches to assess direct human exposure on-site directly below the pavement and in the recharge basin. Subsurface soil samples were collected only on-site from a depth of approximately 40 ft bgs to assess soil contamination impacts to groundwater. The results indicate that shallow soils at the site exceed the unrestricted SCG for the pesticide, dieldrin and that subsurface soils exceed the SCGs for the metals, chromium and silver. Figure 4 presents the exceedances of the Unrestricted Soil Cleanup Objectives (SCOs) for surface and subsurface soils.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
No Exceedances					
SVOCs					
No Exceedances					
Inorganics					
Chromium, trivalent	3.3 – 33.3 mg/kg	30 mg/kg	1/4	1,500	0/4
Silver	ND – 9.1 mg/kg	2 mg/kg	1/4	1,500	0/4
Pesticides/PCBs					
Dieldrin	ND – 39 ug/kg	5 ug/kg	1/2	1,400 ug/kg	0/2

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

The primary soil contaminants are metals and pesticides associated with residues from the former photoengraving operations and storage of pesticides by the former occupant of 40 Roselle St., Fumex Pest Control.

Based on the findings of the Remedial Investigation, the presence of pesticides 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 dieldrin. The inorganic contaminants are at concentrations that only slightly exceed the unrestricted SCO and in the case of silver is not applicable to the protection of groundwater, as silver is not present in the groundwater and for chromium there is no protection of groundwater SCO specified. The Ecological Resources SCO does not apply to the site as it is in an industrial/commercially zoned area and there are no ecological receptors in the area.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and

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

Sub-slab soil vapor samples, indoor air, and outdoor air samples were collected from the Site building as well as the adjacent property. The results on-site indicated that PCE and TCE were detected in indoor air and sub-slab vapor at levels where actions are needed to reduce exposures from soil vapor intrusion. The results for 50 Roselle Street indicated that PCE was detected in indoor air and sub-slab vapor at levels where actions are needed to reduce exposures from soil vapor intrusion. The PCE results for sub-slab vapor range from non-detect to 9,600 ug/m^3 and for indoor air from 3.7 ug/m^3 to 60 ug/m^3. The TCE results for sub-slab vapor range from 4.1 ug/m^3 to 5,900 ug/m^3 and for indoor air range from 2.2 ug/m^3 to 34 ug/m^3. In addition, the air guidelines for PCE (30 ug/m^3) and TCE (2 ug/m^3) are exceeded for both properties. The results of the soil vapor intrusion sampling are presented on Figure 5.

Soil vapor data were collected from both the eastern (SV-10) and western parking lots (SV-11) to evaluate the potential for off-site migration of soil vapors. The concentrations in the eastern parking lot for PCE and TCE were 240 ug/m^3 and 55 ug/m^3 respectively. The concentrations in the western parking lot for PCE and TCE were 71 ug/m^3 and 41 ug/m^3 respectively. These data, in conjunction with the results of other environmental sampling, indicate a need to complete a soil vapor intrusion investigation off-site. The results of the OU-1 soil vapor sampling are shown in Figure 6. The off-site areas are the subject of an OU2 investigation and remediation.

Based on the findings of the Remedial Investigation, the past uses of the site have resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are PCE and TCE.

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 Action

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

Alternative 2: Site Management with Long-Term Monitoring (LTM)

The Site Management Alternative requires only institutional controls for the site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: *$543,000*
Capital Cost: *$20,000*
Annual Costs: *$34,000*

Alternative 3: Bioremediation with Extraction of DNAPL

This alternative would include, the bioremediation of soluble VOCs in groundwater by injection of microorganisms and agents to promote the biological processes that breakdown the VOCs. The removal of separate phase contaminants (DNAPL) would be conducted by extraction of the DNAPL material and off-site disposal. Soil contamination would be contained with a cover system composed of the asphalt parking area and the building slab. A sub-slab depressurization system would be installed to mitigate vapors in the on-site building as well as the adjacent building. Long-term monitoring of the groundwater would be instituted to determine if bioremediation is occurring and to know when groundwater standards are reached.

Present Worth: *$1,185,000*
Capital Cost: *$638,000*
Annual Costs: *$39,000*

Alternative 4: In-Situ Chemical Oxidation

This alternative would include, In-Situ Chemical Oxidation (ISCO), a soil cover system, and sub-slab depressurization systems. The ISCO would involve the injection of an oxidizing agent such as hydrogen peroxide, potassium permanganate, or ozone into the groundwater to promote the chemical breakdown of VOCs including the DNAPL. Soil contamination would be contained with a cover system composed of the asphalt parking area and the building slab. A sub-slab depressurization system would be installed to mitigate vapors in the on-site building as well as the adjacent building. Long-term monitoring of the groundwater would be instituted to ensure

that chemical breakdown of the VOCs is occurring and contaminant concentrations are brought below groundwater standards.

Present Worth: *$1,049,000*
Capital Cost: *$564,000*
Annual Costs: *$34,000*

Alternative 5: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include: excavation of the surface/ shallow soils and off-site disposal and the pumping of on-site groundwater and DNAPL and ex-situ treatment by absorption with granular activated carbon. On-Site groundwater will continue to be monitored until groundwater meet SCGs. Sub-slab depressurization systems are to be installed on-site, as well as the adjacent property, 50 Roselle Street.

Present Worth: *$1,285,000*
Capital Cost: *$762,000*
Annual Costs: *$34,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1: No Action	$0	$0	$0
Alternative 2: Site Management with LTM	$20,000	$34,000	$543,000
Alternative 3: Bioremediation with Extraction of DNAPL	$638,000	$39,000	$1,185,000
Alternative 4: In-Situ Chemical Oxidation	$564,000	$34,000	$1,049,000
Alternative 5: Restoration to Pre-Disposal or Unrestricted Conditions	$762,000	$34,000	$1,285,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4, In-Situ Chemical Oxidation as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by injecting oxidizing compounds into the groundwater on-site to breakdown the DNAPL and the VOCs on-site, cover the surficial soil to prevent exposure to the compounds found on-site, and install sub-slab depressurization systems at both 40 and 50 Roselle Streets to mitigate soil vapor intrusion at those properties. The elements of this remedy are described in Section 7.

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 Public 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, In-Situ Chemical Oxidation (Alternative 4*)*, would satisfy this criterion by capping the contaminated soils and treating the groundwater, restricting it use until RAOs are met, and mitigating exposures from soil vapor intrusion. Alternative 4 addresses the soil vapor mitigation need, which is the most significant threat to public health and the source of the groundwater contamination which is the most significant threat to the environment. Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 relies on a restriction of groundwater use at the site to protect public health, however it does not restrict access to soils at the site or mitigate exposures to soil vapor intrusion, therefore it will be not considered any further. Alternative 5, by removing all soil contaminated above the unrestricted soil cleanup objective, through pumping and treating and groundwater restrictions, and installation of SVI mitigation at the affected properties, meets the threshold criteria.

Alternatives 3, 4 and 5 rely on a restriction of groundwater use at the site to protect human health. Alternative 4 may require a short-term restriction on groundwater use; however, it is expected the restriction will be able to be removed in approximately five years.

The potential for soil vapor intrusion will be significantly reduced by Alternative 3, 4 and 5. Soil vapor mitigation is required under Alternative 3, 4, 5 in order to protect human health.

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 source areas of contamination and complies with the restricted use soil cleanup objectives at the surface through a cover system. It also creates the conditions necessary to restore groundwater quality to the extent practicable.

Alternatives 3 and 5 also comply with this criterion. Because Alternatives 3, 4, and 5 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternative 4 will achieve groundwater SCGs in less than 5 years, while groundwater contamination above SCGs will remain on-site under Alternative 3 and 5 for many years.

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, 4, and 5 require groundwater use restrictions as well as long-term monitoring. However, in the long-term, the durations for the monitoring of groundwater under Alternative 4 is likely to be much shorter than for Alternative 3 and 5. The ISCO technology is most likely to be effective much more quickly at reducing the presence of contaminants in the groundwater than bioremediation or pump and treat.

Long-term effectiveness in soils is best accomplished by those alternatives involving excavation of the contaminated overburden soils (Alternative 5). For Alternative 3 and 4, site management and capping will be effective in the long-term.

Each of the three remaining alternatives (Alternatives 3, 4, and 5) require SSDSs to mitigate the potential for exposures from soil vapor intrusion. However, Alternative 4, should effectively treat contamination in the groundwater and the DNAPL for the shortest time period with a projected duration of five-years of long-term monitoring.

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

Alternative 5, excavation and off-site disposal of soils, reduces the toxicity, mobility and volume of on-site waste by transferring the material to an approved off-site location. However, depending on the disposal facility, the volume of the material would not be reduced. Alternative 3 and 4 require the capping and Site Management of the on-site soils, therefore there would be no reduction of toxicity, mobility or volume.

Alternative 4 and 5 would permanently reduce the toxicity, mobility and volume of contaminants in groundwater by use of chemical treatment. Alternative 3 would reduce the toxicity, mobility, and volume of contaminants by biological treatment.

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, 4, and 5 all have short-term impacts. Those impacts are the least for Alternatives 3 and 4 and include the installation and injections to promote breakdown of the contaminants. The impacts would be the most

for Alternative 5 and include the installation of the extraction and injection wells and the treatment system and the excavation of the top foot of soil and placement of backfill.

The time needed to achieve the remediation goals is the shortest for Alternative 4 and longer for Alternative 5. Alternative 3 takes the longest to achieve the remediation goals.

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 and 4 are favorable in that they are implementable with pre-design investigations. Alternative 5 is also implementable, but the volume of soil excavated under this alternative would necessitate increased truck traffic on local roads for a couple months as well as pre-design investigation to determine the pump size for the treatment system.

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.

Alternative 5 (excavation and off-site disposal and pump and treatment of groundwater) would have the highest present worth cost. Alternative 4 would be less expensive than Alternative 3, yet it would provide equal protection of the groundwater resource. The present worth costs of Alternatives 3 and 4 are similar to each other, although the capital cost for Alternative 3 would be higher than that of Alternative 4.

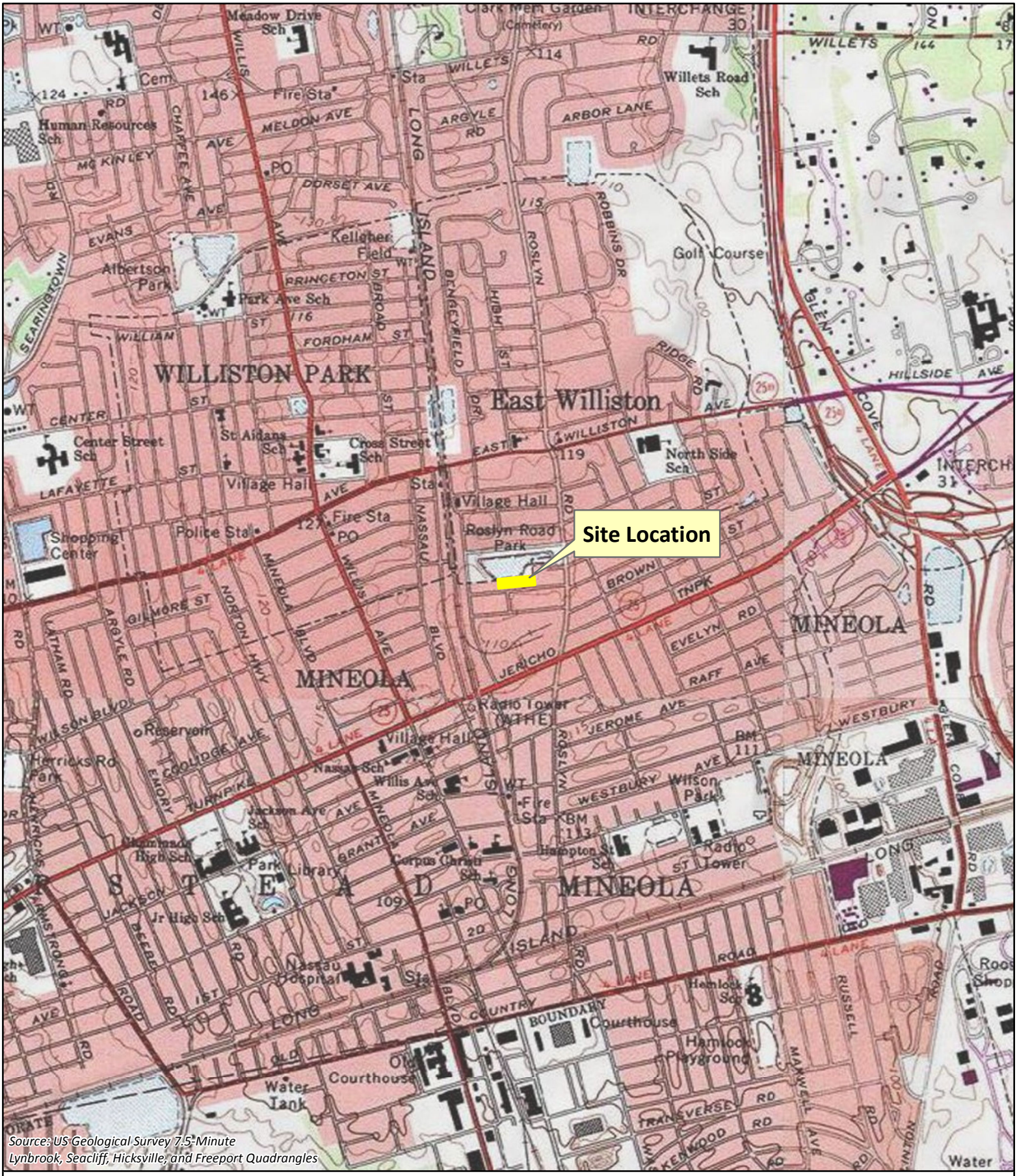
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since the anticipated use of the site is commercial, Alternatives 3 and 4 would be less desirable because at least some contaminated soil would remain on the property whereas Alternative 5 would remove and treat the contaminated soil permanently. However, the residual contamination with Alternative 3 and 4 would be controllable with implementation of a Site Management Plan and a cover system.

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



N

Site Location

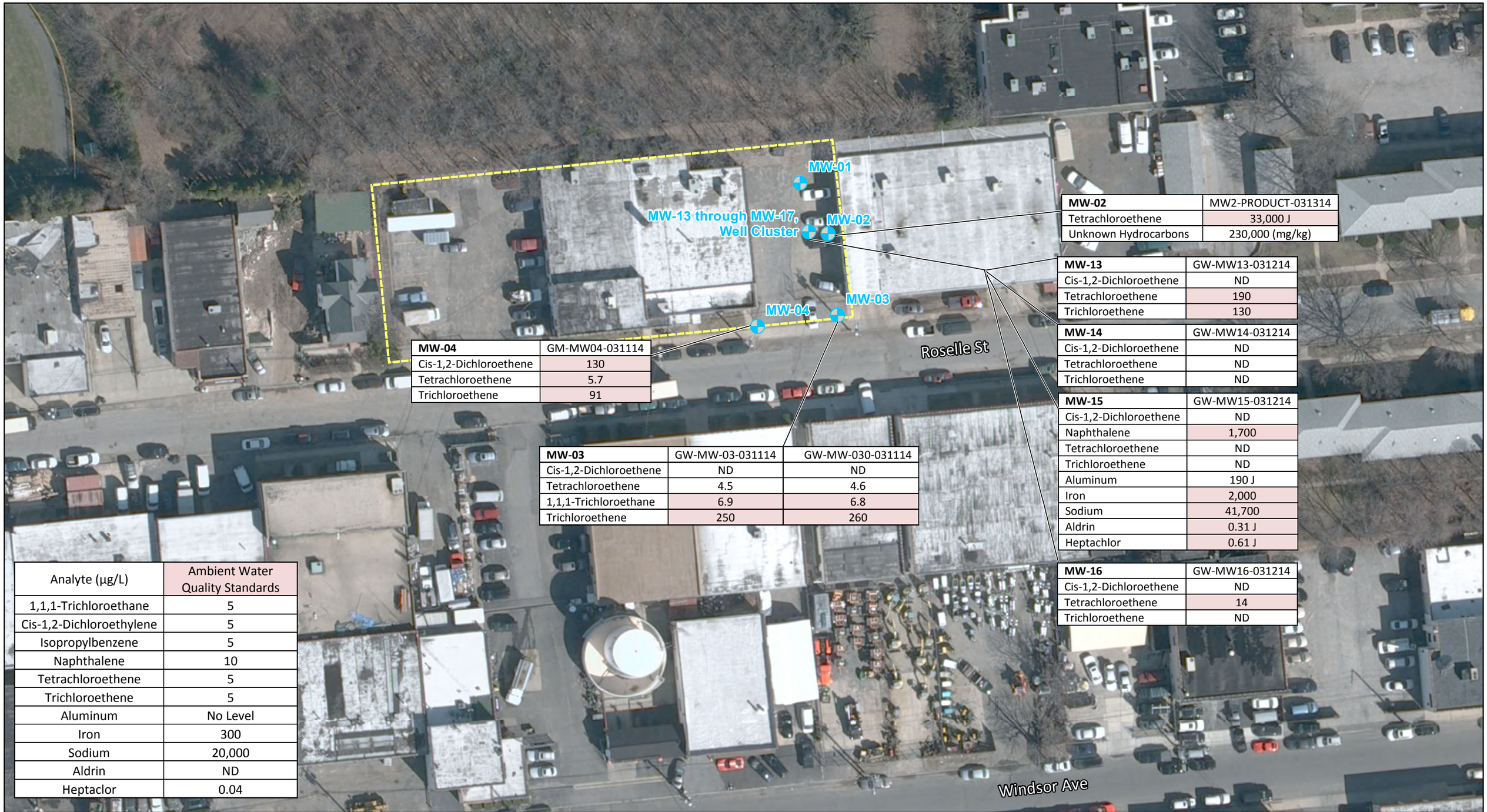
1 inch = 2,000 feet

0 1,000 2,000 3,000 4,000 Feet

Former Garden Photoengraving
Mineola, NY
Figure 1

CDM Smith

estradal Z:\NYSDEC D007621\WA#19 - Former Garden Photoengraving\03 Reports and Studies\05 Environmental Reports\Reports & Studies - 03\RI-FS GIS Files\FFS Figures\Fig1-1_Site_Location.mxd 3/4/2016



MW-04	GM-MW04-031114
Cis-1,2-Dichloroethene	130
Tetrachloroethene	5.7
Trichloroethene	91

MW-03	GW-MW-03-031114	GW-MW-030-031114
Cis-1,2-Dichloroethene	ND	ND
Tetrachloroethene	4.5	4.6
1,1,1-Trichloroethane	6.9	6.8
Trichloroethene	250	260

MW-02	MW2-PRODUCT-031314
Tetrachloroethene	33,000 J
Unknown Hydrocarbons	230,000 (mg/kg)

MW-13	GW-MW13-031214
Cis-1,2-Dichloroethene	ND
Tetrachloroethene	190
Trichloroethene	130

MW-14	GW-MW14-031214
Cis-1,2-Dichloroethene	ND
Tetrachloroethene	ND
Trichloroethene	ND

MW-15	GW-MW15-031214
Cis-1,2-Dichloroethene	ND
Naphthalene	1,700
Tetrachloroethene	ND
Trichloroethene	ND
Aluminum	190 J
Iron	2,000
Sodium	41,700
Aldrin	0.31 J
Heptachlor	0.61 J

MW-16	GW-MW16-031214
Cis-1,2-Dichloroethene	ND
Tetrachloroethene	14
Trichloroethene	ND

Analyte (µg/L)	Ambient Water Quality Standards
1,1,1-Trichloroethane	5
Cis-1,2-Dichloroethylene	5
Isopropylbenzene	5
Naphthalene	10
Tetrachloroethene	5
Trichloroethene	5
Aluminum	No Level
Iron	300
Sodium	20,000
Aldrin	ND
Heptaclor	0.04

Legend

Monitoring Well

Site Boundary

Notes

1. All results are in ug/L, unless otherwise noted.
2. Results with light red fill have exceeded AWQS.
3. ND - Non-Detect
4. Depths refer to the bottom of the 5' screened interval.

Groundwater Sample Exceedances for VOCs and SVOCs – Phase I

1 inch = 50 feet

0 50 100 Feet

Former Garden Photoengraving
Mineola, NY
Figure 2

CDM Smith

ESTRADAL Z:\NYSDEC D0007621\WA#19 - Former Garden Photoengraving\03 Reports and Studies\05 Environmental Reports\Reports & Studies - 03\RI-FS GIS Files\FFS Figures\Fig4-1_GW_Results_Phase1.mxd 1/3/2017

Analyte (µg/L)	Ambient Water Quality Standards
Cis-1,2-Dichloroethylene	5
Tetrachloroethene	5
1,1,1-Trichloroethane	5
Trichloroethene	5
Naphthalene	10

MW-09

MW-08

MW-01

MW-13 through MW-17, Well Cluster

MW-03

MW-04

Roselle St

MW-13	MW-13-0914	GW-MW-13-35-45-20150806
Cis-1,2-Dichloroethene	ND	NA
Tetrachloroethene	170	NA
Trichloroethene	35	NA
Naphthalene	NA	5.1

MW-15	MW-15-0914	GW-MW-15-75-85-20150804
Cis-1,2-Dichloroethene	ND	NA
Tetrachloroethene	ND	NA
Trichloroethene	0.21 J	NA
Naphthalene	NA	ND

MW-16	MW-16-0914	GW-MW-16-56-20150804
Cis-1,2-Dichloroethene	ND	NA
Tetrachloroethene	2.4 J	NA
Trichloroethene	ND	NA
Naphthalene	NA	1000

MW-17	MW-17-0914	GW-MW-17-65-75-20150804
Cis-1,2-Dichloroethene	ND	NA
Tetrachloroethene	ND	NA
Trichloroethene	ND	NA
Naphthalene	NA	2.3 J

MW-04	MW-04-0914	GW-MW-04-46-56-20150806
Cis-1,2-Dichloroethene	37	NA
Tetrachloroethene	5.4 J	NA
Trichloroethene	100	NA
Naphthalene	NA	3000

MW-03	MW-03-0914	GW-MW-03-45-55-20150806
Cis-1,2-Dichloroethene	ND	NA
Tetrachloroethene	4.0 J	NA
1,1,1-Trichloroethane	4.7 J	NA
Trichloroethene	170	NA
Naphthalene	NA	2100

N

Legend

Monitoring Well

Site Boundary

Notes

1. All results are in ug/L.
2. Depths refer to the bottom of the 5' screened interval.
3. ND - Non-Detect
4. NA - Not Analyzed
5. Results with light red fill have exceeded AWQS.
6. Locations not indicated with an exceedance do not surpass AWQS.

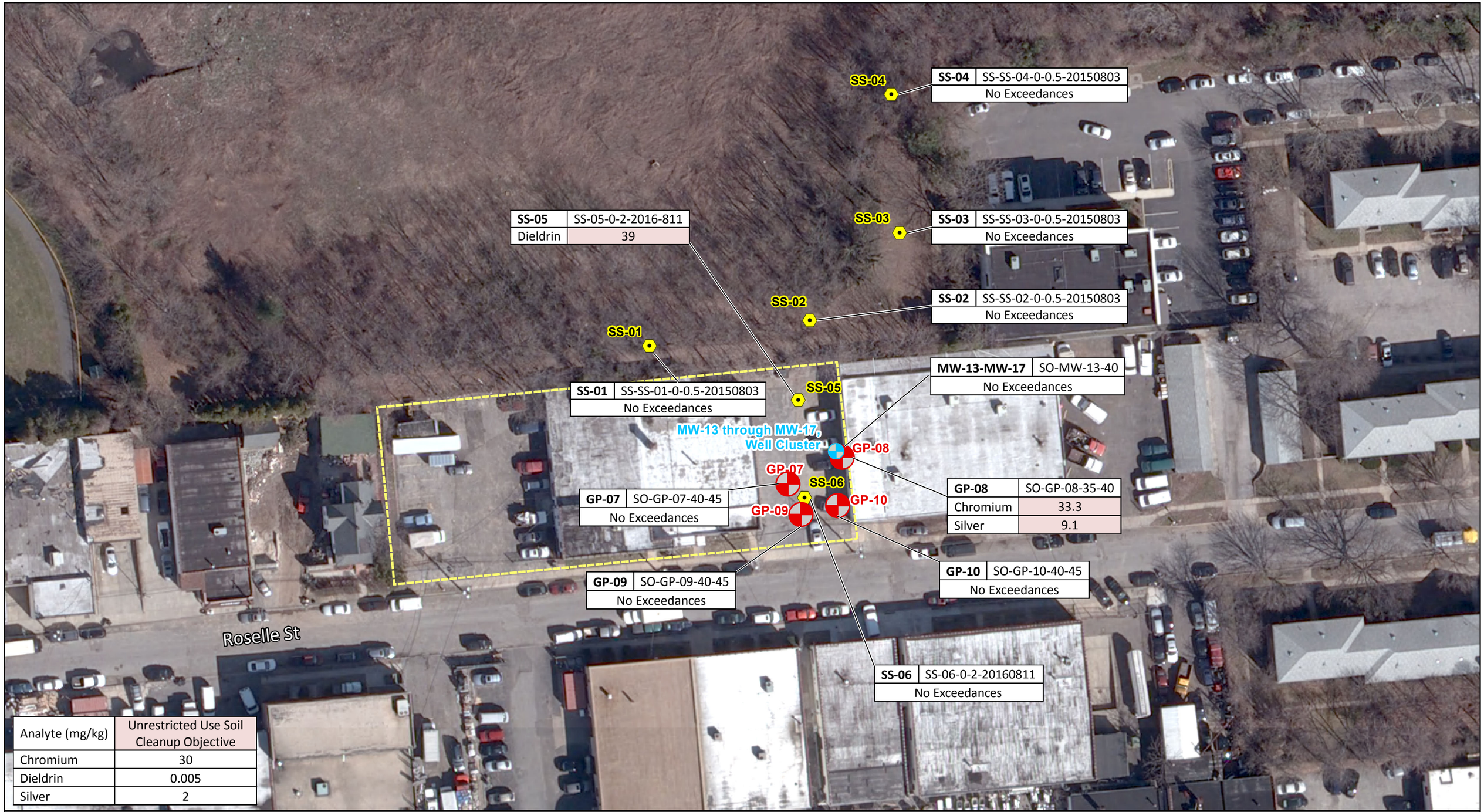
Groundwater Sample Exceedances for VOCs and SVOCs – Phase II

1 inch = 50 feet

0 50 100 Feet

Former Garden Photoengraving
Mineola, NY
Figure 3

CDM Smith



Analyte (mg/kg)	Unrestricted Use Soil Cleanup Objective
Chromium	30
Dieldrin	0.005
Silver	2

Legend

- Surface Soil
- Monitoring Well
- Vertical Profile GW Location/Soil Boring
- Site Boundary

Notes

1. All results are in mg/kg.
2. Results with light red fill exceed Unrestricted Use Soil Cleanup Objectives.

Soil Sample Unrestricted SCO Exceedances - Phase I and II

1 inch = 50 feet

0 50 100 Feet

Former Garden Photoengraving
Mineola, NY
Figure 4

CDM Smith

ESTRADAL Z:\NYSDEC D007621\WA#19 - Former Garden Photoengraving\03 Reports and Studies\05 Environmental Reports\Reports & Studies - 03\RI-FS GIS Files\FFS Figures\Fig4-3_SoilSampleLoc_Exceedances.mxd 1/3/2017

IA-07	IA-7-20140227	IA-7_061814
1,1,1-Trichloroethane	ND	2
Carbon tetrachloride	ND	0.5
Trichoroethene	14	2.5
Tetrachloroethene	23	3.7

SSV-07	SSV-7_022614	SSV-7_061814
1,1,1-Trichloroethane	ND	ND
Carbon tetrachloride	0.45	ND
Trichloroethene	12	1600
Tetrachloroethene	18	2900

IA-04	IA-4-20140227	IA-4_061814
1,1,1-Trichloroethane	ND	ND
Carbon tetrachloride	ND	ND
Trichoroethene	28	2.2
Tetrachloroethene	50	16

SSV-04	SSV-4-20140227	SSV-4_061814
1,1,1-Trichloroethane	ND	95
Carbon tetrachloride	0.48	ND
Trichloroethene	27	51
Tetrachloroethene	38	2400

IA-06	IA-6-20140227	IA-6_061814
1,1,1-Trichloroethane	ND	1.5
Carbon tetrachloride	ND	0.53
Trichoroethene	4.2	2.8
Tetrachloroethene	6.8	5.3

SSV-06	SSV-6_022614	SSV-6_061814
1,1,1-Trichloroethane	ND	160
Carbon tetrachloride	ND	120
Trichloroethene	4.1	830
Tetrachloroethene	ND	2400

OA-05	OA-5-20140227
1,1,1-Trichloroethane	ND
Carbon tetrachloride	0.38
Trichloroethene	ND
Tetrachloroethene	ND

SSV-03	SSV-3_061814
1,1,1-Trichloroethane	150
Carbon tetrachloride	ND
Trichloroethene	3600
Tetrachloroethene	6900

SSV-05	SSV-5-20140227	SSV-DUP-1-20140227	SSV-5_061814	SSV-DUP-1_061814
1,1,1-Trichloroethane	ND	ND	ND	ND
Carbon tetrachloride	0.57	0.6	ND	ND
Trichloroethene	40	39	5900	4900
Tetrachloroethene	58	56	9600	8000

IA-05	IA-5-20140227	IA-5_061814
1,1,1-Trichloroethane	ND	2.2
Carbon tetrachloride	ND	0.52
Trichoroethene	34	3.8
Tetrachloroethene	60	5.7

Analyte (µg/m^3)	NYSDOH Air Guideline Value
Tetrachloroethene	30
Trichloroethene	2

OA-02
IA-07
SSV-07
SSV-03
IA-04
SSV-04
SSV-05
IA-05
OA-01
SSV-06
IA-06
OA-05
Roselle St
Roslyn Rd
Sagamore Ave
Windsor Ave

Legend

- Indoor Air
- Outdoor Air
- Subslab Vapor Point
- Site Boundary

Notes

1. All results are in ug/m^3.
2. ND - Non-Detect
3. Results with light red fill exceed Air Guidance Values.

Vapor Intrusion Sample Results – Phase I and II

1 inch = 75 feet

0 75 150 Feet

Former Garden Photoengraving
Mineola, NY
Figure 5

CDM Smith

estradal Z:\NYSDEC D007621\WA#19 - Former Garden Photoengraving\03 Reports and Studies\05 Environmental Reports\Reports & Studies - 03\RI-FS GIS Files\FFS Figures\Fig4-4_VaporIntrusion_Results_VI.mxd 2/7/2017

SV-11	SV-11-20140602
1,1,1-Trichloroethane	**19**
Carbon tetrachloride	**0.78**
Trichloroethene	**41**
Tetrachloroethene	**71**

SV-10	SV-10-20140602
1,1,1-Trichloroethane	ND
Carbon tetrachloride	**0.34**
Trichloroethene	**55**
Tetrachloroethene	**240**

Legend

- Soil Vapor Point
- Outdoor Air
- Site Boundary

Notes

1. All results in ug/m^3.
2. ND - Non-Detect

Soil Vapor Sample Results – Phase II

1 inch = 50 feet

0 50 100 Feet

Former Garden Photoengraving
Mineola, NY
Figure 6

CDM Smith

estradal Z:\NYSDEC D007621\WA#19 - Former Garden Photoengraving\03 Reports and Studies\05 Environmental Reports\Reports & Studies - 03\RI-FS GIS Files\FFS Figures\Fig4-5_SoilVapor_Phase_II.mxd 6/6/2016