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Division of Environmental Remediation

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**Record of Decision**  
**Jimmy's Dry Cleaners Site**  
**Operable Unit No. 2**  
**Roosevelt, Nassau County, New York**  
**Site Number 130080**

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**MARCH 2008**

## **DECLARATION STATEMENT - RECORD OF DECISION**

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### **Jimmy's Dry Cleaners Inactive Hazardous Waste Disposal Site Operable Unit No. 2 Roosevelt, Nassau County, New York Site No. 130080**

#### **Statement of Purpose and Basis**

The Record of Decision (ROD) presents the selected remedy for Operable Unit 2 of} the Jimmy's Dry Cleaners site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law 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 Operable Unit 2 of} the Jimmy's Dry Cleaners inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) 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.

#### **Assessment of the Site**

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

#### **Description of Selected Remedy**

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Jimmy's Dry Cleaners site and the criteria identified for evaluation of alternatives, the Department has selected in-situ chemical oxidation of the groundwater, groundwater monitoring, and a soil vapor intrusion assessment. The components of the remedy are as follows:

- A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Implement in-situ chemical oxidation (i.e., potassium permanganate, sodium permanganate, persulfate) of the highest concentrations of volatile organic compounds (VOCs) (defined as the limits of the 1,000 ug/L PCE isoconcentration line) within the OU2 contaminant plume.
- Implement a soil vapor intrusion assessment to provide evaluate the potential for soil vapor intrusion and installation of mitigation systems, as necessary.
- Imposition of an institutional control in the form of an environmental easement on OU1 that

will: (a) require compliance with the approved site management plan; (b) document the existing use and development restrictions that will limit the use of groundwater without necessary water quality treatment as determined by the Nassau County Department of Health and (c) require the Jimmy's Dry Cleaner property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

- Development of a site management plan which will include the following institutional and engineering controls: (a) to address any residual contamination and use restrictions to be incorporated into the OU1 Site Management Plan (b) to evaluate the potential for vapor intrusion at residences and buildings located within OU2, including provision for mitigation of any impacts identified; (c) monitoring of groundwater and soil vapor as needed; (d) provisions for operation and maintenance of any mitigation system that may be required; and (e) provisions for the continued proper operation and maintenance of the components of the remedy.
- The Jimmy's Dry Cleaners property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that will impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.
- Since the remedy may result in untreated hazardous waste remaining at the site, a long-term groundwater monitoring program will be instituted. This program will allow the effectiveness of the remedy to be monitored and will be a component of the long-term management for the site.

#### **New York State Department of Health Acceptance**

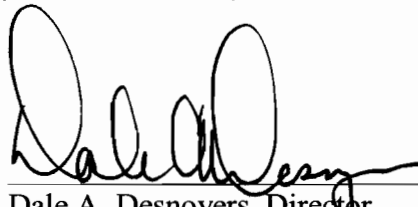
The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

#### **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.

MAR 27 2008

Date



Dale A. Desnoyers, Director  
Division of Environmental Remediation

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# RECORD OF DECISION

**Jimmy's Dry Cleaners Site  
Operable Unit No. 2  
Roosevelt, Nassau County, New York  
Site No. 130080  
March 2008**

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## **SECTION 1: SUMMARY OF THE RECORD OF DECISION**

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Jimmy's Dry Cleaners Operable Unit 2 (OU2) which is considered the off-site groundwater contaminant plume. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, prior operational practices at the former Jimmy's Dry Cleaner have resulted in the disposal of hazardous wastes, including tetrachloroethene (PCE), a volatile organic compound (VOC). These wastes have contaminated the soil and groundwater at the site and the groundwater off-site, and have resulted in:

- a significant threat to human health associated with potential exposure to contaminants in the groundwater and soil vapor.
- a significant environmental threat associated with the current impacts of contaminants to groundwater.

To eliminate or mitigate these threats, the Department has selected in-situ chemical oxidation of the groundwater, groundwater monitoring, and a soil vapor intrusion assessment.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially 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.

## **SECTION 2: SITE LOCATION AND DESCRIPTION**

Jimmy's Dry Cleaner's Operable Unit 1 (OU1), located in Nassau County at 61 Nassau Road in Roosevelt, New York (Figure 1), is rectangular in shape and consists of approximately one acre of land including the former dry cleaner building (Figure 2). The building currently is not occupied and is in disrepair. Much of the site is covered either by the building or asphalt/gravel parking areas. Major crossroads surrounding the site are Taylor Road to the north, Davis Street to the south,

Dutchess Street to the west, and Nassau Road to the east. The area surrounding the site is a mixture of residential and commercial properties. The commercial properties are located predominately along Nassau Road.

OU2, which is the subject of this document, consists of the off-site groundwater contaminant plume. OU2 begins at Davis Street to the north and extends to south of West Wilton Street (Figure 3). An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable unit for this site is OU1, which consists of the Jimmy's Dry Cleaners property. OU1's Record of Decision was signed in March 2004. The OU1 remedy is currently in design.

### **SECTION 3: SITE HISTORY**

#### **3.1: Operational/Disposal History**

In 1988, as a result of a site inspection by the Nassau County Department of Health (NCDOH), it was concluded that the dry cleaning operations and hazardous material storage at Jimmy's Dry Cleaners presented a risk to public health and the environment. This conclusion was based on the observation of poor housekeeping practices; specifically, leaking dry cleaning equipment and inappropriate hazardous waste storage practices. The NCDOH also noted the presence of an unregistered below-grade fuel oil tank and potential for discharge of hazardous materials to a dry well located near the dry cleaning facility. Subsequent investigations identified elevated levels of chlorinated VOCs in the soil, groundwater, soil vapor, and indoor air near the dry cleaner and down-gradient of the site. The dry cleaner ceased operation in November 1998.

#### **3.2: Remedial History**

In 1994, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

In the spring of 1994, soil and groundwater samples were collected from the site. The results confirmed the presence of chlorinated VOCs in the groundwater at the site.

In 1995, the NCDOH collected additional soil and groundwater samples from the site. The December 1995 sampling effort confirmed the presence of chlorinated VOCs above the Technical and Administrative Guidance Memorandum (TAGM) 4046 concentrations in soil and above groundwater standards near the former dry cleaner.

An RI for OU1 and OU2 was completed between August 2001 and December 2002. An interim remedial measure (IRM) consisting of a soil vapor extraction (SVE) system was installed under OU1 in September 2002 to minimize soil vapor from migrating to surrounding residences and businesses. A ROD for OU1 was signed in March 2004. The Remedial Action for OU1, as outlined in the

ROD, requires chemical oxidation of the groundwater, enhancement of the IRM SVE system to treat the soil and soil vapor contamination, and continued soil vapor intrusion monitoring.

#### **SECTION 4: 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: the estate of James Lawrence, the now deceased former owner of the former Jimmy's Dry Cleaner business; and Breen Capital Investment Corporation, the current property owner.

The PRPs declined to implement the RI/FS at the site when requested by the Department. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

#### **SECTION 5: SITE CONTAMINATION**

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

##### **5.1: Summary of the Remedial Investigation**

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between August 2001 and December 2002. Additional field activities were also conducted under the Feasibility Study between June 2004 and August 2007. The field activities and findings of the investigation are described in the RI report and the Feasibility Study report.

The OU1 and OU2 RI were conducted as one investigation. Major components of the RI that relate to OU2 included a soil vapor survey, groundwater monitoring, and soil sampling. A supplemental investigation conducted during the OU2 FS included indoor air sampling, a soil vapor survey, groundwater monitoring, and a bench-scale treatability study.

##### **5.1.1: Standards, Criteria, and Guidance (SCGs)**

To determine whether the soil, groundwater, and soil vapor, and indoor air contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives).
- Concentrations of VOCs in air were evaluated using the air guidelines provided in the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

### **5.1.2: Nature and Extent of Contamination**

This section describes the findings of the investigation for all environmental media that were investigated.

As described in the RI report, soil, groundwater, soil vapor, and indoor air samples were collected to characterize the nature and extent of contamination. As seen in Figure 3, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs) in the groundwater. For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) for air samples.

Figures 3 and 4 summarize the degree of contamination for the contaminants of concern in groundwater and compare the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

#### **Groundwater**

The initial groundwater investigation was conducted as part of the overall Jimmy's Dry Cleaner site RI which encompassed both OU1 and OU2. Samples were collected using direct push methods and from groundwater monitoring wells installed within the area designated as OU2. The groundwater monitoring and survey data collected as part of the RI concluded that the groundwater table is located at approximately 15 to 20 feet below ground surface and groundwater flows to the south at an average hydraulic gradient of 0.08 with a horizontal groundwater flow velocity of approximately 2.58 feet/day.

The primary constituent identified in the groundwater was PCE. PCE was identified to depths of approximately 200 feet below grade, extending approximately 3,400 feet to the south of OU1. Concentrations ranged from non-detect to 23,000 ppb. The highest concentrations of PCE were detected in the shallower depths in close proximity to OU1 (Figures 3). As groundwater flows to the south, concentrations decrease with the highest concentrations found at depth (Figure 4). The nearest downgradient public water supply well is approximately one and one-half miles from the site, and a new public supply wellfield was installed sidegradient to the plume in 2006. These wells are



screened approximately 450-550 ft below grade and are separated from the groundwater plume by a low permeability layer. Sentinel wells serve as a monitoring system for the water wells and have not detected plume migration towards the wellfield. A monitoring location to the north and up gradient of OU1 did not identify the presence of VOCs in groundwater, indicating that OU1 is the source of the PCE.

Groundwater samples collected subsequent to the RI in June 2006 and February 2007 confirm that VOCs, primarily PCE, continue to be present above NYSDEC Class GA groundwater standards in groundwater in OU2.

Groundwater contamination identified during the RI/FS will be addressed in the remedy selection process.

### **Soil Vapor/Sub-Slab Vapor/Air**

As documented in the RI, a soil vapor survey identified elevated concentrations of VOCs in the OU1 soil vapor. The soil vapor data confirmed that disposal of dry cleaning chemicals to soils occurred in OU1, resulting in soil and groundwater contamination. Indoor air monitoring identified PCE in the air above the Guidance Value and Background Levels in the now defunct delicatessen in OU1 and in a neighboring residential structure as a result of former dry cleaning operations at OU1. An IRM to address the soil vapor intrusion was designed and installed at OU1. In May and June 2006, soil vapor sampling was conducted at 56 locations within OU1 and OU2. PCE concentrations ranged from non-detect to 678 micrograms per cubic meter (ug/m<sup>3</sup>) within the OU2 boundaries (Figure 5). A limited number of residences have been evaluated for potential vapor intrusion. To date, the maximum concentration of PCE detected in the OU2 sub-slab sample was 6 ug/m<sup>3</sup>, while the maximum concentration of PCE detected in an indoor air samples was 2.4 ug/m<sup>3</sup>.

Soil vapor contamination and the potential for indoor air contamination identified during the RI/FS will be addressed in the remedy selection process.

#### **5.2: 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 completion of the RI/FS.

There were no IRMs performed at OU2.

#### **5.3: Summary of Human Exposure Pathways:**

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6.6 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a

contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Pathways that may exist include:

- Ingestion
- Direct Contact
- Inhalation

**Ingestion** is considered a *potential* exposure pathway. Groundwater at the site flows south. A public supply well is one and one-half miles south of the site, and a new well field is 1500 feet southwest of the dry cleaner site. Since these public supply wells are screened approximately 450 to 550 ft deep, below a low permeability confining layer, this route of exposure is not a completed pathway. Groundwater is the sole source of drinking water in this community. There are no known private drinking water wells in the area defined as OU2, with the exception of a school irrigation well. The well has been tested and did not detect site-related volatile organic compounds. Thus, the groundwater is not a completed pathway, but is still considered a potential exposure pathway as it is a sole-source water resource with some use. All public drinking water supply wells are routinely sampled for volatile organic compounds and are required to meet Safe Drinking Water standards prior to distribution to the public.

**Direct Contact** is considered a *potential* exposure pathway as the potential exists for a person, on the school property, to come into contact with the spray irrigation water from the irrigation well. The irrigation well is shallow and does not draw water from the deeper contaminated zone, but does lie within the OU2 groundwater plume area. Until the groundwater within the plume meets Groundwater Quality Standards, this well continues to serve as a potential, not completed, exposure pathway for direct contact, ingestion and inhalation concerns.

**Inhalation** is considered to be a *potential* exposure pathway at the current time. Shallow groundwater at the northern portion of the OU2 plume is contaminated above New York State Standards, Criteria and Guidance levels for chlorinated volatile organic compounds [VOCs]. Chlorinated VOCs can volatilize from the water table and enter the soil pore spaces as a vapor, presenting an inhalation exposure route to occupants of nearby buildings. These potential exposures are under investigation and will be addressed if necessary, as part of the Site Management Plan for

the Jimmy's Dry Cleaner site.

#### **5.4: Summary of Environmental Assessment**

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

Site contamination has impacted the groundwater resource in the Upper Glacial aquifer. While the Upper Glacial aquifer is not used for drinking water in the vicinity of the site, it is considered a resource with its best potential use as drinking water. This water is also used for irrigation purposes in the nearby area. It is also possible future impacts may exist for the hydraulically connected Magothy aquifer.

#### **SECTION 6: SUMMARY OF THE REMEDIATION GOALS**

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to PCE and its degradation products in the groundwater.
- The release of contaminants from groundwater into the indoor air through soil vapor.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards.

#### **SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES**

The selected 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. Potential remedial alternatives for the Jimmy's Dry Cleaner OU2 were identified, screened and evaluated in the FS report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth 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.

**7.1: Description of Remedial Alternatives**

The following potential remedies were considered to address the contaminated groundwater and soil vapor at the site.

**Alternative 1: No Action**

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state.

This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

**Alternative 2: Monitored Natural Attenuation**

Present Worth:.....	\$2,080,000
Capital Cost:.....	\$490,000
Annual Costs:	
(Years 1-13):.....	\$150,000

Alternative 2 would be comprised of monitored natural attenuation (MNA), a soil vapor intrusion assessment and an environmental easement on OU1.

A MNA application at OU2 would initially comprise of a quarterly groundwater monitoring program to collect spatial and temporal VOC and MNA data from approximately fifteen existing monitoring wells. MNA data would include at a minimum dissolved oxygen, oxidation-reduction potential, ferrous iron, dissolved methane, ethane, standard anion redox indicators (e.g., nitrate, nitrite, sulfate, and sulfide); and, potentially, quantitative polymerase chain reaction (qPCR). Quarterly monitoring would proceed for a minimum of one year to establish groundwater quality data and to estimate a VOC attenuation rate. Semi-annual sampling would be implemented after the requisite baseline data was attained. It is anticipated that 12 years of semi-annual sampling will be needed.

During the remedial design process a soil vapor intrusion assessment would be completed to provide additional characterization for the potential for soil vapor intrusion and, if necessary, installation of subslab depressurization systems.

To ensure compliance with the objectives of this alternative, an environmental easement would be put in place on OU1, requiring a site management plan. The site management plan would be developed to: i) provide the long-term groundwater monitoring; ii) evaluate the potential for vapor intrusion at residences and buildings located within OU2, including provision for mitigation of any

impacts identified; iii) provide operation and maintenance of any sub-slab depressurization system that may be required; and iv) identify any use restrictions.

**Alternative 3: Enhanced In-Situ Biodegradation**

Present Worth:.....	\$6,250,000
Capital Cost:.....	\$1,650,000
Annual Costs:	
(Years 1-13):.....	\$433,000

Alternative 3 would be comprised of enhanced *in-situ* biodegradation (EISB), groundwater monitoring, a soil vapor intrusion assessment and an environmental easement on OU1.

The OU2 EISB would inject an electron donor, such as emulsified soybean oil, sodium lactate, or ethanol, into the groundwater to enhance the reductive dechlorination of PCE. By applying EISB treatment at highest concentrations of VOCs (defined as the limits of the 1,000 ug/L PCE isoconcentration line) within the OU2 contaminant plume, the resulting “segmented” plume would be more readily attenuated by the ongoing biological degradation sustained through the EISB zones, and further by the natural degradation, dispersion, and adsorption processes active in the aquifer. It is anticipated that the two injection areas would be completed with the public right-aways. Quaterly injections of the electron donor would be required during the first four years of operation, with groundwater monitoring continuing for the next 9 years.

During the remedial design process a soil vapor intrusion assessment would be completed to provide additional characterization for the potential for soil vapor intrusion and, if necessary, installation of subslab depressurization systems.

To ensure compliance with the objectives of this alternative, an environmental easement would be put in place on OU1, requiring a site management plan. The site management plan would be developed to: i) provide the long-term groundwater monitoring; ii) evaluate the potential for vapor intrusion at residences and buildings located within OU2, including provision for mitigation of any impacts identified; iii) provide operation and maintenance of any sub-slab depressurization system that may be required; and iv) identify any use restrictions.

**Alternative 4: In-Situ Chemical Oxidation of Highest VOC concentrations in Groundwater**

Present Worth:.....	\$4,770,000
Capital Cost:.....	\$1,930,000
Annual Costs:	
(Years 1-7):.....	\$456,000

Alternative 4 would be comprised of the following actions: in-situ chemical oxidation of the highest concentrations of VOCs (defined as the limits of the 1,000 ug/L PCE isoconcentration line) within

OU2 contaminant plume (Figure 6), groundwater monitoring, soil vapor intrusion assessment, and an environmental easement on OU1.

Under this alternative potential contact with site contamination would be reduced and/or eliminated by destruction of VOCs within the limits of the 1,000 ug/L PCE isoconcentration line via chemical oxidation. By destroying the VOCs in areas of highest concentration, the resulting segmented plume would be readily attenuated via degradation, dispersion, and adsorption processes within the plume. Groundwater monitoring would be implemented to monitor the effectiveness of the remedy. It is anticipated that the injection would be completed within the first 18 months of operation, with groundwater monitoring continuing for another 7 years.

During the remedial design process a soil vapor intrusion assessment would be completed to provide additional characterization for the potential for soil vapor intrusion and, if necessary, installation of subslab depressurization systems.

To ensure compliance with the objectives of this alternative, an environmental easement would be put in place on OU1, requiring a site management plan. The site management plan would be developed to: i) provide long-term groundwater monitoring; ii) evaluate the potential for vapor intrusion at residences and buildings located within OU2, including provision for mitigation of any impacts identified; iii) provide operation and maintenance of any sub-slab depressurization system that may be required; and iv) identify any use restrictions.

### **Alternative 5: Groundwater Extraction and Reinjection**

Present Worth:.....	\$13,650,000
Capital Cost:.....	\$9,260,000
Annual Costs:	
(Years 1-10):.....	\$486,200

Alternative 5 would be comprised of the following actions: groundwater extraction/treatment/reinjection, groundwater monitoring, soil vapor intrusion assessment, and an environmental easement on OU1.

Under this alternative potential contact with site contamination would be reduced and/or eliminated by groundwater extraction with ex-situ treatment and reinjection of treated groundwater. Groundwater extraction would remove the PCE from the groundwater and form a hydraulic barrier to minimize further off-site migration of PCE. Groundwater monitoring would be implemented to monitor the effectiveness of the remedy.

Preliminary estimates indicate that a total of three extraction wells, with a combined pumping rate of 1,350 gallons per minute (gpm) would be required to treat the OU2 groundwater plume. A representative groundwater treatment system would include an equalization tank and transfer pump, metals and solids pre-treatment, an air stripper, and granular activated carbon for polishing the liquid stream prior to discharge. Treated groundwater would be recharged to groundwater through approximately six to ten reinjection wells located beyond the down gradient edge of the plume.

During the remedial design process a soil vapor intrusion assessment would be completed to provide additional characterization for the potential for soil vapor intrusion and, if necessary, installation of subslab depressurization systems.

To ensure compliance with the objectives of this alternative, an environmental easement would be put in place on OU1, requiring a site management plan. The site management plan would be developed to: i) provide long-term groundwater monitoring; ii) evaluate the potential for vapor intrusion at residences and buildings located within OU2, including provision for mitigation of any impacts identified; iii) provide operation and maintenance of any sub-slab depressurization system that may be required; and iv) identify any use restrictions.

## **7.2 Evaluation of Remedial Alternatives**

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York. 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.
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.

The next five “primary balancing criteria” are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term 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.
4. 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.
5. 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.

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.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 1.

This final criterion 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.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed 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. In general, the public comments were supported of the selected remedy.

## **SECTION 8: SUMMARY OF THE SELECTED REMEDY**

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department has selected Alternative 4, In-situ Chemical Oxidation of Highest VOC concentrations in Groundwater as the remedy for this site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

Alternative 4 was chosen because, as described below, it satisfies the threshold criteria and provides the best balance of the remaining criteria described in Section 7.2. Alternative 4 will achieve the remedial goals (as described in Section 6) by eliminating the most significant source of contamination in the groundwater. By oxidizing the highest concentrations of PCE in the groundwater, it will create the conditions needed to restore groundwater quality to the extent practicable. Alternatives 2, 3, and 5 would also comply with these threshold criteria; however, they do not present the best balance for the remaining criteria.

Because Alternatives 2 through 5 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.



Alternatives 2 through 5 would all have short-term construction impacts that are easily controlled by standard construction means. However, Alternatives 3, 4, and 5 in comparison to Alternative 2 would have a greater construction impact in the short term due to the required equipment construction and/or injection requirements. With the exception of Alternative 1, all of the proposed Alternatives would achieve the remedial action objectives. The means and the time required to reach the remedial objectives, however, is not equal. Based on current site constraints and available data, Alternative 4 would achieve the remedial objectives in the shortest period of time.

Each alternative would provide long-term effectiveness through the destruction or removal of VOCs in the groundwater.

Alternatives 2 and 4 are the easiest to implement. Alternative 3 while implementable, would present more logistical challenges. Whereas, Alternative 5 would present a significant challenge to construct, due to the volume of groundwater that would need to be piped to the treatment location, processed, and reinjected to reach the remedial objectives in a reasonable amount of time.

Reduction of toxicity, mobility, and volume would be achieved by Alternatives 2 through 4 through natural attenuation and/or active treatment. The process of natural attenuation and the active treatment causing reduction or oxidation are irreversible processes. Alternative 5 physically removes the groundwater, thereby removing the contamination.

The cost of the alternatives varies significantly. Table 1 presents the costs of each alternative. As the complexity of the remedial alternative increases, so does the cost.

The estimated present worth cost to implement the proposed remedy is \$4,770,000. The cost to construct the remedy is estimated to be \$1,930,000 and the estimated average annual costs for 7 years is \$456,000.

The elements of the selected remedy are as follows:

- A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Implement in-situ chemical oxidation of the highest concentrations of VOCs (defined as the limits of the 1,000 ug/L PCE isoconcentration line) within the OU2 contaminant plume.
- Implement a soil vapor intrusion assessment to provide additional characterization for the potential for soil vapor intrusion and installation of mitigation systems, as necessary.
- Imposition of an institutional control in the form of an environmental easement on OU1 that will require (a) compliance with the approved site management plan; (b) document the existing use and development restrictions that limit the use of groundwater without necessary water quality treatment as determined by the Nassau County Department of Health and (c) the Jimmy's Dry Cleaner property owner to complete and submit to the Department a periodic

certification of institutional and engineering controls.

- Development of a site management plan which will include the following institutional and engineering controls: (a) to address any residual contamination and use restrictions to be incorporated into the OU1 Site Management Plan (b) evaluate the potential for vapor intrusion at residences and buildings located within OU2, including provision for mitigation of any impacts identified; (c) monitoring of groundwater and soil vapor as needed; (d) provide operation and maintenance of any mitigation system that may be required; and (e) provisions for the continued proper operation and maintenance of the components of the remedy.
- The Jimmy's Dry Cleaners property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.
- Since the remedy may result in untreated hazardous waste remaining at the site, a long-term groundwater monitoring program will be instituted. This program will allow the effectiveness of the remedy to be monitored and will be a component of the long-term management for the site.

## **SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION**

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A public meeting was held on March 5, 2008 to present and receive comments on the PRAP
- The period during which public comments on the PRAP were received was February 8, 2008 through March 12, 2008
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP

**Table 1**  
**Remedial Alternative Costs**

<b>Remedial Alternative</b>	<b>Capital Cost (\$)</b>	<b>Annual Costs (\$)</b>	<b>Total Annual Costs (\$)</b>	<b>Total Present Worth (\$)</b>
Alternative 1: No Action	NA	NA	NA	NA
Alternative 2: Monitored Natural Attenuation	\$490,000	\$150,000	\$1,590,000	\$2,080,000
Alternative 3: Enhanced In-Situ Biodegradation	\$1,650,000	\$433,000	\$4,600,000	\$6,250,000
Alternative 4: In-Situ Chemical Oxidation of Highest VOC concentrations in Groundwater	\$1,930,000	\$456,000	\$2,840,000	\$4,770,000
Alternative 5: Groundwater Extraction and Reinjection	\$9,260,000	\$486,000	\$4,390,000	\$13,650,000

DRAWING NUMBER 824324A25

APPROVED BY

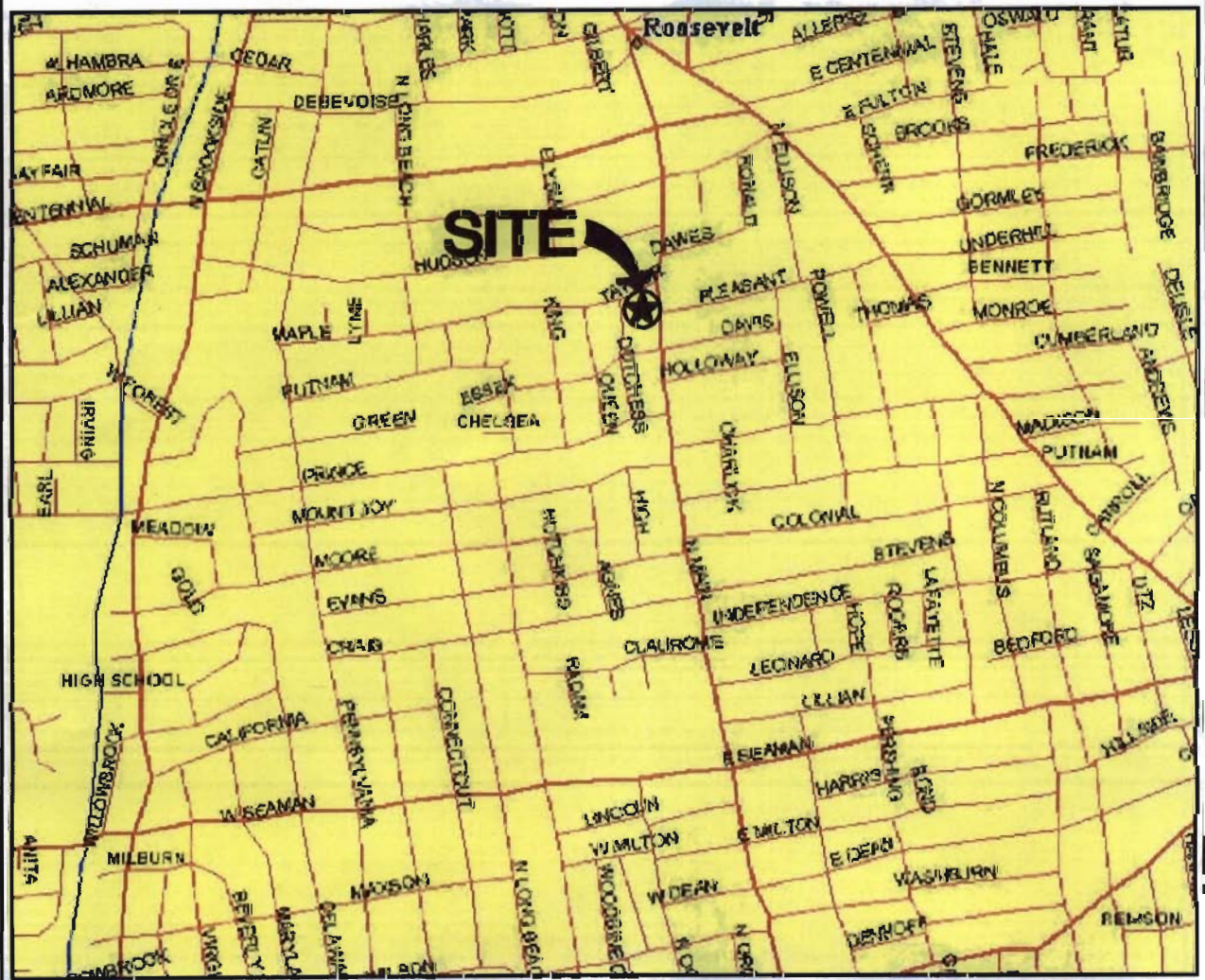
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DRAWN BY S. SHKOLNIK 02-13-03

OFFICE ALBANY, NY

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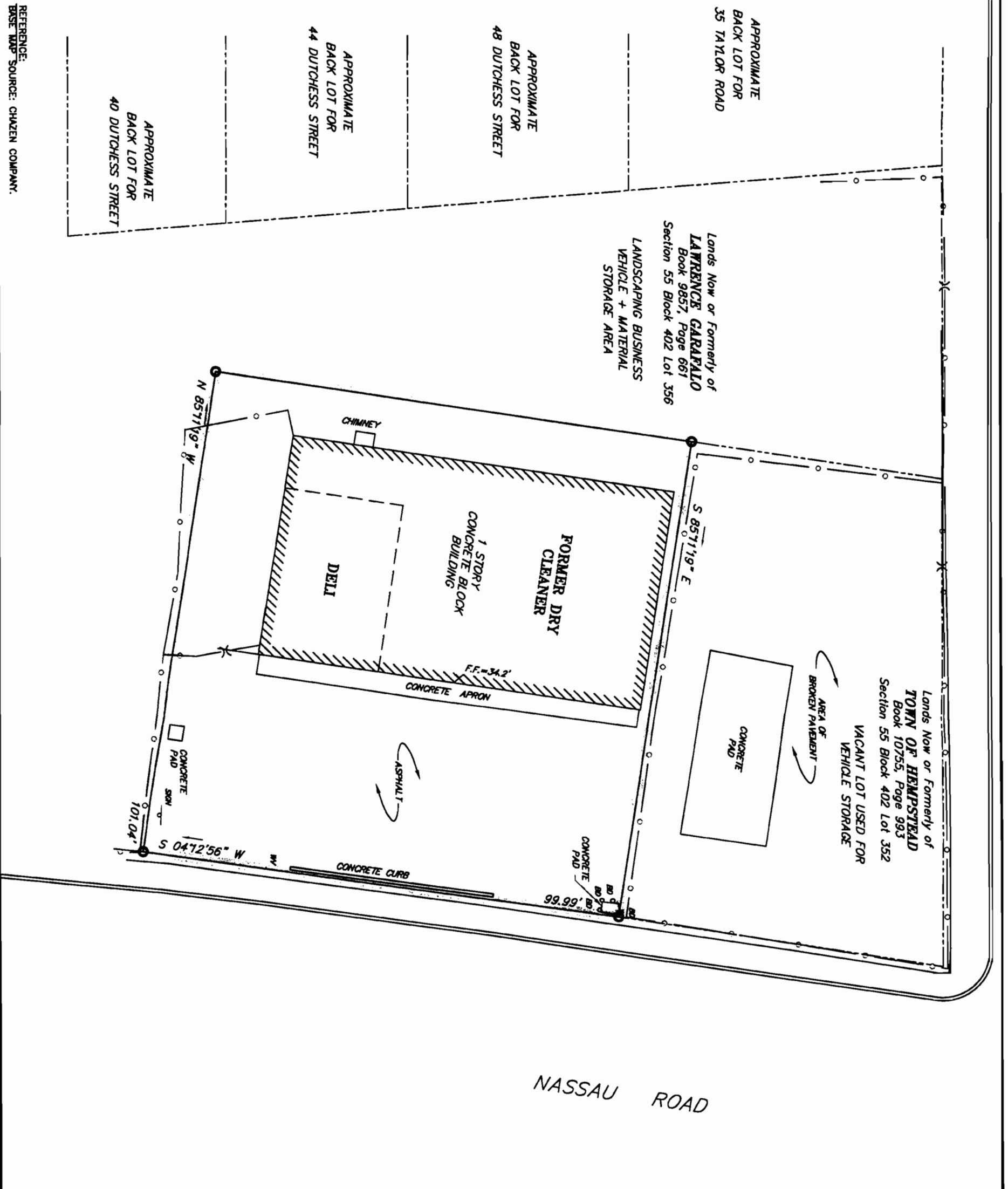
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MAP FROM DELORME'S MAP EXPERT,  
FREEPORT, MAINE.



NYSDEC  
JIMMY'S DRY CLEANER

FIGURE 1  
SITE LOCATION MAP  
ROOSEVELT, NEW YORK

OFFICE ALBANY, NY	DRAWN BY S. SHKOLNIK	CHECKED BY 04-28-03	APPROVED BY	DRAWING NUMBER 824324B10
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REFERENCE:  
 BASE MAP SOURCE: CHAZEN COMPANY.



**LEGEND:**

- — NO PHYSICAL BOUNDS
- — ADJACENT PROPERTY LINE
- — EXISTING FENCE
- — SITE PERIMETER

**Shaw Environmental, Inc.**

NYSDEC JIMMY'S DRY CLEANER

**FIGURE 2**  
 SITE MAP

ROOSEVELT, NEW YORK

# DIRECTION OF GROUNDWATER FLOW

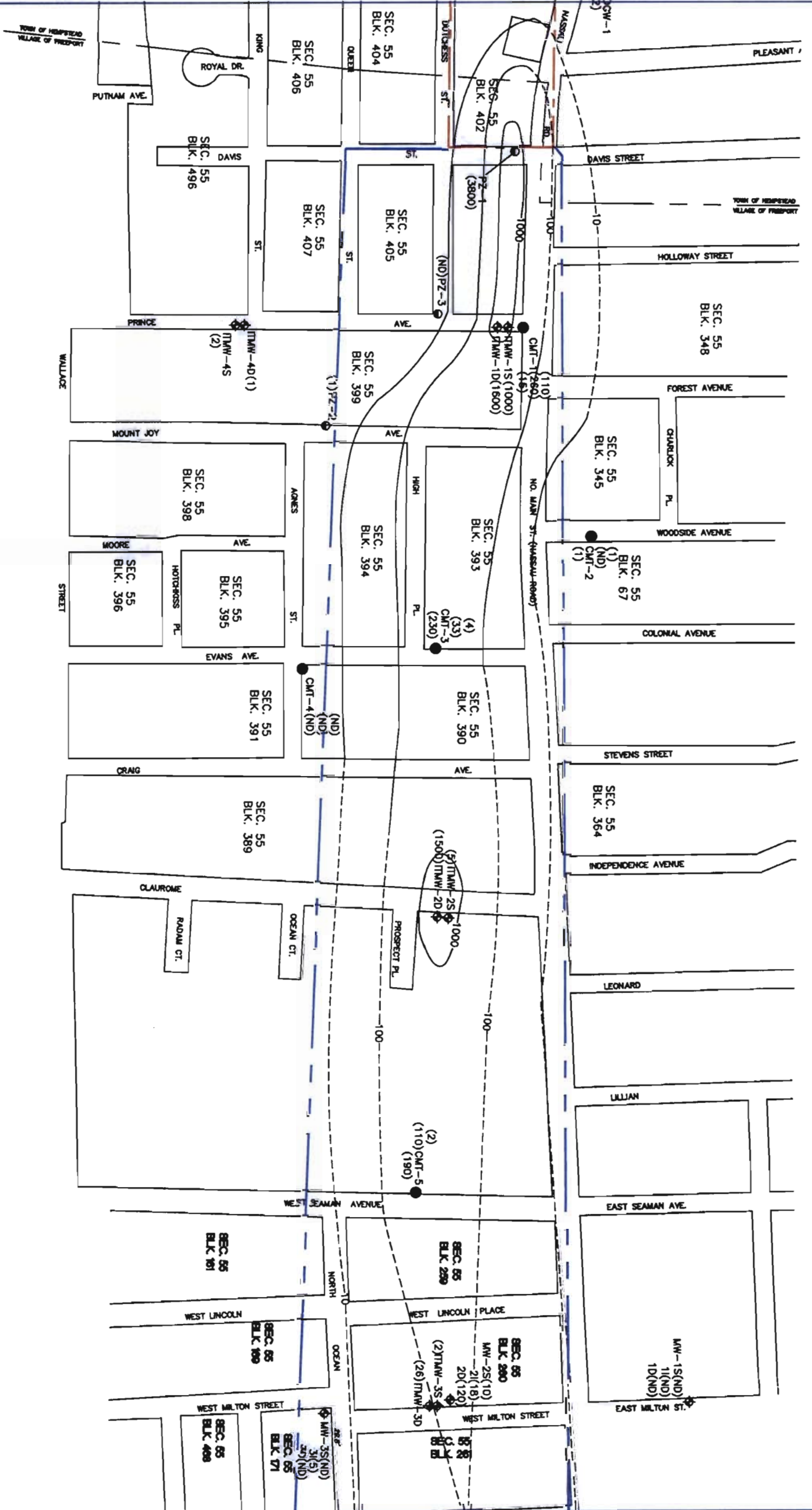


**REFERENCE:**

BASE MAP SOURCE: CHAZEN ENGINEERING & LAND SURVEYING CO., P.C. AND SHAW E&I ENGINEERING OF NY (FIGURE 1-3)

**NOTE:**

ONLY FORMER GROUNDWATER SAMPLE LOCATIONS ITDGW-1 AND ITDGW-26, PIEZOMETERS PZ-1 THRU 5, AND MONITORING WELLS 1S, 1D, 2S, 2D, 3S, 3D, 4S, AND 4D ARE STILL PRESENT. MW1, MW2, MW3 WELL NESTS SAMPLED IN JUNE 2007, OTHER DATA IS FROM FEB. 2007 SAMPLING EVENT.



**LEGEND:**

- CMT-7 CMT MONITORING WELL
- PZ-3 EXISTING PIEZOMETER
- ◆ EXISTING MONITORING WELL
- TAX MAP PROPERTY LINES
- OU1 BOUNDARY
- OU2 BOUNDARY
- CONCENTRATION OF PCE IN GROUNDWATER (ug/L)
- PCE ISOCONCENTRATION CONTOUR LINE (UG/L) (DASHED WHERE INFERRED)

FIGURE 3



FILE NO. 10653.36951.004  
OCTOBER 2007

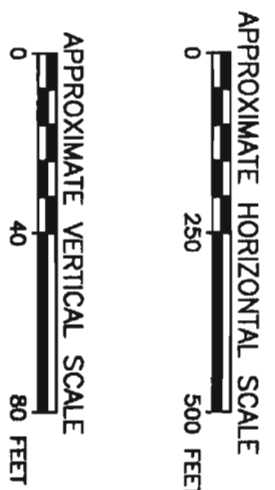
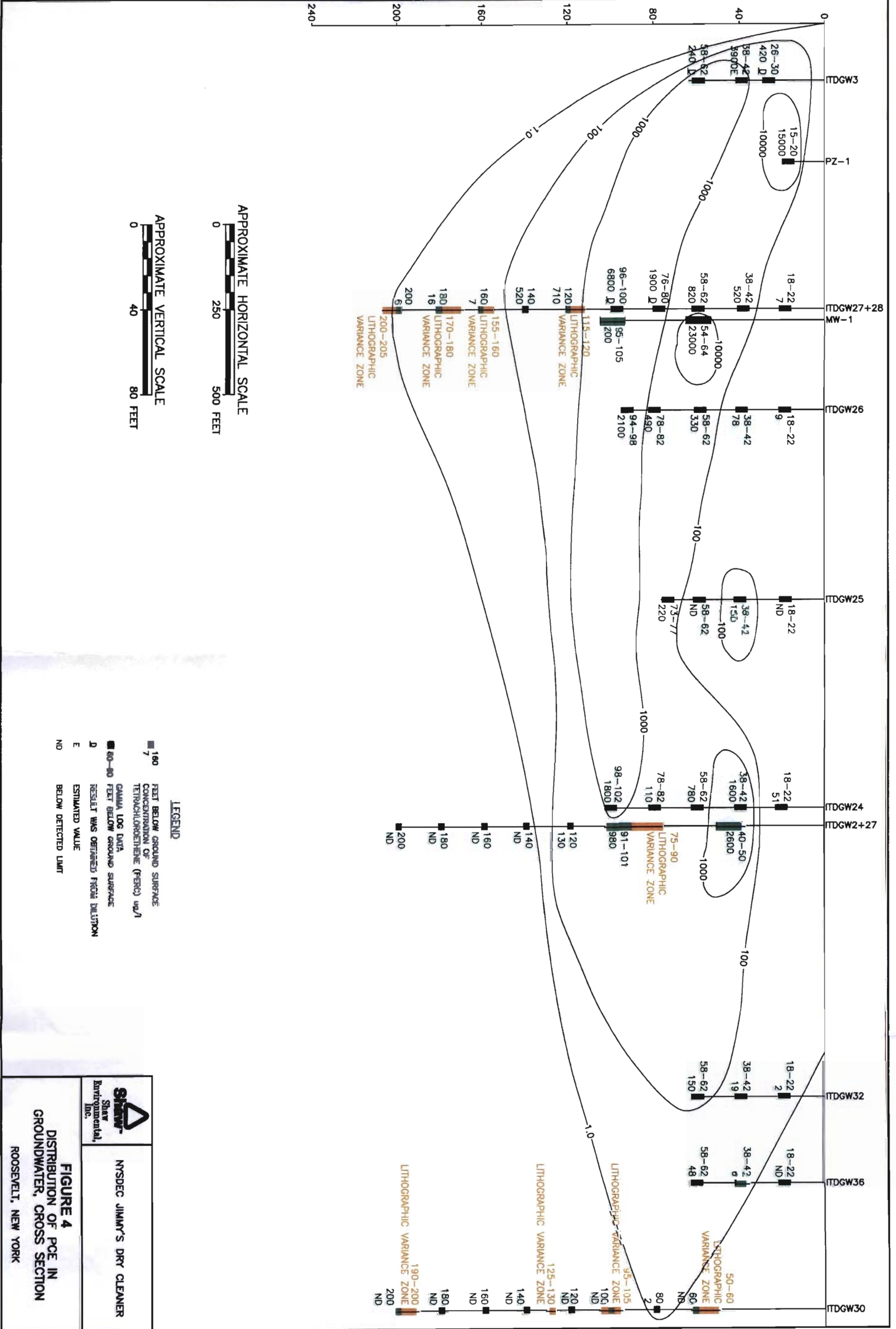


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JIMMY'S DRY CLEANERS  
NYSDEC WA#D004090-25  
ROOSEVELT, NEW YORK

PCE CONCENTRATIONS  
IN GROUND WATER

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
ALBANY, NY	S. SHKOLNIK	04-30-03		824324B17

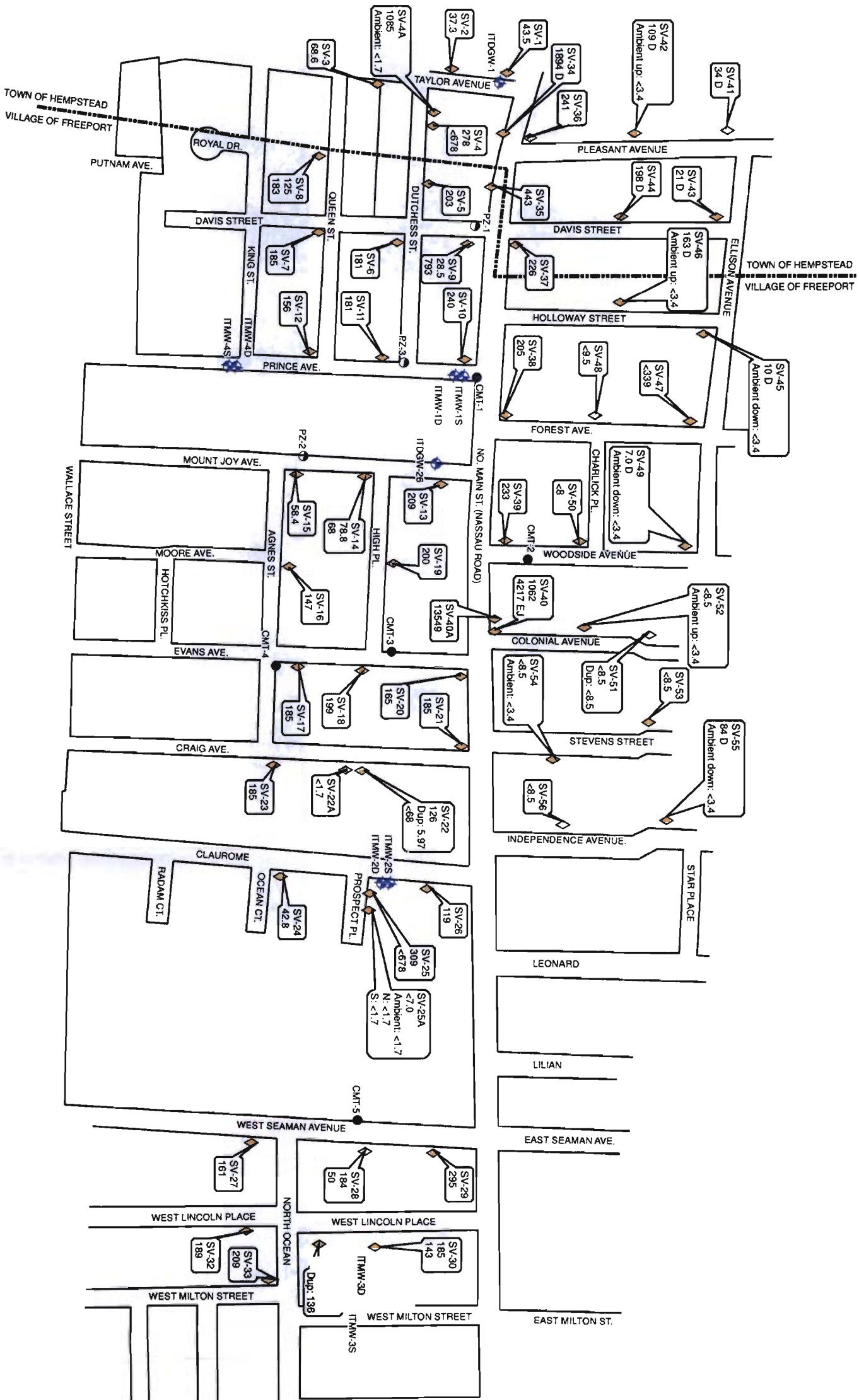


**LEGEND**

- 160 FEET BELOW GROUND SURFACE CONCENTRATION OF TETRACHLOROETHENE (PCE) (ug/l)
- 7 GAMMA LOG DATA
- 60-90 FEET BELOW GROUND SURFACE
- D RESULT WAS OBTAINED FROM DILUTION
- E ESTIMATED VALUE
- ND BELOW DETECTED LIMIT

	NYSDEC JIMMY'S DRY CLEANER ROOSEVELT, NEW YORK
	<b>FIGURE 4</b> DISTRIBUTION OF PCE IN GROUNDWATER, CROSS SECTION

This document was developed in color. Reproduction in BW may not represent the data as intended.

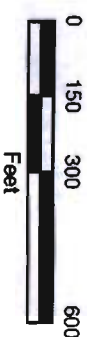


**FIGURE 5**

- Legend**
- SV-28  
119  
SOIL VAPOR PROBE AND PCE VALUE IN ug/m<sup>3</sup>
  - EXISTING PIEZOMETER
  - ⊕ EXISTING MONITORING WELL
  - EXISTING CMT MONITORING WELL
  - TOWN BOUNDARY
  - TAX MAP PROPERTY LINES

**JIMMY'S DRY CLEANERS  
ROOSEVELT, NEW YORK  
NYSDEC SITE #1-30-080**

**SOIL VAPOR RESULTS -  
TETRACHLOROETHYLENE (PCE)**



AUGUST 2007  
10653.3695.1





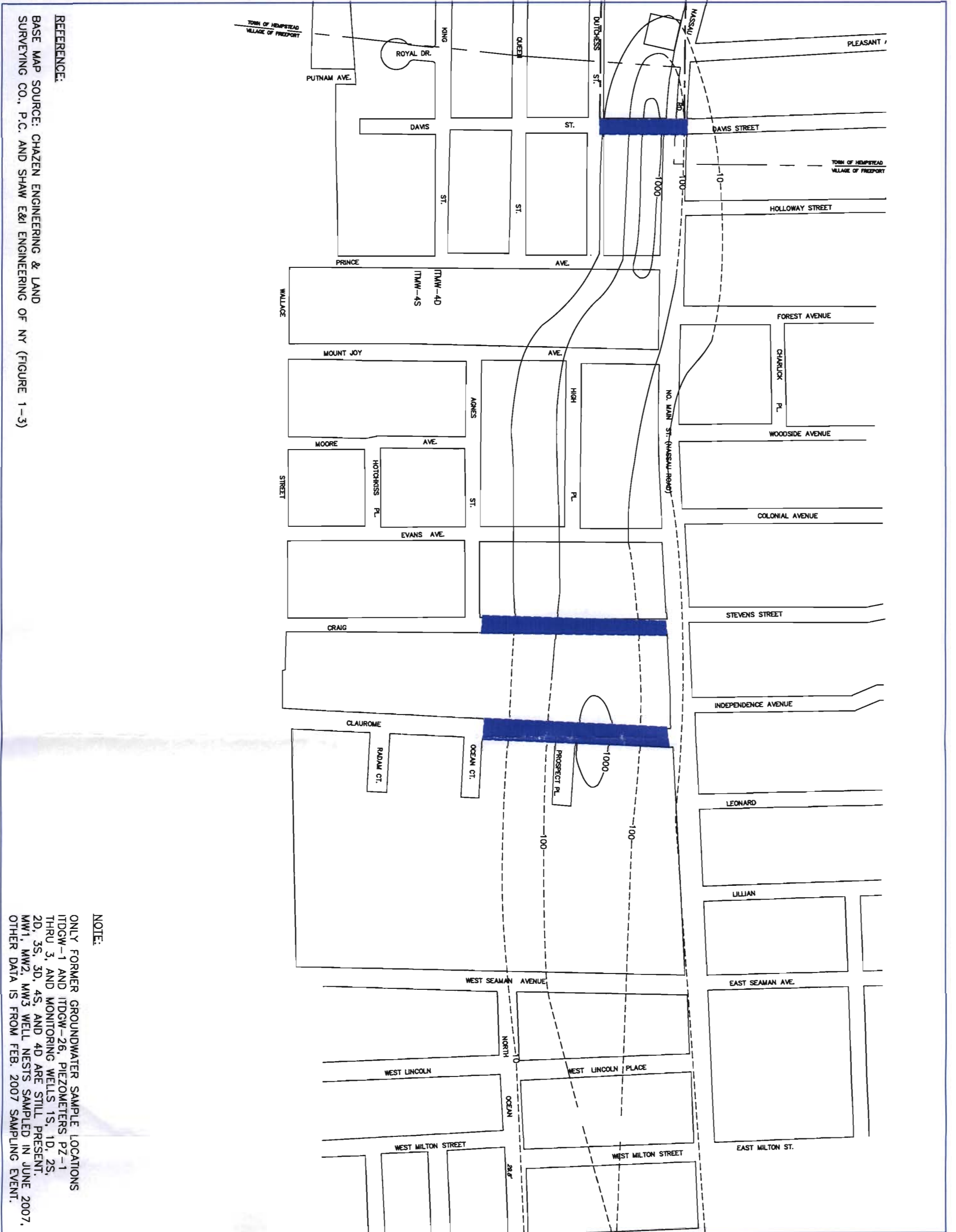


FIGURE 6



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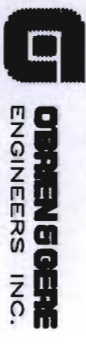
- TAX MAP PROPERTY LINES
- 1000 PCE ISOCONCENTRATION CONTOUR LINE (UG/L) (DASHED WHERE INFERRED)
- APPROXIMATE LOCATION OF CHEMICAL OXIDANT INJECTION

JIMMY'S DRY CLEANERS  
 NYSDEC WA#D004090-25  
 ROOSEVELT, NEW YORK

CHEMICAL OXIDANT  
 INJECTION LOCATIONS



FILE NO. 10653.36951.004  
 JANUARY 2008



2005 © O'Brien and Gere Engineers, Inc.

REFERENCE:

BASE MAP SOURCE: CHAZEN ENGINEERING & LAND SURVEYING CO., P.C. AND SHAW E&I ENGINEERING OF NY (FIGURE 1-3)

NOTE:

ONLY FORMER GROUNDWATER SAMPLE LOCATIONS ITDGW-1 AND ITDGW-26, PIEZOMETERS PZ-1 THRU 3, AND MONITORING WELLS 1S, 1D, 2S, 2D, 3S, 3D, 4S, AND 4D ARE STILL PRESENT. MW1, MW2, MW3 WELL NEETS SAMPLED IN JUNE 2007. OTHER DATA IS FROM FEB. 2007 SAMPLING EVENT.

# **APPENDIX A**

## **Responsiveness Summary**

# **RESPONSIVENESS SUMMARY**

**Jimmy's Dry Cleaners  
Operable Unit No. 2  
Roosevelt, Nassau County, New York  
Site No. 130080**

The Proposed Remedial Action Plan (PRAP) for the Jimmy's Dry Cleaner Operable Unit 2 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 8, 2008. The PRAP outlined the remedial measure proposed for the contaminated groundwater and soil vapor at the Jimmy's Dry Cleaner Operable Unit 2 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 5, 2008, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) 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 12, 2008.

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:**

Where is the majority of the contamination? Is the contamination in Roosevelt or Freeport?

**RESPONSE 1:**

The dry cleaning solvent tetrachloroethene (PCE) is the primary contaminant of concern. The source area (where the disposal of PCE is believed to have occurred) is located at the Jimmy's Dry Cleaners site in Roosevelt. The groundwater PCE plume extends south from the Jimmy's Dry Cleaners site (which is located in Roosevelt) into Freeport towards West Seaman Avenue.

**COMMENT 2:**

How do you treat such a large plume?

**RESPONSE 2:**

With a plume as large as the Jimmy's Dry Cleaner Plume, it is important to cut off the source of the groundwater contamination then treat the remaining contamination. At the Jimmy's Dry Cleaner site, the source area is located on the property. The source area will be treated with in-situ chemical oxidant injection and a soil vapor extraction system. This will be performed under the ROD for OU1. Once the source area remediation is underway, the off-site groundwater

plume can be remediated. In-situ chemical oxidant injection will also be used to treat the off-site groundwater plume.

**COMMENT 3:**

How many times has chemical oxidant injection been used? Where has it been used?

**RESPONSE 3:**

In-situ chemical oxidant injection has been used and proven effective at many sites throughout the United States. This technology has been determined by the Department to be a presumptive remedy (i.e. proven and cost-effective) for chlorinated solvent groundwater plumes, such as the one at the Jimmy's Dry Cleaner Site. This technology is currently being used at the 100 Oser Avenue Site in Hauppauge New York to treat a PCE groundwater plume. Other remedial projects are underway or planned.

**COMMENT 4:**

At other similar sites, was this remedy used in a commercial or residential area? Are any of the sites similar in nature to the Jimmy's Dry Cleaner Site?

**RESPONSE 4:**

This in-situ chemical oxidation injection has been used in both commercial and residential areas. The 100 Oser Avenue Site is similar in nature to the Jimmy's Dry Cleaner site; the source area was located in a commercial area that abutted a residential area, and the off-site groundwater plume has migrated under the neighboring residential area.

**COMMENT 5:**

Where will the Chemical Oxidant Injection System be installed? Will it be installed in resident's homes?

**RESPONSE 5:**

The chemical oxidant injection system wells will be located in the public right of ways along the streets that cross the groundwater plume. The exact locations will be determined during the remedial design process. The system will not be installed in residents' homes.

**COMMENT 6:**

With a chemical oxidant injection system, what do you inject into and where?

**RESPONSE 6:**

The chemical oxidant injection system will inject the chemical oxidant (i.e., potassium permanganate, sodium permanganate, persulfate) into the groundwater at multiple depths to target the areas of contamination.

**COMMENT 7:**

Who is responsible for inspecting businesses that use PCE?

**RESPONSE 7:**

The Nassau County Department of Health regulates dry cleaners that use perc (or PCE) under the Article XI program. The Nassau County Department of Health routinely inspects dry

cleaning operations. It was through their inspections that the improper disposal of PCE at Jimmy's Dry Cleaners was found. Not all businesses that use perc are required to report their use and may not be subject to inspection by a governmental agency.

**COMMENT 8:**

What does the system currently installed at Jimmy's Dry Cleaners do?

**RESPONSE 8:**

A soil vapor extraction (SVE) system is currently in operation as an interim remedial measure (IRM). The SVE system was installed to address PCE contaminated soil vapor that is migrating from the site toward the neighboring structures.

**COMMENT 9:**

In 2002-2003 the NYSDEC collected air samples from my homes. Why?

**RESPONSE 9:**

In 2002-2003 the Department collected indoor air samples to assess indoor air quality in buildings in the vicinity of Jimmy's Dry Cleaners.

**COMMENT 10:**

What area is covered by the current SVI assessment?

**RESPONSE 10:**

The current SVI assessment begins on Taylor Avenue north of the Jimmy's Dry Cleaners site and extends south through Ocean Court and Prospect Place. Nassau Street is the eastern boundary of the assessment area, while Queen Street and Agnes Street are the western border.

**COMMENT 11:**

Will commercial and residential buildings be included in the SVI assessment?

**RESPONSE 11:**

Yes, owners of the commercial and residential buildings located within the assessment area have been asked to participate in the assessment.

**COMMENT 12:**

Do houses north of the Jimmy's Dry Cleaner on Taylor Avenue need to be tested for SVI?

**RESPONSE 12:**

Homes upgradient of Jimmy's Dry Cleaner facility on Taylor Avenue have been included in the request for air sampling program. The groundwater upgradient to the site has been determined to meet groundwater quality standards; however, the extent of a vapor plume has not yet been defined and could extend north of the site. To document that there is not a soil vapor intrusion concern upgradient of the site, access for air quality sampling is being requested at a limited number of homes near the facility. Unless the assessment of the homes on Taylor Avenue indicates a potential problem, the homes further north do not need to be tested.

The NYSDEC and NYSDOH continue to request homeowners and business owners within the defined OU2 plume boundaries to provide access for indoor air and sub slab testing to better understand if soil vapor intrusion is a pathway of concern for the community.

**COMMENT 13:**

Do you know what the health impacts of these chemicals would be if a person were to be exposed to these chemicals? What health affects can be contributed to the chemicals?

**RESPONSE 13:**

Tetrachloroethene (PCE) and trichloroethene (TCE) are the primary contaminants in the OU2 groundwater plume. These compounds could present inhalation concerns to the community if soil vapor intrusion is occurring. PCE and TCE both result in central nervous system (CNS) and liver impacts at levels a thousand to ten thousand times higher than any indoor air concentrations measured in the vicinity of Jimmy's Dry Cleaners. Most human exposure data results from workplace environments, where high levels and daily contact exposures occur. With TCE, long term exposure to 40,000 micrograms/cubic meter ( $\mu\text{g}/\text{m}^3$ ) results in reduced scores on motor coordination tasks, nausea, headaches and dizziness. With PCE, reduced coordination scores and biochemical changes in blood and urine occurred at 50,000  $\mu\text{g}/\text{m}^3$ . Limited studies indicate high levels of TCE exposure over long periods of time show an association with increased risks of certain types of cancers: kidney, liver, esophagus and Non-Hodgkin's lymphoma. Limited studies of PCE show a slightly increased risk of some times types of cancers (esophagus, bladder, non-Hodgkin's lymphoma; possibly cervix, tongue and lung) and reproductive effects.

**COMMENT 14:**

If I introduced you to a group of people who have been exposed to high levels of chemicals, would you interview them and collect any health data? I am looking for people interested in the facts and willing to document these cases.

**RESPONSE 14:**

This question does not deal with impacts from the Jimmy's site. However, the contact information of the questioner was forwarded to staff of the NYSDOH Bureau of Environmental and Occupational Epidemiology for their consideration.

# **APPENDIX B**

## **Administrative Record**

# **Administrative Record**

## **Jimmy's Dry Cleaners Operable Unit No. 2 Site No. 130080**

1. Proposed Remedial Action Plan for the Jimmy's Dry Cleaners site, Operable Unit No. 2, dated February 2008, prepared by the Department.
2. RI/FS Workplan For Jimmy's Dry Cleaner, dated July 20, 2001, prepared by IT Corporation
3. Remedial Investigation Report Jimmy's Dry Cleaners, August 2003, prepared by Shaw Environmental & Infrastructure Engineering of New York, P.C.
4. Feasibility Study Report Jimmy's Dry Cleaners Operable Unit 1, January 2004, prepared by Shaw Environmental & Infrastructure Engineering of New York, P.C.
5. Record of Decision for the Jimmy's Dry Cleaners Site, Operable Unit No.1, dated March 2004, prepared by the Department.
6. Feasibility Study Report Jimmy's Dry Cleaners Operable Unit 2, November 2007, prepared by O'Brien and Gere
7. Supplemental Feasibility Study Sampling Report – OU1 and OU2, October 2007, prepared by O'Brien and Gere