RECORD OF DECISION

Former Roxy Cleaners
State Superfund Project
Delmar, Albany County
Site No. 401058
March 2013

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

DECLARATION STATEMENT - RECORD OF DECISION

Former Roxy Cleaners
State Superfund Project
Delmar, Albany County
Site No. 401058
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Statement of Purpose and Basis

This document presents the remedy for the Former Roxy Cleaners site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the 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, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Former Roxy Cleaners site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1) Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, 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 gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- 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
On-site soils which exceed commercial use SCOs (as defined by 6 NYCRR Part 375-6.8) for all contaminants will be excavated and transported off-site for disposal at a permitted facility. Approximately 340 cubic yards of soil will be removed. 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) In-Situ Chemical Oxidation
In-situ chemical oxidation is a technology used to treat chlorinated ethene compounds (a type of volatile organic compound) in the soil and groundwater. The process generally consists of injection of a chemical oxidant into the subsurface via injection wells or an infiltration gallery. However, in this case, the chemical oxidants will be spread in to the bottom of the excavation in direct contact with saturated soils and groundwater. To further facilitate the degradation of contaminants in groundwater, additional chemical oxidant injections will be conducted as necessary, based on the results of groundwater monitoring. When the chemical oxidant comes into contact with the contaminant, an oxidation reaction occurs that breaks down the contaminant into relatively benign compounds such as carbon dioxide and water. Several chemical oxidants are commercially available. For the purpose of this discussion, persulfate (PersulfOX) will be the chemical oxidant evaluated. Once the excavation is complete, the chemical oxidant will be applied in the bottom of the excavation to address residual contamination in soil and groundwater.

4) Vapor Mitigation
The on-site building and the adjacent off-site building (if deemed necessary) will be required to have a sub-slab depressurization system (SSDS) to prevent the migration of vapors into the building from groundwater. A final determination of the need to mitigate (vs. monitor) the adjacent structure will be deferred until pre-design sampling is completed.

An SSDS uses a fan-powered vent and piping to draw vapors from the soil beneath the buildings slab and discharge the vapors to the atmosphere. Depressurizing the area beneath the basement slab relative to indoor air pressure creates a relative vacuum which minimizes or prevents the infiltration of sub-slab vapors into the building. The system will include an exhaust fan sized to create enough negative pressure in the sub-slab area to minimize infiltration of vapors into the building. The system will exhaust to the outside.

5) Institutional Controls
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 engineering controls remain in place and effective:
Institutional Controls: an environmental easement that will prohibit use of groundwater for potable purposes without necessary water quality treatment as determined by the NYSDOH or County DOH and restrict the site to commercial or industrial use.
Engineering Controls: operation and maintenance of the sub-slab depressurization systems operation discussed in paragraph 4 above.

This plan includes, but may not be limited to:
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- 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 future 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 to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
- compliance monitoring of the sub-slab depressurization systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 28,2013

Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

Former Roxy Cleaners
Delmar, Albany County
Site No. 401058
March 2013

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected 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. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the 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 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Bethlehem Public Library
451 Delaware Ave
Delmar, NY 12054
Phone: 518-439-9314

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy.

After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

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 Roxy Cleaners site is located at 156 Delaware Avenue in the Hamlet of Delmar, Town of Bethlehem.

Site Features:
The site is a narrow 1.1 acre parcel in a commercial section of Delaware Avenue. The building that had been occupied by the former dry cleaner is at the front of the lot with the rest of the property covered by asphalt or compressed gravel and dirt. The site is bounded by Delaware Avenue and restaurants to the north, a pet kennel/store at 154 Delaware Avenue to the east, a cellular communications tower and mini-mall to the south, and a large strip mall to the west.

Current Zoning/Uses:
The site and the surrounding area along Delaware Avenue are zoned commercial. Most recently the building was a dry cleaning drop-off location operated by Best Cleaners. Presently, the building is unoccupied.

Past Use of the Site:
The site was originally developed as a bus depot until circa late 1950s or early 1960s. After the bus depot, the site was a Roxy Cleaners dry cleaning facility for many decades where dry cleaning activities occurred on-site. Dry cleaning activities are no longer conducted on the premises.

Site Geology and Hydrogeology:
Depth to groundwater is approximately 3-4 feet and appears to be a perched zone that is present at and around the site due to clayey soils. Regional groundwater flows east-northeast toward the Normans Kill.

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) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI 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:

A Lot in Delmar, Inc.

Roxy Cleaners

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:

- air
- 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 contaminants of concern identified at this site are:

TETRACHLOROETHYLENE (PCE)	TRICHLOROETHENE (TCE)
DICHLOROETHYLENE	VINYL CHLORIDE

As illustrated in Exhibit A, the contaminants 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.

Nature and Extent of Contamination:
Past investigations found that the on-site soil, soil vapor and groundwater were contaminated with the chlorinated dry cleaning solvent tetrachloroethene (PCE) and its break-down products. PCE is associated with the operation of the Roxy dry cleaner. Trichloroethene (TCE), cis-1,2-DCE, trans-1,2-dichloroethene (DCE)and vinyl chloride are breakdown products of PCE.

Remedial Investigation activities were conducted in the summer of 2011 and the fall of 2012.

Soil: The analytical results confirm the presence of volatile organic compounds (VOCs) in on-site soil, with four chlorinated VOCs (PCE, TCE, DCE and vinyl chloride) detected. PCE, TCE, DCE, and vinyl chloride were present in multiple samples at concentrations exceeding the unrestricted use soil cleanup objectives (SCOs). An area immediately behind the building at the back doors was identified as the on-site source area, with the highest PCE at a concentration of 2,500 parts per million (ppm) well exceeding the commercial use SCO (150 ppm).

The presence of chlorinated VOCs in on-site soil has resulted in the contamination of groundwater well above groundwater standards. As with soil, the primary groundwater contaminants are PCE, TCE, DCE and vinyl chloride.

Groundwater: PCE, TCE, cis-DCE, and vinyl chloride were found in the groundwater samples at concentrations ranging from non-detect to concentrations well in excess of NYSDEC Class GA standards or guidance values. The highest respective concentrations for these contaminants were 190,000 parts per billion (ppb) (standard is 5 ppb), 2,700 ppb (standard is 5 ppb), 6,800 ppb (standard is 5 ppb) and 1,100 ppb (standard is 2 ppb) and were generally in the area of the back door of the facility.

The presence of chlorinated VOCs has also resulted in the contamination of soil vapor. PCE was detected at a maximum concentration of 2,000,000 micrograms per cubic meter (µg/m3) and TCE was detected at a maximum concentration of 250,000 µg/m3; both in a soil vapor sampling point near the source area.

Soil Vapor and Indoor Air: During a 2009 on-site soil vapor intrusion investigation preceding the RI, the maximum PCE concentrations were 69 µg/m3 in indoor air and 152,000 µg/m3 sub-slab. TCE, DCE and vinyl chloride were below their respective detection limits in indoor air, but

were detected in sub-slab vapor at the respective maximum concentrations of 13,100 µg/m3, 9,270 µg/m3 and 4,420 µg/m3.

Further vapor intrusion sampling was performed to define the extent of soil vapor contamination at the adjacent 154 Delaware Avenue commercial building in January 2012. A total of 28 compounds totaling 520 µg/m3 of VOCs were detected in the sub-slab vapor sample, 260 µg/m3 of which was PCE. The maximum PCE concentration in the corresponding indoor air samples was 6.5 µg/m3. According to the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH 2006), the results of the soil vapor intrusion sampling in the on-site and off-site buildings indicate mitigation is recommended.

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.*

Access to the site is unrestricted. However, contact with contaminated soil or groundwater is unlikely unless people dig below ground surface. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds (VOCs) in the groundwater may move into the soil vapor (air spaces within 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. Investigations have determined that soil vapor intrusion is occurring in the indoor air of one on-site building at levels which warrant remediation to prevent exposure to site-related VOCs. Also, the potential exists for soil vapor intrusion to occur in an off-site structure.

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

- 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.

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 SELECTED 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 feasibility study (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 remedy is set forth at Exhibit D.

The selected remedy is referred to as the Excavation and Off-Site Disposal to Meet Restricted / Commercial SCOs remedy.

The estimated present worth cost to implement the remedy is $795,000. The cost to construct the remedy is estimated to be $518,000 and the estimated average annual cost is $12,300.

The elements of the selected remedy are as follows:

1) Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, 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 gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- 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

On-site soils which exceed commercial use SCOs (as defined by 6 NYCRR Part 375-6.8) for all contaminants will be excavated and transported off-site for disposal at a permitted facility. Approximately 340 cubic yards of soil will be removed. 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) In-Situ Chemical Oxidation

In-situ chemical oxidation is a technology used to treat chlorinated ethene compounds (a type of volatile organic compound) in the soil and groundwater. The process generally consists of injection of a chemical oxidant into the subsurface via injection wells or an infiltration gallery. However, in this case, the chemical oxidants will be spread in to the bottom of the excavation in direct contact with saturated soils and groundwater. To further facilitate the degradation of contaminants in groundwater, additional chemical oxidant injections will be conducted as necessary, based on the results of groundwater monitoring. When the chemical oxidant comes into contact with the contaminant, an oxidation reaction occurs that breaks down the contaminant into relatively benign compounds such as carbon dioxide and water. Several chemical oxidants are commercially available. For the purpose of this discussion, persulfate (PersulfOX) will be the chemical oxidant evaluated. Once the excavation is complete, the chemical oxidant will be applied in the bottom of the excavation to address residual contamination in soil and groundwater.

4) Vapor Mitigation

The on-site building and the adjacent off-site building (if deemed necessary) will be required to have a sub-slab depressurization system (SSDS) to prevent the migration of vapors into the building from groundwater. A final determination of the need to mitigate (vs. monitor) the adjacent structure will be deferred until pre-design sampling is completed.

An SSDS uses a fan-powered vent and piping to draw vapors from the soil beneath the buildings slab and discharge the vapors to the atmosphere. Depressurizing the area beneath the basement slab relative to indoor air pressure creates a relative vacuum which minimizes or prevents the

infiltration of sub-slab vapors into the building. The system will include an exhaust fan sized to create enough negative pressure in the sub-slab area to minimize infiltration of vapors into the building. The system will exhaust to the outside.

5) Institutional Controls
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 engineering controls remain in place and effective:
Institutional Controls: an environmental easement that will prohibit use of groundwater for potable purposes without necessary water quality treatment as determined by the NYSDOH or County DOH and restrict the site to commercial or industrial use.
Engineering Controls: operation and maintenance of the sub-slab depressurization systems operation discussed in paragraph 4 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- 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 future 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 to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of the sub-slab depressurization systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- 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, 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. 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 6.1.1 are also presented.

Waste/Source Areas

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

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. As shown in Figures 2A and 2B, an area immediately behind the building at the back doors was identified as the primary on-site source area where contaminants exceed restricted commercial soil cleanup objectives (SCOs). The area designated as the secondary source area is the approximate extent of soil contamination in excess of unrestricted SCOs. The location where the filters would have been cleaned and disposed of at the back of the building is the source of contamination. The facility loading door where the dry cleaning solvent would have been delivered and possibly spilled is also at the back of the building.

The source area identified will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from temporary sampling points and permanent monitoring wells constructed for this investigation; all samples were collected from overburden groundwater. The samples were collected to assess on-site groundwater conditions and determine if contaminants have migrated off-site. The data indicate that contamination in on-site groundwater exceeds the SCGs for volatile organic compounds, and site-related contaminants above their respective SCGs have migrated a short distance off-site to the east behind the 154 Delaware Ave building as shown in Figure 3. However, due in part to the dense clay soil, contaminant concentrations in groundwater reduce significantly over a short distance in this up gradient area. Only DCE and vinyl chloride were detected above their SCGs at 61 parts per billion (ppb) and 26 ppb, respectively.

Sixty-three groundwater samples were collected and screened on-site during the RI. The field screening process consisted of testing for total chlorinated VOCs using the Color-Tec screening procedure. The Color-Tec method was used to obtain presence or absence (i.e., semi-quantitative) and approximate concentrations of chlorinated compounds in groundwater. Color-Tec assesses chlorinated VOCs in the headspace of samples and the results are obtained through visual observation of a reaction in a colorimetric tube. Twenty six of the samples were sent for laboratory analysis. Groundwater samples were obtained via direct-push grab samples,

temporary monitoring wells and four permanent monitoring wells. The samples were collected to characterize the horizontal and vertical extent of groundwater contamination at the site.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
tetrachloroethene	ND – 190,000	5	13 / 26
trichloroethene	ND – 2,700	5	12 / 26
cis-1,2-dichloroethene	ND – 6,800	5	16 / 26
trans-1,2-dichloroethene	ND - 44	5	2 / 26
vinyl chloride	ND – 1,100	2	13 / 26

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).
ND – non-detectable

Based on the findings of the RI, the presence of chlorinated VOCs in on-site soil has resulted in the contamination of groundwater. The primary groundwater contaminants are associated with operation of the Roxy dry cleaner. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: tetrachloroethene (PCE), trichloroethene (TCE), 1.2-cis-dichloroethene (DCE) and vinyl chloride. As noted on Figure 3, the primary groundwater contamination is associated with the area immediately behind the back door of the building.

Soil

Surface and subsurface soil samples were collected during the RI. The analytical results confirm the presence of the following VOCs in the subsurface soil: PCE, TCE, DCE, and vinyl chloride. PCE, TCE, DCE, and vinyl chloride were present in multiple samples at concentrations exceeding the unrestricted use SCOs. The highest levels of contaminants were typically found outside of the building in the samples closest to the rear doors of the Roxy Site building (Figure 2B); none of the soil samples collected from under the on-site building had PCE concentrations above the commercial use SCO.

Fifty-two subsurface soil samples were collected during the Remedial Investigation (RI). The samples were collected to characterize the horizontal and vertical extent of soil contamination at the site. Soil samples for borings obtained during the third phase were collected from beneath the building slab. All soil samples were submitted to the laboratory for Volatile Organic Compound [VOC] (Method 8260C) analysis.

All five of the chlorinated VOCs were detected in the thirteen soil samples collected in the shallow overburden at 0 to 5 feet below grade surface (bgs). Four of the samples contained VOCs at concentrations exceeding the unrestricted use SCOs, but no samples had concentrations exceeding the commercial use SCOs. The total chlorinated VOC concentrations in this zone ranged from non-detect to 42 mg/kg in a sample collected near the back door of the facility.

Thirty-two soil samples were collected in the vadose zone (5 to 16 feet bgs). Twenty-three of the samples contained VOCs at concentrations exceeding the unrestricted use SCOs. One soil sample also contained PCE at a concentration of 2,500 parts per million (ppm) exceeding the commercial use SCO and the PCE concentration of another subsurface soil sample was at the threshold of the restricted commercial SCO (150 ppm).

Seven soil samples were collected in the saturated overburden (16 to 35 feet bgs). Three of the samples contained PCE, but none of the sample concentrations exceeded either the unrestricted use or commercial use SCO for PCE. The PCE concentrations in this zone ranged from non-detect to 0.0035 ppm.

Of the twelve soil samples collected from beneath the building, five were above the unrestricted SCO with a maximum concentration of 39 ppm, but all were well below the restricted commercial use SCO.

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 Commercial SCG
VOCs					
tetrachloroethene	ND - 2500	1.3	29 / 52	150	1 / 52
trichloroethene	ND – 15	0.47	23 / 52	200	0 / 52
1.2-cis-dichloroethene	ND – 20	0.25	23 / 52	500	0 / 52
vinyl chloride	ND – 4.6	0.02	10 / 52	13	0 / 52

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; all Unrestricted Soil Cleanup Objectives in this table are based on the Protection of Groundwater 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.
ND – non detectable

The primary soil contaminants are VOCs associated with past dry cleaning operations at the site. As noted on Figure 2A, the primary soil contamination is associated with an area behind the building at the back doors.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, PCE, TCE and cis-1,2-DCE.

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 buildings, indoor air inside buildings, and outdoor ambient air. At this site due to the presence of buildings in the impacted area, a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

Prior to the RI in December 2007 and March 2009, indoor air and sub-slab vapor sampling was conducted in the Former Roxy building and the adjacent building at 154 Delaware Avenue. During the 2007 sampling round in

the Former Roxy building, PCE was found in indoor air and sub-slab vapor at the respective concentrations of 69 micrograms per cubic meter ($\mu g/M^3$) and 176,000 $\mu g/M^3$. In 154 Delaware, PCE was found in sub-slab vapor at 400 $\mu g/M^3$ and in indoor air at 2.68 $\mu g/M^3$.

In March 2009, one sub-slab and two indoor air samples were collected from the on-site Roxy building. Of the two indoor air samples, PCE was present at a maximum concentration of 24 $\mu g/M^3$. Sub-slab vapor was significantly impacted with PCE, TCE and DCE at the respective concentrations of 27,000 $\mu g/M^3$, 4,700 $\mu g/M^3$ and 1,700 $\mu g/M^3$. In 154 Delaware, PCE was found in sub-slab vapor at 120 $\mu g/M^3$ and in indoor air at 7.5 $\mu g/M^3$.

During the RI in June 2011, seven soil vapor samples were obtained from the site and the immediate area. In January 2012, one sub-slab and two indoor air samples were collected from the adjacent building at 154 Delaware Avenue (Figure 4). An outdoor ambient air sample was also obtained from behind the building at the same time that the samples were collected from the adjacent building.

A total of 37 VOCs were detected in the seven soil vapor samples collected on-site and in the immediate vicinity of site. Seven of the 37 VOCs were detected in all seven samples (acetone, cis-DCE, methyl ethyl ketone, n-hexane, PCE, toluene, and TCE). Total chlorinated VOCs ranged from 21 $\mu g/M^3$ (micrograms per cubic meter) to approximately 2,762,040 $\mu g/M^3$, with PCE being the largest contributor to the totals. PCE, TCE, and cis-DCE were present in all samples and vinyl chloride was present in all but one sample. PCE was detected at a maximum concentration of 2,000,000 $\mu g/M^3$, and TCE was detected at a maximum concentration of 250,000 $\mu g/M^3$, both in soil vapor sampling point near the source area. The total remaining VOC concentrations were also calculated and ranged from 24 $\mu g/M^3$ to nearly 3,700 $\mu g/M^3$.

Vapor intrusion sampling performed at the adjacent 154 Delaware Avenue building in January 2012 provided additional analytical data to evaluate potential exposure concerns identified during the Phase II investigation in March 2009. A total of 28 compounds totaling 520 $\mu g/m^3$ of VOCs were detected in the sub-slab sample, 260 $\mu g/m^3$ of which was PCE. The maximum PCE concentration in indoor air samples was 6.5 $\mu g/m^3$.

Based on the concentration detected, and in comparison with the New York State's Soil Vapor Intrusion Guidance, the 154 Delaware Avenue building falls into the category which recommends"monitor/mitigate" based on these PCE concentrations. Both the indoor air and sub-slab concentrations of PCE were found at much higher concentrations in the Roxy building and fall into the category which recommends "mitigate".

Based on the findings of the Remedial Investigation, the presence of chlorinated VOCs has 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, TCE and cis-DCE.

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 No. 2: Sub-Slab Depressurization System (SSDS), Long-term Monitoring, and Institutional Controls

This alternative consists of long-term monitoring to assess the mobility of the contamination in soil and groundwater. SSDSs will also be required in two buildings to minimize the infiltration of vapors into the buildings. Institutional controls included in this alternative will consist of access/use and deed restrictions at the site to limit the potential for human exposure to contaminated site soils and groundwater.

Present Worth: $358,000
Capital Cost:..... $81,800
Annual Costs:..... $12,300

Alternative No. 3: Excavation and Off-Site Disposal to Meet Restricted – Commercial SCO, Chemical Oxidation, SSDS, Long-Term Monitoring, and Institutional Controls

This alternative consists of excavation shown in Figure 5 and off-site disposal of contaminated soils that exceed the commercial use SCOs. The excavated material will be stockpiled, sampled, and disposed of accordingly. This alternative includes the removal of two wells that are located within the excavation limits. One well will require in-place decommissioning of the portion that extends below the excavation limit prior to excavation. As a polishing step, a chemical oxidation amendment will be spread at the bottom of the excavation before backfilling. In addition, future injections of the chemical oxidant will be conducted as needed, based on groundwater monitoring, to facilitate the degradation of contaminants in groundwater. A new long-term monitoring well will also be installed. SSDSs, long-term monitoring, and institutional controls are also included in this alternative.

Present Worth: $795,000
Capital Cost:..... $518,000
Annual Costs:..... $12,300

Alternative 4: Restoration to Pre-Disposal or Unrestricted Conditions via Excavation and Off-Site Disposal, Chemical Oxidation, SSDS, and Post Remediation Monitoring

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative will include: excavation and off-site disposal of soil, in-situ chemical oxidation, installation of SSDSs, and post remediation monitoring. This

alternative, which has the capability of cleaning up the site to pre-disposal or unrestricted conditions, is included in this FS in accordance with DER-10. This alternative consists of excavation and off-site disposal of contaminated soils that exceed the unrestricted SCO for PCE of 1.3 mg/kg. The excavated material will be stockpiled, sampled, and disposed of accordingly. To implement this alternative, the entire former Roxy building and a large portion of the adjacent building must be demolished. This alternative also includes the removal of two wells that are located within the excavation limits. One well will require in-place decommissioning of the portion that extends below the excavation limit prior to excavation. In addition, a new long-term monitoring well will be installed. SSDSs, long-term monitoring, and institutional controls as described in Section 3.3 are also included in this alternative.

Capital Cost:.....$11,500,000

Exhibit C

Remedial Alternative Costs

	Remedial Alternative	Capital Cost	Annual Costs	Total Present Worth
1	No Action	$0	$0	$0
2	Sub-Slab Depressurization System, Long-term Monitoring, and Institutional Controls	$81,800	$12,300	$358,000
3	Excavation and Off-Site Disposal to Meet Restricted Commercial Use SCOs, Chemical Oxidation, SSDS, Long-Term Monitoring, and Institutional Controls	$518,000	$12,300	$795,000
4	Excavation and Off-Site Disposal to Meet Unrestricted SCO and Chemical Oxidation	$11,500,000	$0	$11,500,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Source Excavation, In-Situ Chemical Oxidation, Installation of SSDSs and Monitoring as the remedy for this site. Alternative 3 will achieve the remediation goals for the site by excavation of the source area behind the building to restricted commercial soil cleanup objectives. Groundwater contamination will be addressed by the removal of the source and utilization of a chemical oxidant to facilitate contaminant degradation. Indoor air impacts will be addressed by the SSDSs. 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 3) will satisfy this criterion by removing the contaminated soils above restricted commercial use soil cleanup objectives (SCOs) down to approximately 20 feet below grade. Alternative 3 also addresses the source of the groundwater and soil vapor contamination and prohibits the use of on-site groundwater for potable purposes and will mitigate indoor air impacts. Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 also complies with this criterion but to a lesser degree because the source would stay in place. Alternative 4, by removing all soil contaminated above the unrestricted SCOs and more completely removing soil contaminants, meets the threshold criteria.

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.

Alternatives 1 and 2 do not comply with SCGs because the contaminated soils will remain on site. Alternatives 3 and 4 comply with SCGs since soil contamination will be properly disposed of off-site. However, Alternative 3 will achieve commercial use SCOs for soil while Alternative 4 will achieve unrestricted use SCOs. Neither Alternative 1 nor Alternative 2 will address groundwater contamination. Alternative 4 will best remove the source of groundwater contamination and much of the groundwater contamination. Alternative 3 will remove much of the source and achieving groundwater standards will be facilitated by chemical oxidant injections as needed.

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.

Since Alternative 1 employs no action, contaminated soil will remain onsite and impacts to indoor air in the on-site building will remain, providing no protection of human health and the environment. Alternative 2 will be effective in the long term provided it is properly operated and the SSDSs are maintained. Alternatives 3 has a higher level of long-term effectiveness and permanence than Alternative 2, because contaminated site soils above commercial use SCOs will be removed and properly disposed of off-site and groundwater contamination will be addressed with further chemical oxidant injections as needed. Alternative 4 will have the highest level of long-term effectiveness and permanence because contaminated soils above unrestricted use SCOs will be removed and properly disposed of off-site.

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

The mobility of contamination in groundwater is naturally limited by the dense clay in the sub-surface. Alternatives 1 and 2 will not address contaminated soils or groundwater; therefore, toxicity, mobility and volume will not be reduced. Alternatives 3 and 4 will reduce the toxicity, mobility, and volume of contaminated soil at the site through off-site disposal at a permitted disposal facility.

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.

Short-term impacts are not anticipated under Alternatives 1 and 2, since no soil removal will occur. Under Alternatives 3 and 4, several short-term impacts have the potential to affect the community during remedial activities, such as dust and noise due to excavation and off-site transport of the contaminated soil. In addition, spills of contaminated soils could occur during the off-site transport of soils. However, these potential impacts could be easily controlled or minimized using engineering controls and adequate safety procedures.

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.

There are no actions to implement for Alternative 1. Alternatives 2 and 3 are readily implementable using standard construction means and methods. Alternative 4 would require the removal of a building which is currently in use, making this alternative less implementable than the other three.

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 1 will involve no action and thus will incur no costs. Alternative 2 has a lower total present worth cost than Alternative 3 because no soil excavation will be required for Alternative 2. Alternative 4 has the highest present worth because it involves demolition and construction of a portion of the building, additional paving, and excavation of a much greater quantity of soil. Alternative 3 will provide protection of the environment and public health comparable to Alternative 4, but at significant less cost making it the most cost effective.

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.

Because the anticipated use of the site is commercial, Alternative 2 is less desirable because none of the soil contamination will be actively removed and soil contamination will remain above commercial SCOs. Alternative 3 will remove contaminated soil to restricted commercial use SCOs. Alternative 4 will achieve unrestricted use SCOs and will allow for any type of 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 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

Path: L:\Buffalo\Roxy_Cleaners\maps\MXD\FormerRoxyCleanersFigure.mxd

N

0 125 250 500 Feet

Figure 1

Former Roxy Cleaners Site Location Map

Delmar, NY

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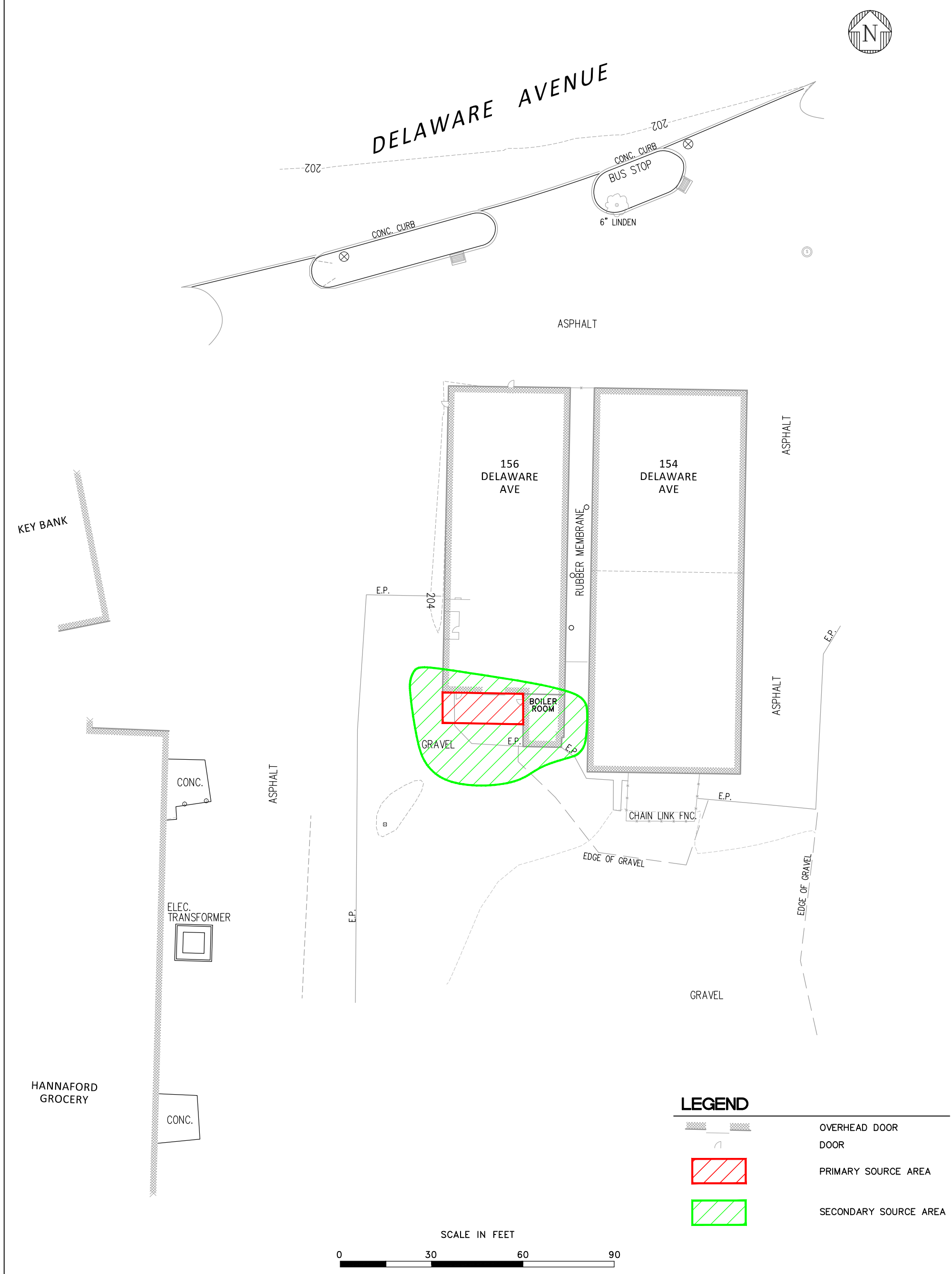

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FIGURE 2A SITE CONTAMINATION SOURCE AREAS
FORMER ROXY CLEANERS

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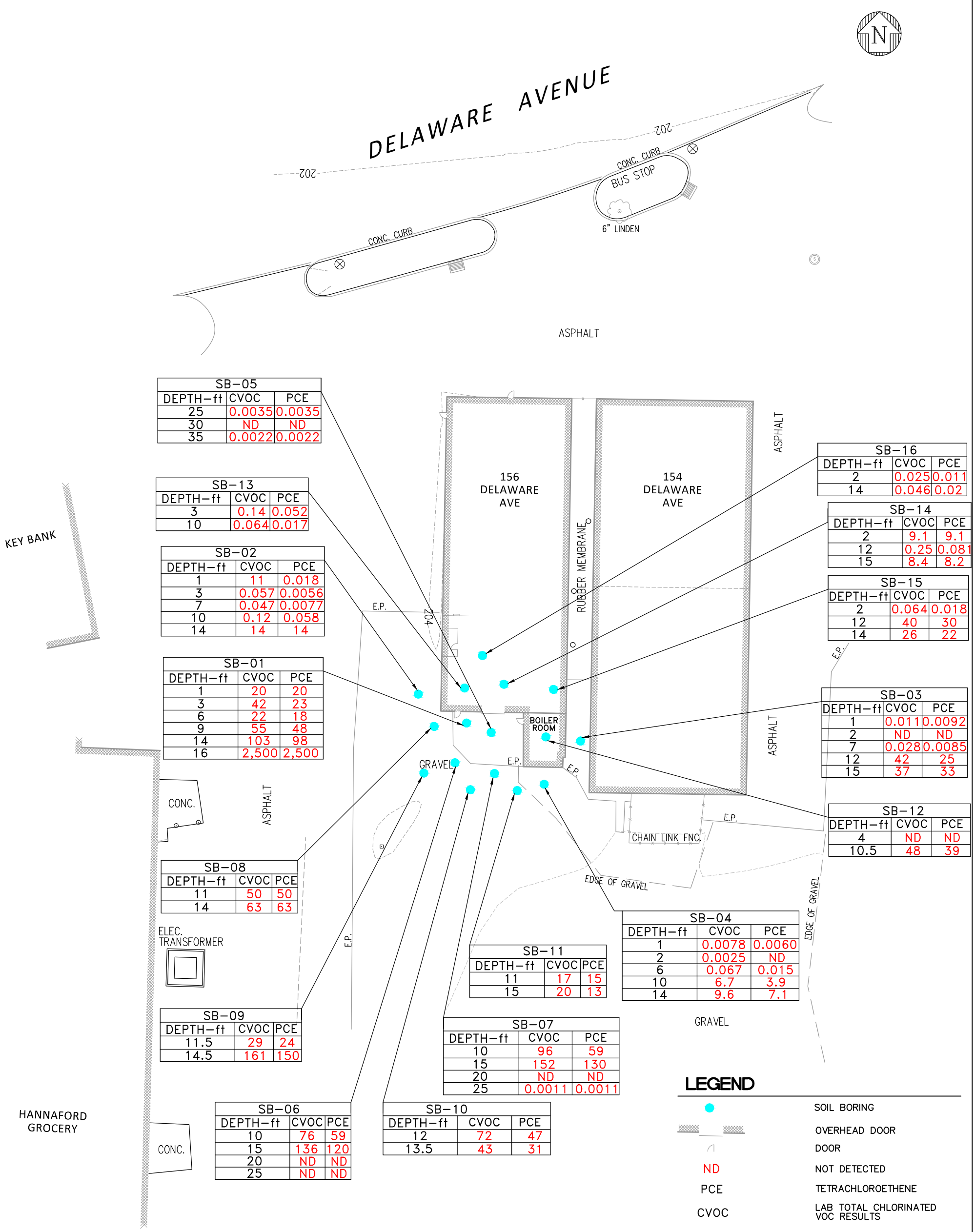

SB-05		
DEPTH-ft	CVOC	PCE
25	0.0035	0.0035
30	ND	ND
35	0.0022	0.0022

SB-13		
DEPTH-ft	CVOC	PCE
3	0.14	0.052
10	0.064	0.017

SB-02		
DEPTH-ft	CVOC	PCE
1	11	0.018
3	0.057	0.0056
7	0.047	0.0077
10	0.12	0.058
14	14	14

SB-01		
DEPTH-ft	CVOC	PCE
1	20	20
3	42	23
6	22	18
9	55	48
14	103	98
16	2,500	2,500

SB-08		
DEPTH-ft	CVOC	PCE
11	50	50
14	63	63

SB-09		
DEPTH-ft	CVOC	PCE
11.5	29	24
14.5	161	150

SB-06		
DEPTH-ft	CVOC	PCE
10	76	59
15	136	120
20	ND	ND
25	ND	ND

SB-10		
DEPTH-ft	CVOC	PCE
12	72	47
13.5	43	31

SB-07		
DEPTH-ft	CVOC	PCE
10	96	59
15	152	130
20	ND	ND
25	0.0011	0.0011

SB-11		
DEPTH-ft	CVOC	PCE
11	17	15
15	20	13

SB-04		
DEPTH-ft	CVOC	PCE
1	0.0078	0.0060
2	0.0025	ND
6	0.067	0.015
10	6.7	3.9
14	9.6	7.1

SB-16		
DEPTH-ft	CVOC	PCE
2	0.025	0.011
14	0.046	0.02

SB-14		
DEPTH-ft	CVOC	PCE
2	9.1	9.1
12	0.25	0.081
15	8.4	8.2

SB-15		
DEPTH-ft	CVOC	PCE
2	0.064	0.018
12	40	30
14	26	22

SB-03		
DEPTH-ft	CVOC	PCE
1	0.011	0.0092
2	ND	ND
7	0.028	0.0085
12	42	25
15	37	33

SB-12		
DEPTH-ft	CVOC	PCE
4	ND	ND
10.5	48	39

LEGEND

●	SOIL BORING
	OVERHEAD DOOR
	DOOR
ND	NOT DETECTED
PCE	TETRACHLOROETHENE
CVOC	LAB TOTAL CHLORINATED VOC RESULTS

SCALE IN FEET

0 30 60 90

NOTES

1. SAMPLING LOCATION SB-01 IS APPROXIMATE DUE TO GPS SIGNAL ISSUES.
2. ALL RESULTS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).

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FIGURE 2B SUBSURFACE SOIL ANALYTICAL RESULTS FORMER ROXY CLEANERS

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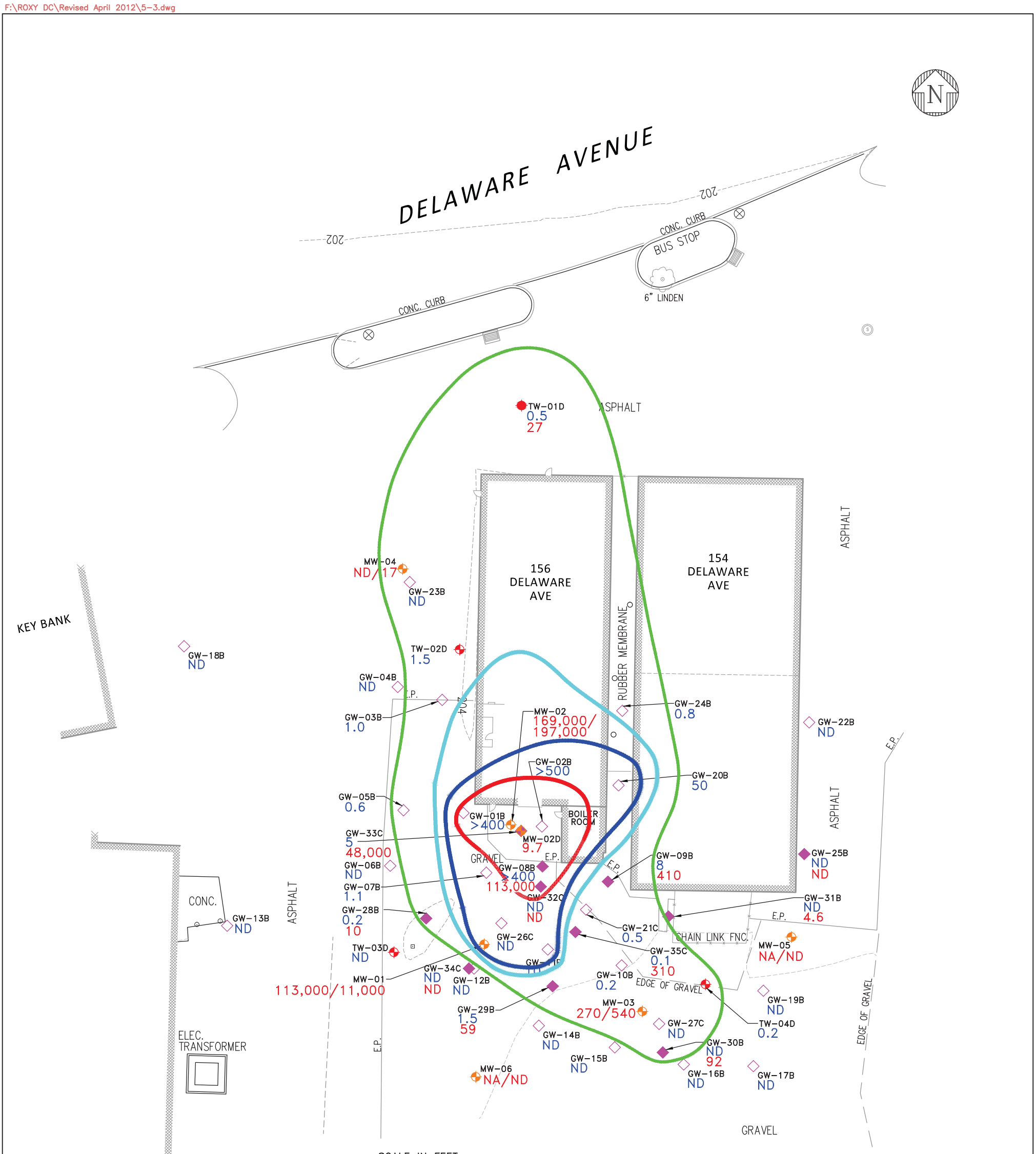

NOTES

1. "B" SAMPLES WERE FROM THE SHALLOW OVERBURDEN ZONE (15'–20' BGS). "C" SAMPLES WERE FROM THE MIDDLE OVERBURDEN ZONE (25'–35' BGS).
   THE TEMPORARY WELL "D" SAMPLES WERE COLLECTED FROM THE SHALLOW OVERBURDEN ZONE (15'–20' BGS), WHILE THE MW-02D SAMPLE WAS COLLECTED FROM THE DEEPER OVERBURDEN ZONE (40'–50' BGS).
   ALL MONITORING WELLS (EXCEPT FOR MW-02D) ARE SCREENED IN THE SHALLOW OVERBURDEN ZONE.
2. MONITORING WELL MW-02D WAS BUILT USING THE GW-33C BOREHOLE.
3. ALL MONITORING WELLS EXCEPT FOR MW-02D, MW-05, AND MW-06 WERE SAMPLED TWICE. WHEN TWO RESULTS ARE SHOWN (NA/ND), THE FIRST IS FROM JUNE 2011 AND THE SECOND IS FROM OCTOBER 2011.
4. ug/L = MICROGRAMS PER LITER.
5. ND = NOT DETECTED.
6. NA = NOT SAMPLED.

LEGEND

- MONITORING WELL
- COLOR-TEC TEMPORARY WELL
- LAB SAMPLE TEMPORARY WELL
- COLOR-TEC GROUNDWATER GRAB LOCATION
- LAB SAMPLE GROUNDWATER GRAB LOCATION
- OVERHEAD DOOR
- DOOR
- ND — COLOR-TEC RESULTS
- 0.001 — LAB TOTAL CHLORINATED VOC RESULTS (MICROGRAMS PER LITER)
- 100,000 ug/L
- 10,000 ug/L
- 1,000 ug/L
- ESTIMATED EXTENT OF CHLORINATED VOC PLUME IN GROUNDWATER (>5 ug/L)

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FIGURE 3: OVERBURDEN GROUNDWATER ZONE COLOR-TEC AND TOTAL CHLORINATED VOC RESULTS FORMER ROXY CLEANERS

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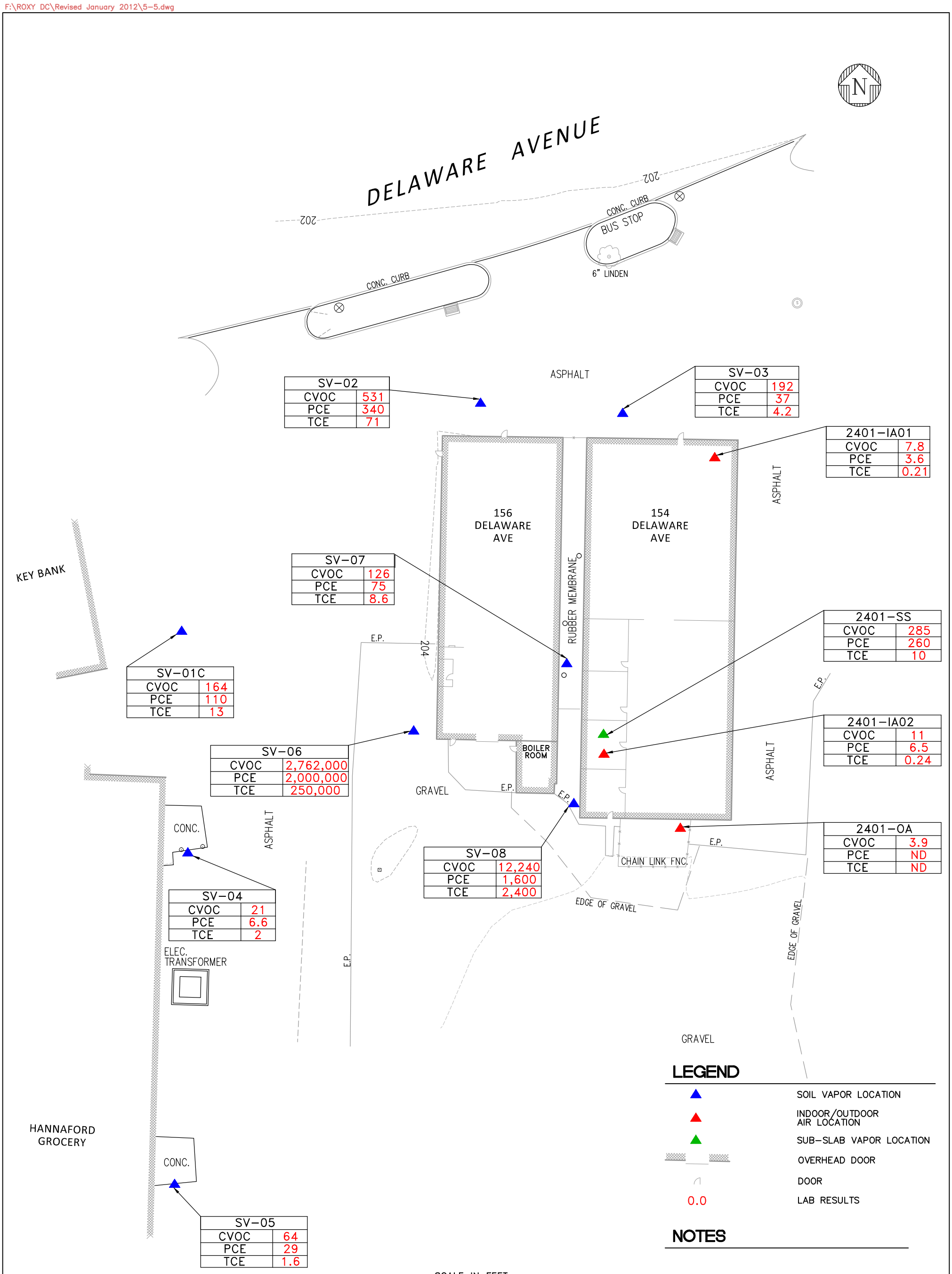

LEGEND

- SOIL VAPOR LOCATION
- INDOOR/OUTDOOR AIR LOCATION
- SUB-SLAB VAPOR LOCATION
- OVERHEAD DOOR
- DOOR
- 0.0 LAB RESULTS

NOTES

1. RESULTS ARE IN MICROGRAMS PER CUBIC METERS ($\mu g/m^3$).
2. PCE = TETRACHLOROETHENE.
3. TCE = TRICHLOROETHENE.
4. CVOC = TOTAL CHLORINATED VOLATILE ORGANIC ALIPHATIC COMPOUNDS.

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FIGURE 4 SOIL VAPOR & AIR ANALYTICAL RESULTS
FORMER ROXY CLEANERS

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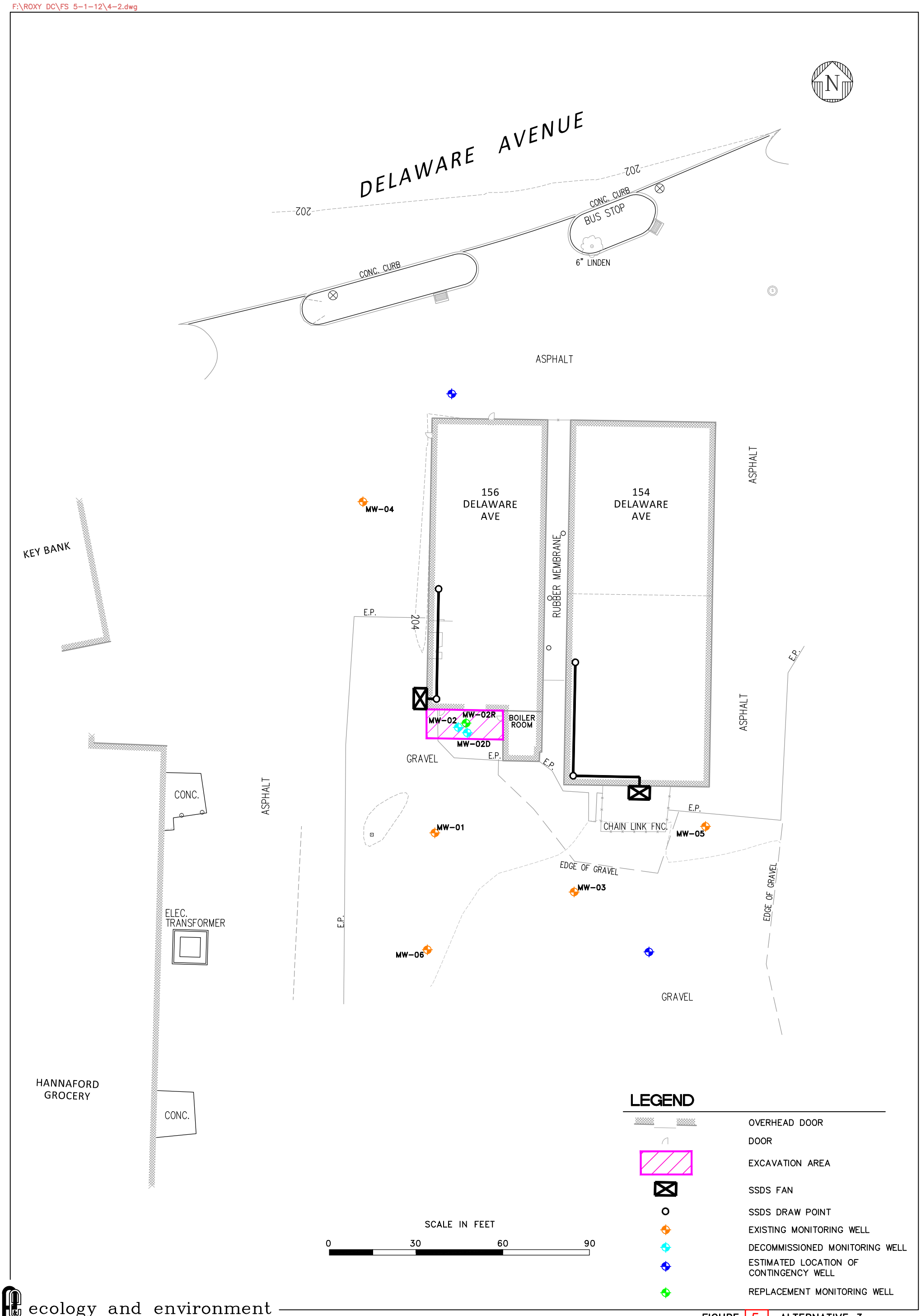

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FIGURE 5 : ALTERNATIVE 3
FORMER ROXY CLEANERS

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Former Roxy Cleaners

State Superfund Project
Delmar, Albany County, New York
Site No. 401058

The Proposed Remedial Action Plan (PRAP) for the Former Roxy Cleaners site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 22, 2013. The PRAP outlined the remedial measure proposed for the contaminated soil, groundwater and indoor air at the Former Roxy Cleaners site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 4, 2013, which included a presentation of the remedial investigation and feasibility study (RI/FS) Former Roxy Cleaners as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 24, 2013.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: When will the remedy be implemented?

RESPONSE 1: It is anticipated that the remedial design will be completed by early 2014 and the remedial action activities will commence in the summer of 2014 or the first half of 2015 barring any unforeseen developments.

COMMENT 2: Will the project be competitively bid?

RESPONSE 2: If the potentially responsible party is unable or unwilling to implement the remedy, the Department will seek to implement the remedy using State Superfund monies. Under that scenario, the Department would publicly advertise the remedial construction project and select a qualified remedial contractor to implement the remedy.

Robert H. Feller of Bond, Schoeneck & King representing the Estate of Bette Smith and A Lot In Delmar, Inc. submitted a letter dated March 22, 2013, which included the following comments:

COMMENT 3: The PRAP does not properly evaluate the applicable standards, criteria and guidance (SCG). In particular, with respect to vapor intrusion, it provides no discussion of the permissible emission limits (PELs) under the Occupational Safety and Health Act (OSHA). Nor does it consider the Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils issued by the U.S. Environmental Protection Agency (EPA).

The DEC is required to ensure compliance with all promulgated standards and criteria. As identified in the Feasibility Study (FS) among these promulgated standards are the OSHA PELs. On the other hand, DEC is only required to consider, not to follow, unpromulgated guidance, such as the Department of Health's (DOH) Guidance for Evaluating Vapor Intrusion. Instead, the PRAP ensures compliance with unpromulgated DOH guidance and completely ignores promulgated OSHA standards. In fact, the applicable OSHA PELs for perchloroethylene (PCE) and the other contaminants of concern are not even identified in either document. The PRAP recommends that the site be cleaned up to commercial standards. With respect to workplace (i.e., commercial exposures), the OSHA PELs preempt any state standards. Therefore, it is improper for the PRAP to require remediation to levels beyond compliance with these promulgated standards. I am aware that the DOH has taken the position that the OSHA PELs only apply to "voluntary" exposures, which the DOH appears to consider only those resulting from operations in the workplace. However, there is no good support for this position.

29 CFR 1910.1000 (which has the PCE limit), states: "An employee's exposure to any substance listed in Tables Z-1, Z-2, or Z-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section" (emphasis added). It mentions nothing about generating the substance during operations. OSHA also has publications that emphasize that employers may be exposing their employees to harmful chemicals simply due to the building location or design, and not through any operations:

http://www.osha.gov/Publications/3430indoor-air-quality-sm.pdf. "Indoor Air Quality in Commercial and Institutional Buildings" (2011). I would direct your attention to page 7 of the pdf, which specifically states that employers may be exposing their employees to harmful chemicals due to the building's location or design.

The OSHA Technical Manual also has a section describing how compliance officers perform inspections regarding indoor air quality, and cites that NIOSH found that 10% of instances are due to "contamination from outside building." http://www.osha.gov/dts/osta/otm/otm iii/otm iii 2.html. In summary, it is clear that the Federal Occupation Safety and Health Administration does consider worker exposure from pre-existing contamination to be subject to the PELs.

RESPONSE 3: OSHA PELs are not considered SCGs when evaluating vapor intrusion impacts in a workplace where contaminants are entering the workplace from contaminated soil, groundwater or vapors outside or beneath the workplace and the contaminants at issue are not currently being used in the workplace. If the contaminants are being used in the workplace, OSHA PELs may be evaluated as appropriate SCGs.

Environmental standards protect workers as members of the general public. The general policy is that they are applicable to remedial decisions when addressing vapor intrusion impacts in a workplace where contaminants are entering the workplace from contaminated soil, groundwater, or vapors outside or beneath the workplace.

Guidance for Evaluating Vapor Intrusion in the State of New York (NYSDOH 2006) was developed to provide a methodology for addressing vapor intrusion impacts. Its development and use are exercises of New York State's statutory authority to take actions to protect public health and remediate inactive hazardous waste disposal sites.

COMMENT 4: The DOH Guidance should not be considered for the remediation of this site because the exposure assumptions used in developing that Guidance are significantly different than those at the buildings being addressed by this remedial action. Alternatively, if it is considered, it must take into account the fact that the site will be restricted to commercial uses.

The risk assumptions underlying the development of the DOH Guidance use a residential exposure scenario. The exposure is based on inhalation of the contaminant 24 hours a day, 7 days a week for an entire lifetime. While that is obviously a very conservative assumption for a residential exposure, it cannot possibly be a valid assumption for worker exposure in a commercial setting. In fact, the OSHA PELs which use the worker exposure assumptions for risk analysis arrive at promulgated standards that are orders of magnitude less stringent.

Multiple studies were used to develop the DOH Guidance document, each of which has its own limitations. One study, the EPA 2001: Building Assessment and Survey Evaluation (BASE) Database, which is referenced in the FS, is based on 100 randomly selected public and commercial office buildings. This study alone is extremely limited. This is why DOH indicated that its document is only designed to be used as "guidance" and that each case should be reviewed individually, based on characteristics of the building, i.e., building design, building layout, air handling systems, building use, etc.

Although the DOH Guidance indicates it should be used in non-residential settings, neither it nor the supporting documents provide an adequate rationale for using these risk assumptions, particularly where site-specific conditions are not going to be taken into account.

RESPONSE 4: See Response 3.

COMMENT 5: The PRAP improperly applies the DOH Guidance as though it were a promulgated rule. New York courts have repeatedly advised that unpromulgated guidance documents cannot be applied by agencies as though they were promulgated rules. The State Administrative Procedures Act (SAPA) provides a rulemaking process whereby standards can be given the force and effect of law. DOH has not followed this process and therefore the concentrations identified in the Guidance Document cannot be treated as binding limits.

New York State courts have opined on when a standard is being treated as an unpromulgated rule. They have stated that a standard needs to be promulgated as a rule when it "is a fixed general principal to be applied without regard to other facts and circumstances relevant to the regulatory scheme."

The DOH Guidance document indicates that it should not be applied as a rule and that the facts and circumstances of individual sites are to be considered in any evaluation. Specifically, page 5 of the guidance has a table (Table 1.2) lists building factors that may affect vapor intrusion.
The list includes:
1) Operation of HVAC systems, fireplaces and mechanical equipment (e.g., clothes dryers or exhaust fans/vents)
2) Heated building
3) Air exchange rates
4) Foundation type
5) Foundation integrity
6) Subsurface features that penetrate the building foundation

Despite that warning, the FS and PRAP, none of these factors were evaluated in either the FS or the PRAP. Instead, the matrices in the DOH Guidance were simply applied by rote as though they were promulgated rules.

RESPONSE 5: Since the selected remedy will result in a significant quantity of soil with levels of volatile organic compound contamination that represent a vapor intrusion source, as well as a source of elevated ground water levels remaining beneath the building, mitigation in lieu of more active remediation was included in the remedy, thus obviating the need for the noted building factor analysis. The DOH guidance is an applicable SCG. Also see Response 3.

COMMENT 6: The recommendation for installing a vapor intrusion mitigation system at 156 Delaware Avenue (the former Roxy building) is based on inadequate data. Using Matrix 2 in the DOH Guidance Document, the results of H2H's sampling were used to support a recommendation to "mitigate." The recommendation is the product of the single 2009 sampling event at 156 Delaware Avenue. Use of a single sample or sampling event is not statistically valid. When a single sampling event indicates remediation (mitigation) is recommended, the sampling event should be repeated.

RESPONSE 6: Although it was not discussed in the PRAP, H2H conducted indoor air and sub-slab vapor sampling in Former Roxy building (156 Delaware) and the adjacent building at 154 Delaware Avenue in December 2007 and March 2009. Both indoor air and sub-slab VOC concentrations in 156 Delaware were higher during the 2007 sampling round with PCE found in indoor air and sub-slab vapor at the respective concentrations of 69 micrograms per cubic meter ($\mu g/M^3$) and 176,000 $\mu g/M^3$. These data are well within the area in Matrix 2 of the *Guidance for Evaluating Vapor Intrusion in the State of New York* (NYSDOH 2006), which recommends “mitigate”. A sub-slab depressurization system will minimize the likelihood that the indoor air will be contaminated by preventing VOCs from entering the building from beneath it. This information has been added to the soil vapor discussion in Exhibit A of the ROD.

COMMENT 7: The recommendation for installing a vapor intrusion mitigation system at 154 Delaware Avenue is based on inadequate data. H2H conducted a sub-slab and interior air sampling event at the structure at 154 Delaware Avenue in 2009. The results of the sampling indicated that the structure at 154 Delaware Avenue fell under the "monitor" category, based on PCE levels. The sampling event was then repeated in 2012. The results of the 2012 sampling event at 154 Delaware Avenue fell under the "monitor/mitigate" category. Statistically, these two data points do not provide enough date to support a "mitigate" recommendation.

RESPONSE 7: Although it was not discussed in the PRAP, H2H conducted indoor air and sub-slab vapor sampling in the building at 154 Delaware Avenue in December 2007 and March 2009. Both indoor air and sub-slab vapor concentrations tend to be higher in the results from the 2009 sampling event and more so in the results from the 2012 sampling event. The tetrachloroethene data fall on "monitor" and "monitor/mitigate" of the Soil Vapor/Indoor Air Matrix 2 of the *Guidance for Evaluating Vapor Intrusion in the State of New York* (NYSDOH 2006). Based on the data, as well as the environmental data collected in the area and the proximity of the building to the site, to prevent exposure to site related contaminants in the indoor air for the occupants of 154 Delaware Avenue, it is appropriate to take reasonable and practical actions to reduce existing/potential exposures by installing a sub-slab depressurization system in the building. However, a final determination of the need to mitigate (vs. monitor) the adjacent structure will be deferred until pre-design sampling is completed. The remedy has been revised to indicate this.

COMMENT 8: Even if one were to focus on the 2012 sampling at 154 Delaware Avenue, the DOH Guidance does not require remediation. Additional analysis is needed. Based on the 2012 sampling, the DOH Guidance recommends "monitor / remediate" for 154 Delaware Avenue. In such a case, the DOH Guidance states "Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building- and site-specific conditions." However, neither the FS nor the PRAP contain any discussion of such conditions.

The sub-slab PCE level at 154 Delaware Avenue, from the 2012 sample event was 260 $\mu g/M^3$ and the two indoor air samples were 3.6 and 6.5 $\mu g/M^3$. Even though the levels fall under the "monitor/mitigate" category, both the sub-slab and indoor air concentrations of PCE fall at the lower end of the range of values. Moreover, applying the matrix to the prior sampling from 2009 would result in a "monitor" recommendation. Since concentrations falling at the lower end of the range of "monitor/mitigate and prior sampling falls even below that range, monitoring is a logical alternative that must be considered and analyzed as part of the decision making process. The PRAP does not consider the alternative of simply monitoring nor does it provide any justification for choosing the "remediate" alternative. The DEC should redo the PRAP to include an evaluation of the monitor alternative at 154 Delaware Avenue and a justification of the recommended approach. This analysis should be subject to an additional public comment period.

RESPONSE 8: See Response 7.

COMMENT 9: The removal of 340 cubic yards of soil and its disposal in a hazardous waste landfill is not justified in order to meet the restricted commercial soil cleanup objective (SCOs).

As noted in Table 2 of the PRAP, fifty-two soil samples were each analyzed for four different volatile organic compounds (VOCs) of concern. In the case of three of the VOCs, all fifty-two samples were below the commercial SCOs. In the case of the fourth VOC (PCE), only one out of the fifty-two samples was above the commercial SCOs.

The proposed area to be excavated is approximately 30-feet in width across the rear of structure at 156 Delaware Avenue, extending out approximately 10-feet from the structure and to a depth of approximately 20-feet, containing approximately 6,000 cubic feet of soil (222.22 cubic yards). However, the "primary contaminant source area" was determined by one soil sample taken from one soil boring, which exceeded the restricted-commercial SCO for tetrachloroethene (PCE). A total of 52 soil samples, collected from 16 soil borings were laboratory analyzed. Of the 52 samples analyzed, a single sample contained one chlorinated VOC, PCE, at a concentration which exceeded the restricted-commercial SCO value of 150 ppm. The one soil sample, collected from soil boring SB-01 at a depth of 16-feet below grade had a PCE concentration of 2,500 ppm.

Designing a soil excavation work plan based on the analytical results of one sample is not statistically valid. Moreover, when confronted with analytical results from one sample that varies significantly from the remaining group of sample results (the PCE concentration at the 16-foot sample from soil boring SB-01 was over 16 times the next highest concentration recorded from any of the samples), the validity of the sample should be confirmed. Confirmatory samples should have been collected from the depth and location of original sample SB-01-16 and from the immediate surrounding area to determine if statistically significant sample results extend horizontal and/or vertically from that location.

Even if the sample is confirmed to be valid, one soil sample from one soil boring does not justify the removal of 6,000 cubic feet (222.22 cubic yards) of soil. The PRAP should consider other alternatives that would require the removal and disposal of a much smaller quantity of soils.

RESPONSE 9: The objective of the remedial investigation (RI) was to locate the source of the contamination, identify the extent of on- and off-site impacts, and obtain enough data to evaluate potential remedies. Along with the soil data, the location of the contamination source at the back of the building is confirmed by the groundwater data and soil vapor data; with the highest concentrations of these media in the immediate proximity of the identified source area.

The comment incorrectly compares the soil data to the commercial use SCO, when the appropriate SCO is the protection of groundwater SCO (PGWSCO), which is identified in the unrestricted use column of Table 2, due to the contravention of groundwater standards and the presence of soil vapor impacts in accordance with 6 NYCRR 375-6. The soil data shown in Figure 2B of the PRAP shows increasing VOC concentrations with depth in SB-1 to the one data point with a PCE above its restricted commercial use SCO. The soil data in 23 soil samples however showed PCE well above the protection of groundwater SCO. Due to the lack of any feasible in-situ soil remedy, a remedy

must consist of excavation of contaminated soil which is a source of groundwater contamination, to the extent feasible. In this case it has been determined that, rather than require the Roxy Cleaners building be demolished as would be required by Alternative 4 to remove the soil exceeding the PGWSCO, the selected remedy will remove the accessible source material (soil exceeding the restricted commercial use SCO) and provide treatment of the groundwater and a system to mitigate any potential for soil vapor intrusion. Table 2 in the ROD has been modified to clarify the unrestricted SCO is the PGWSCO for the compounds identified in the soil.

The soil samples were collected under Department oversight via a standard methodology. The samples were properly shipped to an accredited laboratory where they were analyzed utilizing standard operating procedures. The data was then validated by a qualified professional. A more precise determination of the volume of soil to be excavated will be determined during pre-design sampling, post-excavation sampling and/or waste classification sampling of the stockpiles of excavated material.

COMMENT 10: The removal of 340 cubic yards of soil and its disposal in a hazardous waste landfill and the placement of a chemical oxidation amendment to the remaining soil is not justified to protect groundwater.

The proposed remedial action plan suggests that the removal of the most contaminated soil will prevent additional contamination of groundwater. However, the remedial investigation report suggests that the high clay content of the soils will minimize future groundwater movement, both vertically and horizontally and confirms that the groundwater in the area is not and will not be used in the future for any purposes.

The remedial alternative chosen to address soil contamination at the site does not reflect the cost effective measures that would still bring the soil levels into compliance with the restricted-commercial SCO values, while offering a reasonable level of protection for the groundwater. Even if excavation of source material had some benefit to groundwater, the most cost effective method of addressing the soil contamination would be to confirm that the one sample area does indeed exceed the restricted commercial SCO values and concentrate on that remediation of that specific area.

RESPONSE 10: The RI Report included a geologic study of existing sub-surface conditions that revealed the presence of dense clay across the site which is typical of the area. While the clay significantly inhibits the velocity of groundwater flow and subsequently the migration of groundwater contaminants, it also makes any in-situ groundwater remedy difficult to implement, if not infeasible. Removing a significant volume of the accessible source area will allow contaminants in groundwater to degrade. Chemical oxidation will facilitate contaminant degradation.

The Department's remedial objective for all sites is pre-disposal conditions to the extent feasible (6NYCRR Part 375-2.8(a)) as determined by an evaluation process using the nine criteria discussed in the PRAP. 6NYCRR Part 375-1.8(c) discusses "source removal and control measures." There is a hierarchy of source removal and control measures which are to be used, ranked from the most to least preferable. "Removal and/or treatment" is the most preferred, to

the extent feasible, followed by containment. The option of removing soil with concentrations above the commercial use and groundwater protection SCOs to the extent feasible, followed by in-situ treatment (applied to the open excavation) of the residual contamination and monitoring is a feasible approach to address the need to remediate the source area at the site.

APPENDIX B

Administrative Record

Administrative Record

Former Roxy Cleaners

State Superfund Project
Delmar, Albany County, New York
Site No. 401058

1. Proposed Remedial Action Plan for the Former Roxy Cleaners site, dated February 22, 2013, prepared by the Department.

2. Referral Memorandum dated December 29, 2010 for a remedial investigation and feasibility study of the Former Roxy Cleaners site.

3. "Phase II Environmental Assessment, A Lot in Delmar," March 2007, H2H Associates, LLC.

4. "Sub-Slab Vapor and Indoor Air Monitoring Results, A Lot in Delmar," May 2009, H2H Associates, LLC.

5. "Field Sampling Plan Former Roxy Cleaners Site," June 2011, Ecology and Environment Engineering, P.C.

6. "Remedial Investigation Report for the Former Roxy Cleaners Site," July 2012, Ecology and Environment Engineering, P.C.

7. "Feasibility Study Report for the Former Roxy Cleaners Site," May 2012, Ecology and Environment Engineering, P.C.

8. Letter dated March 22, 2013 from Robert H. Feller of Bond, Schoeneck & King representing the Estate of Bette Smith and A Lot In Delmar, Inc.