PROPOSED REMEDIAL ACTION PLAN

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

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

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

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

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

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

A public comment period has been set from: February 22, 2013 **to** March 24, 2013

A public meeting is scheduled for the following date: March 4, 2013

Public meeting location: Bethlehem Public Library

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 to:

Michael MacCabe
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
mdmaccab@gw.dec.state.ny.us

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

Receive Site Citizen Participation Information by Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:
The 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 is a dry cleaning drop-off location operated by Best Cleaners. Presently, the building is unoccupied.

Historic Uses:
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, an alternative that restricts 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:

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:

tertachloroethene (PCE)	trichloroethene (TCE)
dichloroethene (DCE)	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 five 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 ($\mu g/m^3$) and TCE was detected at a maximum concentration of 250,000 $\mu g/m^3$; 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 $\mu g/m^3$ in indoor air and 152,000 $\mu g/m^3$ 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 $\mu g/m^3$, 9,270 $\mu g/m^3$ and 4,420 $\mu g/m^3$.

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 $\mu g/m^3$ of VOCs were detected in the sub-slab vapor sample, 260 $\mu g/m^3$ of which was PCE. The maximum PCE concentration in the corresponding indoor air samples was 6.5 $\mu g/m^3$. 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 PROPOSED REMEDY

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

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

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

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

The proposed remedy is referred to as the Excavation 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 proposed 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 will be required to have a sub-slab depressurization system (SSDS) to prevent the migration of vapors into the building from groundwater.

An SSDS will be installed in the former Roxy site building and an adjacent off-site building. 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.
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.

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 µg/m^3, 4,700 µg/m^3 and 1,700 µg/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 µg/m^3 (micrograms per cubic meter) to approximately 2,762,040 µg/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 µg/m^3, and TCE was detected at a maximum concentration of 250,000 µg/m_3, both in soil vapor sampling point near the source area. The total remaining VOC concentrations were also calculated and ranged from 24 µg/m^3 to nearly 3,700 µg/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 µg/m^3 of VOCs were detected in the sub-slab sample, 260 µg/m^3 of which was PCE. The maximum PCE concentration in indoor air samples was 6.5 µg/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 installed 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 5and 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

Figure 1

Former Roxy Cleaners Site Location Map

Delmar, NY

F:\ROXY DC\Revised January 2012\6-1.dwg

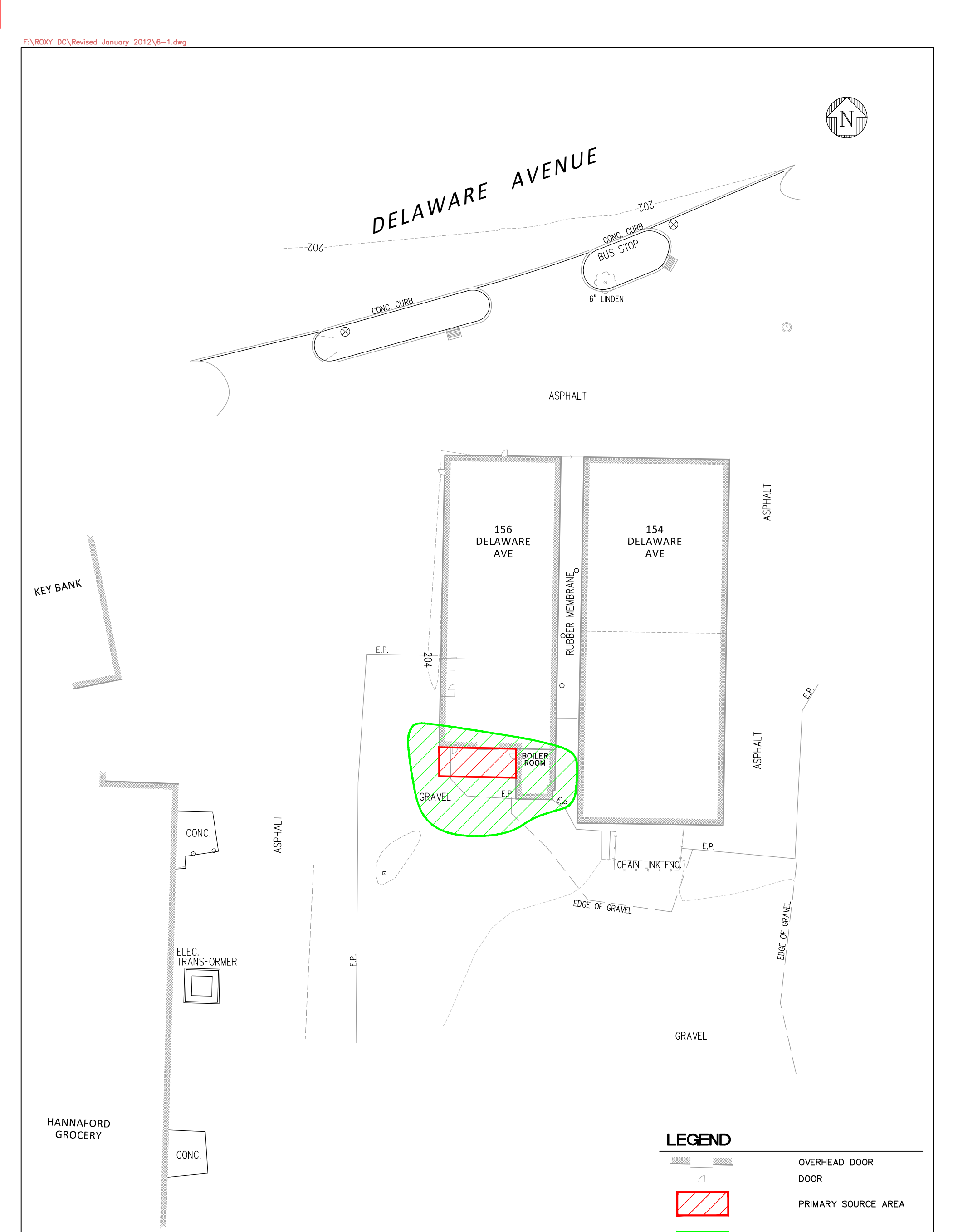

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FIGURE 2A SITE CONTAMINATION SOURCE AREAS
FORMER ROXY CLEANERS

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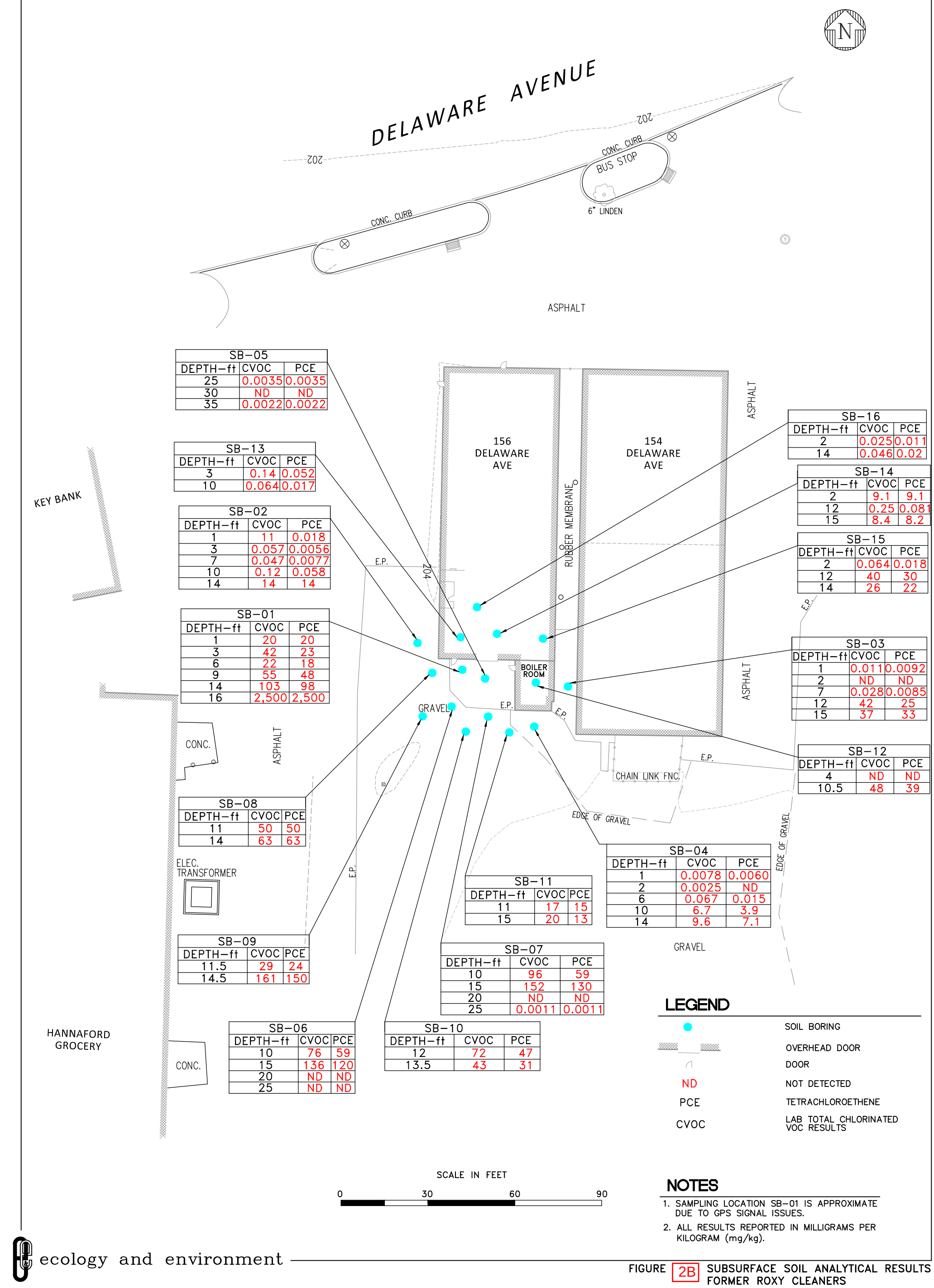

NOTES

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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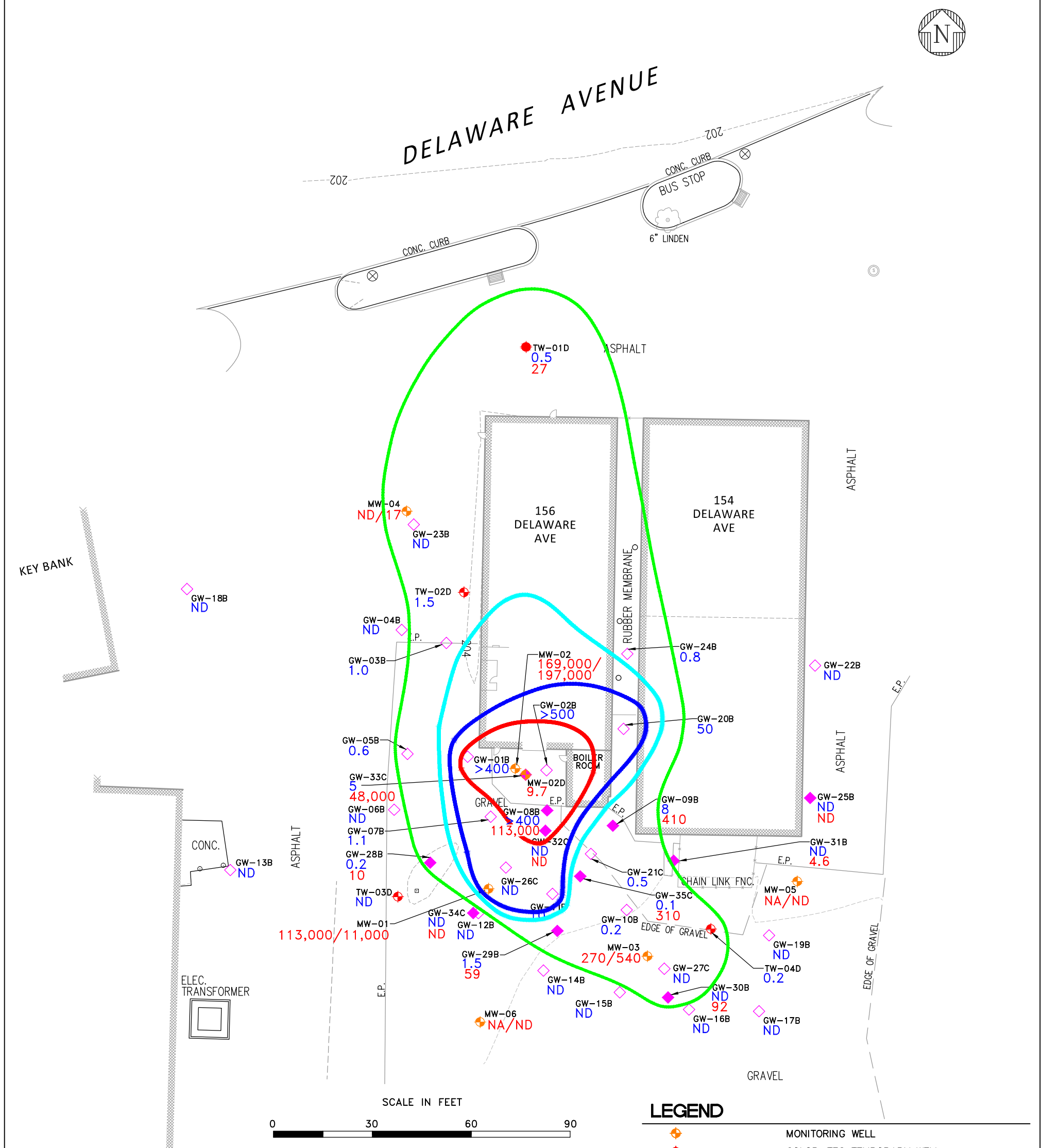
FIGURE 2B SUBSURFACE SOIL ANALYTICAL RESULTS FORMER ROXY CLEANERS

F:\ROXY DC\Revised April 2012\5-3.dwg



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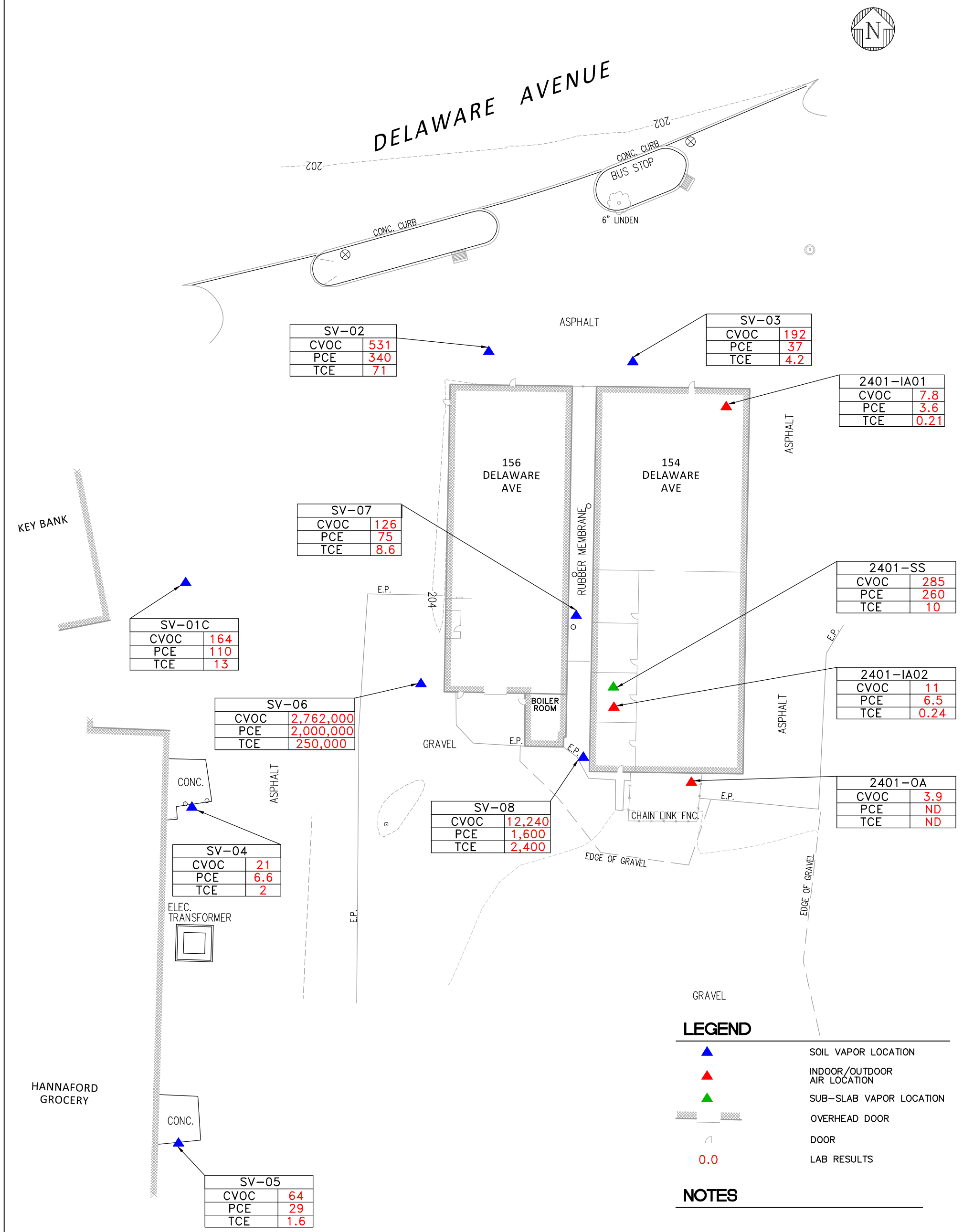
FIGURE 3: OVERBURDEN GROUNDWATER ZONE COLOR–TEC AND TOTAL CHLORINATED VOC RESULTS FORMER ROXY CLEANERS

F:\ROXY DC\Revised January 2012\5-5.dwg



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

F:\ROXY DC\FS 5-1-12\4-2.dwg

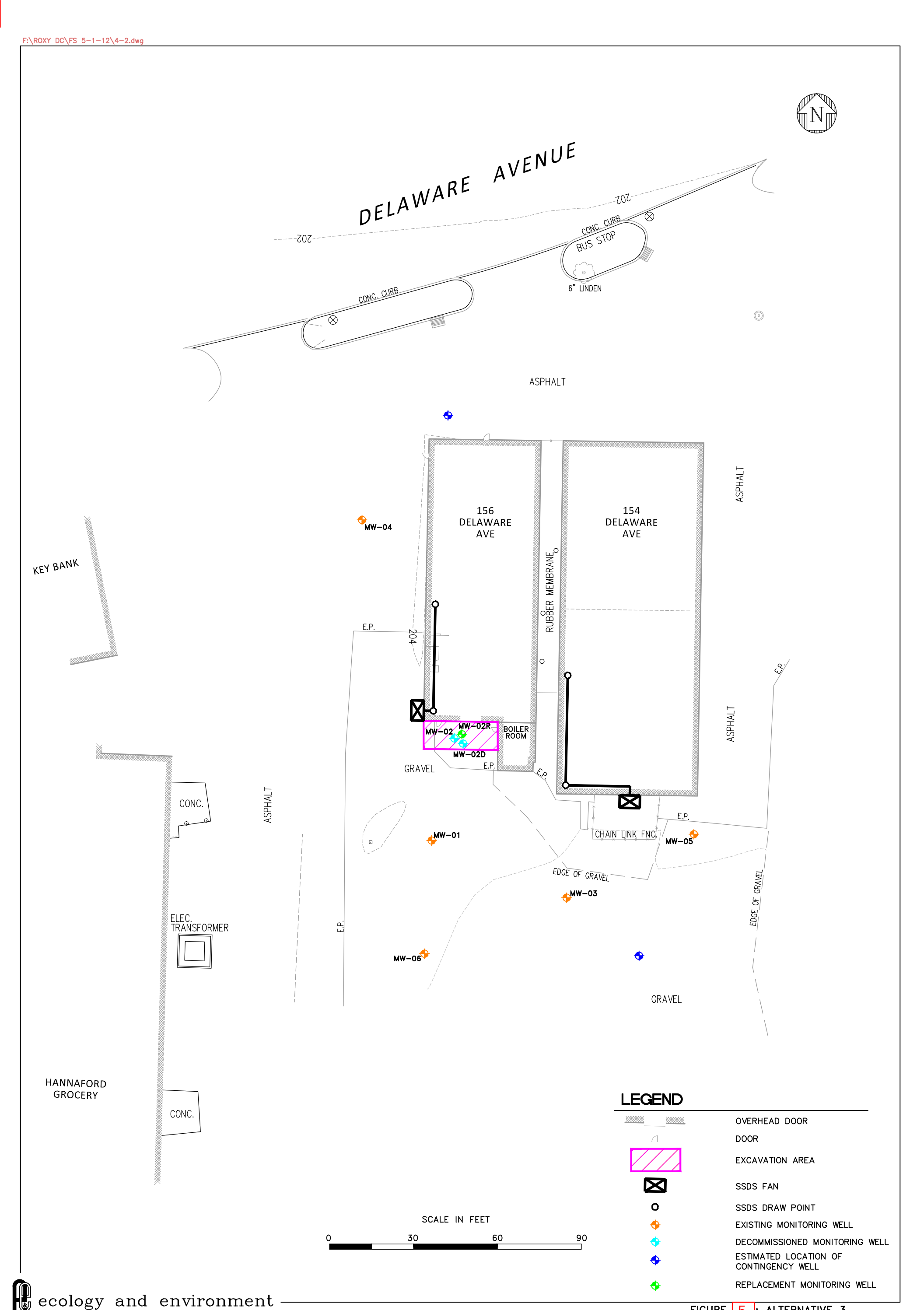

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FIGURE 5 : ALTERNATIVE 3
FORMER ROXY CLEANERS