



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
 DIVISION OF ENVIRONMENTAL REMEDIATION  
**PRAP/ROD ROUTING SLIP**



TO: Sal Ervolina, Assistant Division Director

FROM: The attached is submitted for your approval by:

NAME	INITIAL	DATE
Project Manager: Jamie Ascher	<i>JA</i>	2/17
Section Chief/RHWRE: Walter Parish	<i>WP</i>	2/17
Bureau Director: Chittibabu Vasudevan	<i>CV</i>	2/17/06

DATE: 2/7/2006

RE: **Site Name** Citizens Development Co.  
**City** Great Neck

**Site Code** 130070  
**County** Nassau

- **PRAP** \$9075 2/7 + 2/17/06  
 FINAL
- Draft PRAP
- Clean copy of the PRAP
- Redline/Strikeout version of the PRAP
- Copies of edits to PRAP (Sal's/Dale's)
- Site Briefing Report
- NYSDOH concurrence letter
- USEPA concurrence letter

PRAP Release Approvals

Ass't Div Director: *Sal Ervolina*  
 Sal Ervolina 2/21/06

Division Director: *Dale A. Desnoyers*  
 Dale A. Desnoyers

2/22/06

- ROD**
- Draft ROD
- Signature-ready copy of the ROD
- Redline/Strikeout version of the ROD
- Copies of edits to ROD (Sal's/Dale's)
- Site Briefing Report
- NYSDOH concurrence letter
- USEPA concurrence letter

ROD Signoff

Ass't Div Director: \_\_\_\_\_  
 Sal Ervolina

■ **BRIEFING**  
 Date: 2/15/06 Time: 3:00pm Room: 1220

c: Dale Desnoyers  
 Other reviewers who are invited to Briefing



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF ENVIRONMENTAL REMEDIATION  
**Site Briefing Report**



<b>Site Code</b>	130070	<b>Site Name</b>	Citizens Development Co.	
<b>Classification</b>	02	<b>Address</b>	47 Northern Boulevard	
<b>Region</b>	1	<b>City</b>	Great Neck	<b>Zip</b> 11020
<b>Latitude</b>	40:46:30:0	<b>Town</b>	North Hempstead	
<b>Longitude</b>	73:44:01:0	<b>County</b>	Nassau	<b>Project Manager</b> Jamie Ascher
<b>Site Type</b>	Structure			<b>Estimated Size</b> 1

### Site Description

The CDC site is located on Rt. 25a in Great Neck. The setting is primarily commercial, with strip malls and shopping centers the predominant features. The site building is a single story structure with a basement. It is currently occupied by a cellular phone company. A prior occupant, Cleanland Drive-In Cleaners, is the suspected source of tetrachloroethene found in on-site soil and groundwater.

Materials Disposed at Site	Quantity Disposed
TETRACHLOROETHYLENE {(PCE OR "PERC.")(F001)}	UNKNOWN

**Analytical Data Available for :** Groundwater, Soil

**Applicable Standards Exceeded for:** Groundwater, Drinking Water

### Assessment of Environmental Problems

Soil and groundwater has been contaminated with tetrachloroethene (PCE) by a former dry cleaners which occupied the facility. A ROD was issued in March 1998 for OU-1 which required continued groundwater monitoring. Spikes in PCE levels in shallow groundwater and the presence of PCE in soil gas led to the discovery of another on-site source area. Evaluation of deeper groundwater quality and remediation of soil and shallow groundwater are being undertaken as part of OU-2. IRMs are currently underway which include source remediation (SVE) and groundwater treatment (in-situ treatment). The Department has prepared a draft OU-2 PRAP.

### Assessment of Health Problems

Groundwater in the area is contaminated with tetrachloroethene (PCE), the dry cleaning chemical used by the facility. The Water Authority of Great Neck North (WAGNN) has public supply wells near the site which are contaminated with PCE and other volatile organic compounds (VOCs). Since 1984, WAGNN has used air stripping to remove contamination from the water prior to distribution to the community. Contaminated soils and sediments were removed from the site and concentrations of PCE in shallow groundwater on-site have decreased substantially. The concentrations of PCE remaining in site-related soils are low and do not pose a public health concern with respect to either soil ingestion or dermal contact. A soil vapor extraction (SVE) system was placed on-site to reduce PCE concentrations in indoor air in the on-site building and at an adjacent commercial building.

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## Remedy Description and Cost

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### Remedy Description for Operable Unit 02

A sub-slab SVE is mitigating soil vapor intrusion (PCE) as demonstrated by indoor air quality data. A soil gas survey revealed an additional contaminant source area in subsurface soil outside the facility. 77 tons of contaminated soil was removed via excavation and disposed of off-site, at a permitted facility. A SVE system was installed within the excavation to remediate residual soil contamination. Sodium permanganate is being injected into the soil and groundwater to further remediate residual soil and groundwater contamination.

<b>Total Cost</b>	\$65,200
<b>Capital Cost</b>	\$3,000
<b>OM&amp;M Cost</b>	\$25,600

### Issues / Recommendations

A No Further Action PRAP for OU-2 with continued operation of the SVE system is prepared.



# STATE OF NEW YORK DEPARTMENT OF HEALTH

Flanigan Square, 547 River Street, Troy, New York 12180-2216

Antonia C. Novello, M.D., M.P.H., Dr.P.H.  
*Commissioner*

Dennis P. Whalen  
*Executive Deputy Commissioner*

February 16, 2006

Mr. Dale Desnoyers, Director  
NYS Department of Environmental Conservation  
Division of Environmental Remediation  
625 Broadway, 12<sup>th</sup> Floor  
Albany, New York 12233-7011

Re: **Proposed Remedial Action Plan**  
Citizens Development Company  
Site #130070  
Great Neck, Nassau County

Dear Mr. Desnoyers:

Staff reviewed the February 2006 Proposed Remedial Action Plan (PRAP) for the former Citizens Development Company site in Great Neck, Nassau County. I understand the proposed remedy includes no further action with continued operation of the subslab soil vapor extraction (SVE) systems and additional groundwater treatment (via sodium permanganate injections) and monitoring. A site management plan will be developed to address components of the remedy, including periodic monitoring of soil vapor, indoor air and groundwater. An institutional control will be imposed in the form of an environmental easement to limit use and development of the property and submission of a periodic certification to the NYSDEC stating institutional and engineering controls are still in place.

Based on this information, I believe the proposed remedial action is protective of public health and concur with the plan.

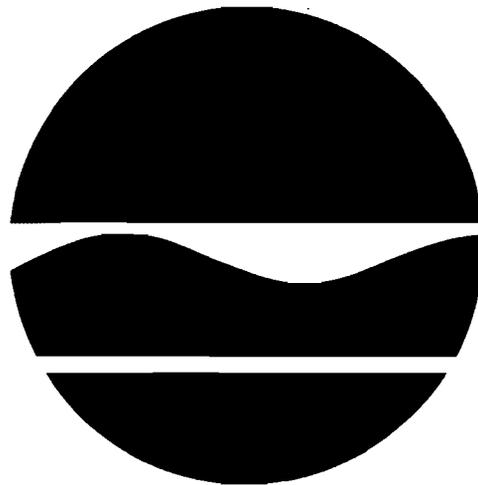
If you have any questions, please contact Mr. Richard Fedigan at (518) 402-7870.

Sincerely,

Steven M. Bates, Assistant Director  
Bureau of Environmental Exposure Investigation

**PROPOSED REMEDIAL ACTION PLAN**  
**Citizens Development Company**  
**Operable Unit No. 2**  
**University Gardens, Nassau County, New York**  
**Site No. 1-30-070**

February 2006



Prepared by:

Division of Environmental Remediation  
New York State Department of Environmental Conservation

# PROPOSED REMEDIAL ACTION PLAN

**Citizens Development Company  
Operable Unit No. 2  
University Gardens, Nassau County, New York  
Site No. 1-30-070  
February 2006**

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## **SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN**

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Citizens Development Company (CDC) site, Operable Unit No. 2 (OU-2). As more fully described in Sections 3 and 5 of this document, dumping of contaminated filter media resulted in the disposal of hazardous wastes, namely volatile organic compounds (VOCs). These wastes contaminated the soil and groundwater at the site and resulted in:

- a significant threat to human health associated with current and potential exposure to contaminated subsurface soil, soil gas and groundwater.
- a significant environmental threat associated with the impacts of contaminants to groundwater.

During the course of the investigation certain actions, known as interim remedial measures (IRMs), were undertaken at the CDC site in response to the threats identified above. An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the remedial investigation/feasibility study (RI/FS). The IRMs undertaken at this site included soil excavation, soil vapor extraction (SVE) and in-situ treatment of groundwater.

Based on the implementation of the above IRMs, the findings of the investigation of this site indicate that the site no longer poses a significant threat to human health or the environment. Therefore, No Further Action with continued operation of the SVE systems and additional treatment of groundwater is proposed as the remedy for this site.

The proposed remedy, discussed in detail in Section 6, 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.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the December 2001 "Operable Unit-2 Remedial Investigation/Feasibility Study Report", the May

2004 "Interim Remedial Measures Work Plan", the August 2004 "Interim Remedial Measures Supplemental Work Plan", the January 2005 "Interim Remedial Measures Report - Part A", the April 2005 "Interim Remedial Measures Report - Part B", and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

NYSDEC - Region 1  
SUNY, Building 40  
Stony Brook, NY 11790  
Monday-Friday, 8:30am-4:45pm  
(631) 444-0240

Great Neck Public Library  
475 Great Neck Road  
Great Neck, NY 11021  
(516) 466-8167  
(516) 466-8055

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from February 27, 2006 to March 27, 2006 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for March 14, 2006 at the Great Neck Public Library beginning at 7:00pm.

At the meeting, the results of the IRMs 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 Mr. Jamie Ascher at the above NYSDEC address through March 27, 2006.

The NYSDEC may modify the proposed remedy or select another based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record

of Decision (ROD). The ROD is the NYSDEC's final selection of the remedy for this site.

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

The Citizens Development Site (1-30-070) is located at 47 Northern Boulevard in the City of Great Neck, Town of North Hempstead, Nassau County, New York (Figure 1). The site consists of a 3,000 square foot single story facility. There is a basement within the building. The site is located in a mixed commercial/residential setting.

Two inactive hazardous waste disposal sites are located within one mile of the site. They are:

- Stanton Cleaners (1-30-072)
- Mayflower Cleaners (1-30-068)

OU-2, which is the subject of this document, consists of the investigation of deeper groundwater quality upgradient and downgradient of the site. OU-2 also addresses the additional remediation of subsurface soil undertaken in response to the identification of a new contaminant source area on-site and to elevated levels of tetrachloroethene (PCE) in shallow groundwater.

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: Operable Unit No. 1 (OU-1). OU-1 addressed the remediation of a previously identified contaminant source area in soil and its affect on shallow groundwater.

## **SECTION 3: SITE HISTORY**

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

Cleanland Drive-In Cleaners occupied the facility from approximately 1960 to 1976. During this time, the dry cleaners often stored PCE saturated

filter media on the unpaved rear yard of the site. In 1976 the facility burned down. The facility was rebuilt and from 1982 until 1984 was occupied by FlowerFashion, a commercial florist. Since 1984, the facility has been occupied by various tenants, none of which were associated with the use or discharge of hazardous wastes.

### **3.2: Remedial History**

November 1983 and January 1984: Nassau County Department of Health (NCDH) soil samples revealed elevated levels of PCE in surface soils in the rear yard of the facility.

April 1984 - December 1984: Soil and groundwater samples collected by the NCDH detected elevated levels of PCE. Approximately 75 cubic yards of contaminated soil were excavated from the rear yard and disposed of at a permitted facility.

January 1986 - May 1990: Under the oversight of the NYSDEC a groundwater extraction and treatment system was constructed on site. Treated groundwater was discharged to the municipal sewer system under a State Pollution Discharge Elimination System (SPDES) permit (NY-0206351).

December 1990 - February 1993: Additional soil and groundwater samples were collected on-site.

April 1993: Soil samples collected from an interior floor sump revealed elevated levels of PCE. Groundwater sampling data revealed elevated levels of PCE in groundwater.

April 12, 1993: The NYSDEC 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.

January 1995: The NYSDEC approved an IRM work plan for OU-1 which included the excavation of contaminated soil from an interior

floor sump and the installation of a soil vapor extraction system (SVE).

February 1996: The NYSDEC approved an IRM closure report for OU-1.

June 1997 - September 1997: An RI (OU-1) was conducted during which 15 groundwater monitoring wells were sampled.

March 1998: A ROD was issued for OU-1 which selected no further action with continued groundwater 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 NYSDEC and the Citizens Development Company entered into a Consent Order on September 29, 1994. The Order obligates the responsible parties to implement a full remedial program.

### **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 VOC contamination in deeper groundwater resulting from previous activities at the site. The OU-2 RI began in October 1999 but the conclusion was delayed due to a spike in PCE levels in shallow groundwater downgradient of the site and the discovery of another contaminant source area. The field activities and findings of the investigation are described in the RI report and the semi-annual groundwater monitoring reports.

The following activities were conducted during the RI:

- The collection of 29 indoor air samples and six outdoor air samples;
- A soil gas survey in the rear yard of the site;
- Collection of 15 post excavation subsurface soil samples;
- The collection of six discrete groundwater samples within the Upper Glacial Aquifer using the hydropunch method: and
- The construction and sampling of three deeper groundwater monitoring wells within the Upper Glacial Aquifer and the sampling of 12 pre-existing water table wells.

To determine whether the subsurface soil, soil vapor, groundwater and indoor air contains 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 NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.
- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".
- To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document.

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 required remediation. These are summarized below. More complete information can be found in the RI and IRM reports.

### **5.1.1: Site Geology and Hydrogeology**

The site is situated over the Upper Glacial and Magothy aquifers. The Upper Glacial aquifer is approximately 190 feet thick and is composed of stratified sands and gravel with intermittent silt lenses. Beneath the Upper Glacial aquifer lies the Magothy aquifer. The Magothy aquifer is composed of clay, silt and sandy clay. Coarse sand and gravels may exist in the lower portions of the aquifer. Beneath the Magothy aquifer lies the Raritan Formation, whose Raritan Clay member is a relatively impermeable confining layer composed of solid and silty clay. The site specific groundwater flow direction is generally northwest (Figure 2). Groundwater is encountered approximately 40'- 45' below land surface.

### **5.1.2: Nature of Contamination**

As described in the reports, soil, groundwater and indoor air samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs), specifically PCE.

### **5.1.3: Extent of Contamination**

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

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for waste, soil, and sediment, and micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) for air samples. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in subsurface soil, soil gas and indoor air and compares 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.

### Soil Gas/Air

November 2002: Indoor air samples taken from the first floor and basement of the site building contained PCE levels of 120 ug/m<sup>3</sup> and 280 ug/m<sup>3</sup>, respectively. Enhancement of the sub-slab SVE system resulted in significant reductions in PCE levels at both locations. In December 2005, PCE was detected at 2.5 ug/m<sup>3</sup> in the first floor and 1.6 ug/m<sup>3</sup> in the basement, well below the NYSDOH PCE guidance value of 100 ug/m<sup>3</sup> and within background concentrations for PCE in indoor air (Table 3).

November 2003: In response to elevated levels of PCE in groundwater and in indoor air, a soil gas survey was conducted in the rear yard to determine if an additional source of contamination existed. Eight locations in the rear yard were sampled with the following range of PCE 1,100 ug/m<sup>3</sup> to 2,400,000 ug/m<sup>3</sup>.

### Subsurface Soil

Subsurface soil quality was initially characterized through soil gas sampling in November 2003. In August 2004, 77 tons of contaminated soil was excavated from the rear yard. Thereafter, 15 post excavation confirmatory soil samples were collected from the base and sidewalls of the contaminant source area. These samples revealed PCE levels in soil ranging from 0.053 ppm to 27 ppm (Figure 3). Physical constraints posed by the site complicated further excavation, therefore, a SVE system was constructed in the base of the excavation to remediate residual soil contamination (Figure 4). When air emissions from the SVE system reach asymptotic conditions, additional confirmatory soil samples will be collected to ensure compliance with TAGM #4046 Recommended Soil Cleanup Objectives.

### Groundwater

As previously discussed, the original focus of OU-2 was to evaluate groundwater quality within the Upper Glacial aquifer. The investigation of deeper groundwater was accomplished through a sampling technique known as the hydropunch method. This sampling method allows groundwater samples to be collected at discrete depths within the aquifer.

In October 1999, hydropunch samples were collected approximately 25' and 50' below the water table (bwt) at upgradient location HP-1 and downgradient locations HP-2 and HP-3. A permanent monitoring well (MW-4D) was constructed adjacent to HP-2 at approximately 95' bwt (Figure 2).

PCE was non detect in HP-1S (25' bwt) and 6 ppb in HP-1I (50' bwt). At HP-2S (25' bwt), PCE was detected at 100 ppb and 740 ppb in HP-2I (50' bwt). PCE was detected at 3.1 ppb in MW-4D. At HP-3S (25' bwt), PCE was detected at 4.9 ppb and 6.3 ppb in HP-3I (50' bwt) (Table 2).

Groundwater samples collected in October 2000 revealed that PCE levels had increased in downgradient MW-3 (820 ppb). Additional samples collected in July 2001 revealed elevated levels of PCE in MW-2 (210 ppb), MW-3 (400 ppb) and MW-4 (620 ppb).

In October 2004, in-situ treatment of groundwater began via injection of sodium permanganate (Figure 4). Groundwater samples collected after several applications of sodium permanganate revealed significant reductions in PCE levels.

In December 2005, two permanent monitoring wells, MW-4S (30' bwt) and MW-4I (45' bwt) were constructed at location HP-2. MW-4S had PCE at 0.48 ppb and MW-4I had a PCE concentration of non-detect. MW-4D had 0.75 ppb of PCE during this round of sampling.

During the most recent sampling, in December 2005, PCE was detected in MW-2 at 35.6 ppb, in

MW-3 at 9.3 ppb and in MW-4 at 45.4 ppb. The SCG for PCE in groundwater is 5 ppb.

## **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.

Mitigation measures were taken at the on-site building, to address current human exposures (via inhalation) to volatile organic compounds associated with soil vapor intrusion. In November 2003, the blower motor on the existing sub-slab SVE system was upgraded to better capture sub-slab soil gas. This improvement resulted in significantly reducing PCE levels in indoor air (Table 3).

August-September 2004: 77 tons of contaminated soil was excavated and disposed of off-site at a permitted disposal facility. A total of 15 post-excavation confirmatory end point soil samples were collected with PCE levels ranging from 0.053 ppm to 27 ppm (Figure 3). Physical constraints posed by the site made further excavation difficult to undertake. Therefore, prior to backfilling, horizontal piping was installed in the base of the excavation so that SVE could be applied to the residual soil contamination (Figure 4).

October 2004: To further facilitate remediation of subsurface soil and to remediate shallow groundwater, 27 injection points were installed in the rear yard for the injection of sodium permanganate into soil and groundwater (Figure 4). Sodium permanganate is a strong oxidizer which treats PCE in soil and groundwater converting it to carbon dioxide and harmless by-products.

## **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 7.2 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.

No exposures are expected for individuals drinking groundwater since the area is served with public water which is treated prior to distribution. Historically, tenants were exposed to PCE in indoor air at levels above 100 ug/m<sup>3</sup> in the on-site building and in businesses adjacent to the site. As an IRM, the SVE system already in place was upgraded to include remediation of on-site and off-site soil vapor. The IRM has reduced indoor air contamination to within background concentrations. Indoor air monitoring will continue for the previously impacted buildings.

## **5.4: Summary of Environmental Impacts**

There are no environmental receptors immediately downgradient of the site which are endangered by site related contaminants.

Site related contamination has impacted the groundwater resource in the Upper Glacial aquifer. Groundwater from this aquifer is utilized as a source of drinking water in the area. The United States Environmental Protection Agency has designated Long Island's aquifer system as a sole source aquifer.

## **SECTION 6: SUMMARY OF THE REMEDIATION GOALS AND PROPOSED REMEDY**

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. 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.

Prior to the completion of the IRMs described in Section 5.2, the remediation goals for this site were to eliminate or reduce to the extent practicable:

- exposures of persons to PCE in indoor air within the site building or adjacent buildings;
- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards;
- the release of contaminants from subsurface soil into indoor air and ambient air through soil vapor; and
- reduction of PCE levels in groundwater to concentrations meeting the ambient water quality standard.

The NYSDEC believes that the IRMs undertaken during OU-2 have accomplished these remediation goals provided that they continue to be operated and maintained in a manner consistent with the design.

The main SCGs applicable to this project are as follows:

- ambient groundwater quality standards;
- TAGM #4046 Determination of Soil Cleanup Objectives and Cleanup Levels; and
- To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document.

While previous applications of sodium permanganate have already effectively reduced PCE concentrations in groundwater, additional applications are expected to further reduce PCE concentrations to levels meeting the remedial goal.

Excavation of the contaminant source area has removed the majority of subsurface soil contamination. Continued operation of the SVE system constructed within the source area will reduce residual soil contamination to levels meeting the recommended soil cleanup objective prescribed in TAGM #4046.

Enhancement and continued operation of the sub-slab SVE system has been proven to be effective in reducing PCE levels in indoor air within the site building and within adjacent buildings.

The following element of the IRMs already completed has achieved the remediation goals and satisfies the SCGs for the site:

- Enhancement of the sub-slab SVE system has reduced PCE levels in indoor air

within the site building and adjacent buildings to levels below the SCG.

Based on the results of the investigations at the site, the IRMs that have been performed, and the evaluation presented here, the NYSDEC is proposing No Further Action with continued operation of the SVE systems and additional treatment and monitoring of groundwater and indoor air as the preferred alternative for the site.

The basis for this proposal is the NYSDEC's conclusion that No Further Action with continued operation of the SVE systems and additional groundwater treatment would be protective of human health and the environment and would satisfy all SCGs, as described above. Overall protectiveness is achieved through meeting the remediation goals listed above.

Implementation of the No Further Action alternative, when projected over a period of three years, would require a capital cost of approximately \$3,000, operation, maintenance and monitoring of \$25,600 and a total present worth of \$65,200.

The NYSDEC concludes that No Further Action is needed other than a site management plan and the institutional and engineering controls listed below.

- Continued operation of the sub-slab SVE system to mitigate vapor intrusion into the site building and adjacent buildings.
- Continued operation of the SVE system installed in the contaminant source area until such time that confirmatory soil samples demonstrate that soil quality meets the remedial goals.
- Additional in-situ treatment of groundwater via injections of sodium permanganate, as necessary.
- Development of a site management plan to provide for the operation and maintenance of the components of the remedy, including periodic monitoring of soil gas, indoor air and groundwater.
- Imposition of an institutional control in the form of an environmental easement that would require compliance with the approved site management plan; restrict the use of groundwater as a source of potable or process water without necessary water quality treatment; and require the property owner to complete and submit to the NYSDEC a periodic certification.
- The property owner would provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the engineering controls, are still in place, allow the NYSDEC access to the site, and 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.
- The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

**TABLE 1**  
**Nature and Extent of Contamination**

<b>SUBSURFACE SOIL</b>	<b>Contaminants of Concern</b>	<b>Concentration Range Detected (ppm)<sup>a</sup></b>	<b>SCG<sup>b</sup> (ppm)<sup>a</sup></b>	<b>Frequency of Exceeding SCG</b>
<b>Volatile Organic Compounds (VOCs)</b>	PCE	0.053 to 27	1.4	12 of 15
	Aug-Sept 2004 (post IRM)			

<b>SOIL GAS</b>	<b>Contaminants of Concern</b>	<b>Concentration Range Detected (µg/m<sup>3</sup>)<sup>a</sup></b>	<b>SCG<sup>b</sup> (µg/m<sup>3</sup>)<sup>a</sup></b>	<b>Frequency of Exceeding SCG</b>
<b>Volatile Organic Compounds (VOCs)</b>	PCE	1,100 to 2,400,000	1.7 - 11	8 of 8

<b>AIR</b>	<b>Contaminants of Concern</b>	<b>Concentration Range Detected (µg/m<sup>3</sup>)<sup>a</sup></b>	<b>SCG<sup>b</sup> (µg/m<sup>3</sup>)<sup>a</sup></b>	<b>Frequency of Exceeding SCG</b>
<b>Volatile Organic Compounds (VOCs)</b>	PCE	0.5 - 280	*	4 of 29

<sup>a</sup> ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil

ug/m<sup>3</sup> = micrograms per cubic meter, ND=non detect

<sup>b</sup> SCG = standards, criteria, and guidance values

\* = To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document

Citizens Development Company - PCE in Groundwater - Table 2

	10/99	10/00	11/00	7/01	10/02	1/03	12/03	6/04	10/04	11/04	12/04	3/05	4/05	5/05	6/05	12/05
MW-1A						61.4	53.6	66.5	NS	NS	60.2	NS	NS	NS	14.3	4
MW-1B											92.8	NS	NS	NS	NS	NS
MW-1C	31	7	NS	NS	11.6	16.1	52	6.5	NS	NS	9.5	NS	NS	NS	1.3	1.2
MW-1D											17.6	NS	NS	NS	NS	NS
HP-1S	ND															
HP-1I	6															
MW-2	51	16	NS	210	146	31.3	5.5	529	NS	NS	189	NS	NS	NS	280	35.6
MW-3	140	820	490	400	162	197	ND	306	NS	NS	60.2	NS	NS	NS	53.4	9.3
MW-4	140	41	410	620	464	49	544	480	670	610	640	460	290	190	8.9	45.4
HP-2S	100															
HP-2I	740															
MW-4S																0.48
MW-4I																ND
MW-4D			3.1	NS	NS	3	1.8	27.5	NS	NS	63.3	NS	NS	NS	5.7	0.75
MW-5		ND	NS	NS	NS	1.6	NS	1.4	NS	NS	NS	NS	NS	NS	1.5	NS
MW-6	56	NS	NS	NS	NS	34.5	NS	10.4	NS	NS	NS	NS	NS	NS	3.7	NS
HP-3S	4.9															
HP-3I	6.3															
MW-7	36		2.1			16.9									19.1	NS
MW-8	ND	ND	NS	NS	NS	1.2	NS	0.48	NS	NS	NS	NS	NS	NS	12.8	NS
MW-10						2.9	NS	NS	NS	NS	NS	NS	NS	NS	3.7	NS

PCE concentrations in ppb  
 ND=non detect NS=not sampled

**Table 3**  
**Citizens Development Co./Flower Fashion Site**  
**Summary of Perchloroethene Indoor Air Readings**  
**Units - ug/m3**

Sample #:	PDM-1	PDM-2	PDM-3	PDM-4	PDM-5	PDM-6*
Location:	AT&T	AT&T	Heath Nut	55 No. Blvd. NW test rm.	55 No. Blvd. Reception	Outdoors
Level:	(Ground Fl.)	(Downstairs)	(Ground Fl.)	(Downstairs)	(Downstairs)	NA

<u>Date</u>						
11/20/02	120	280	NA	170	150	7
12/02/03	27	18	4	47	47	6.4
06/15/04	22	27	6.6	39	39	10
12/17/04	47	52	5.5	70	91	2.6
06/23/05	4.5	8.3	1.4	8.8	10	5.7
12/13/05	2.5	1.6	<0.5	6.2	6.2	<0.5

**Notes:**

- 1-AT&T store now known as Cingular
- 2-Subslab venting system in basement of AT&T installed during the Spring of 2002
- 3-SVE system in rear yard installed January 2005
- 4-November 20, 2002 samples collected and analyzed by NYSDOH

\* - Outdoor air sample

NA - Not Analyzed

LITTLE  
NECK  
BAY



QUEENS CO  
NASSAU CO

Citizens Development Company Site

11020

11368

11362

31

30N

31

32

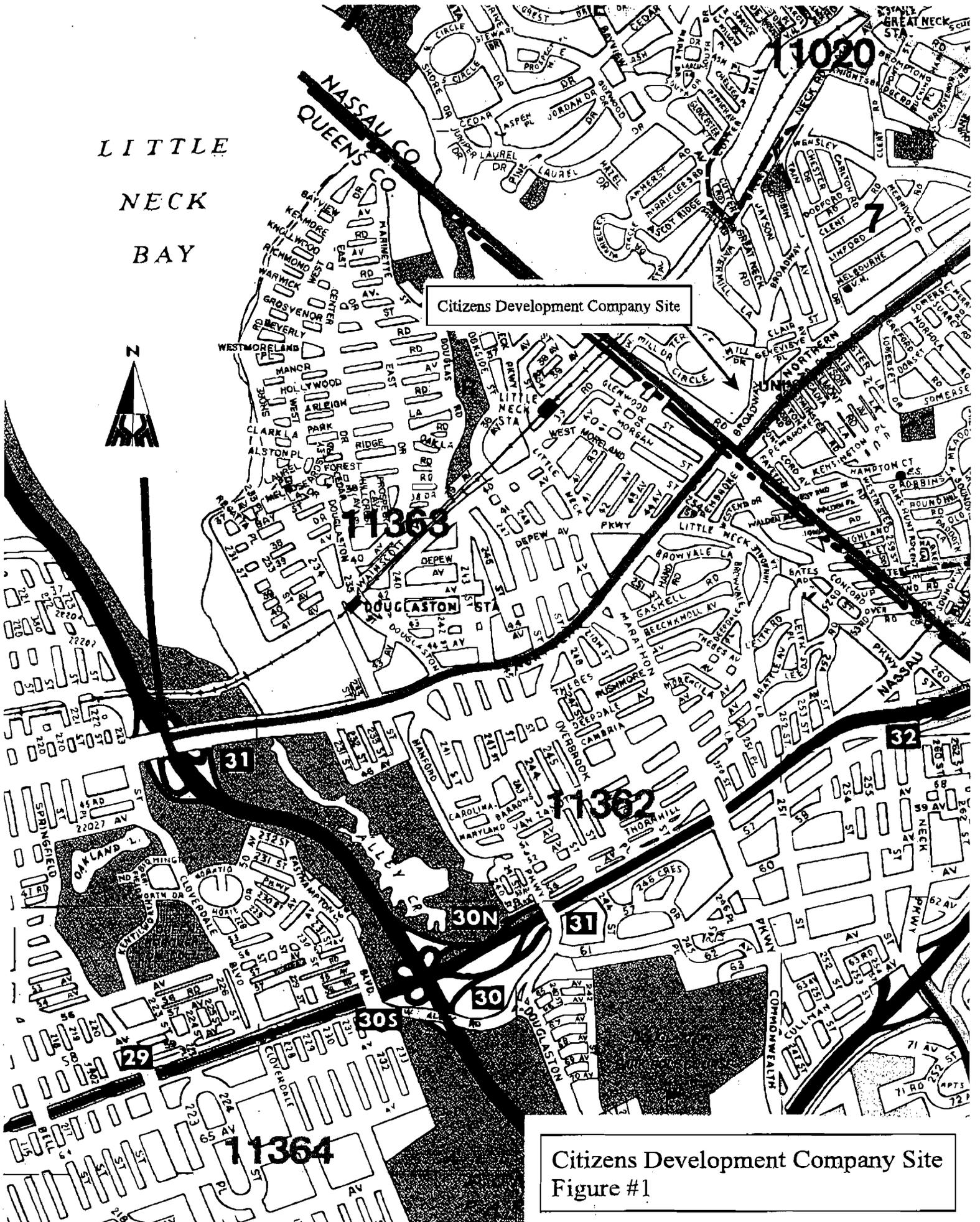
30

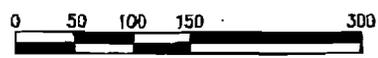
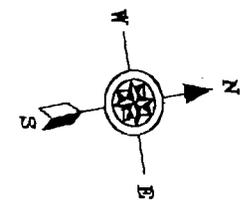
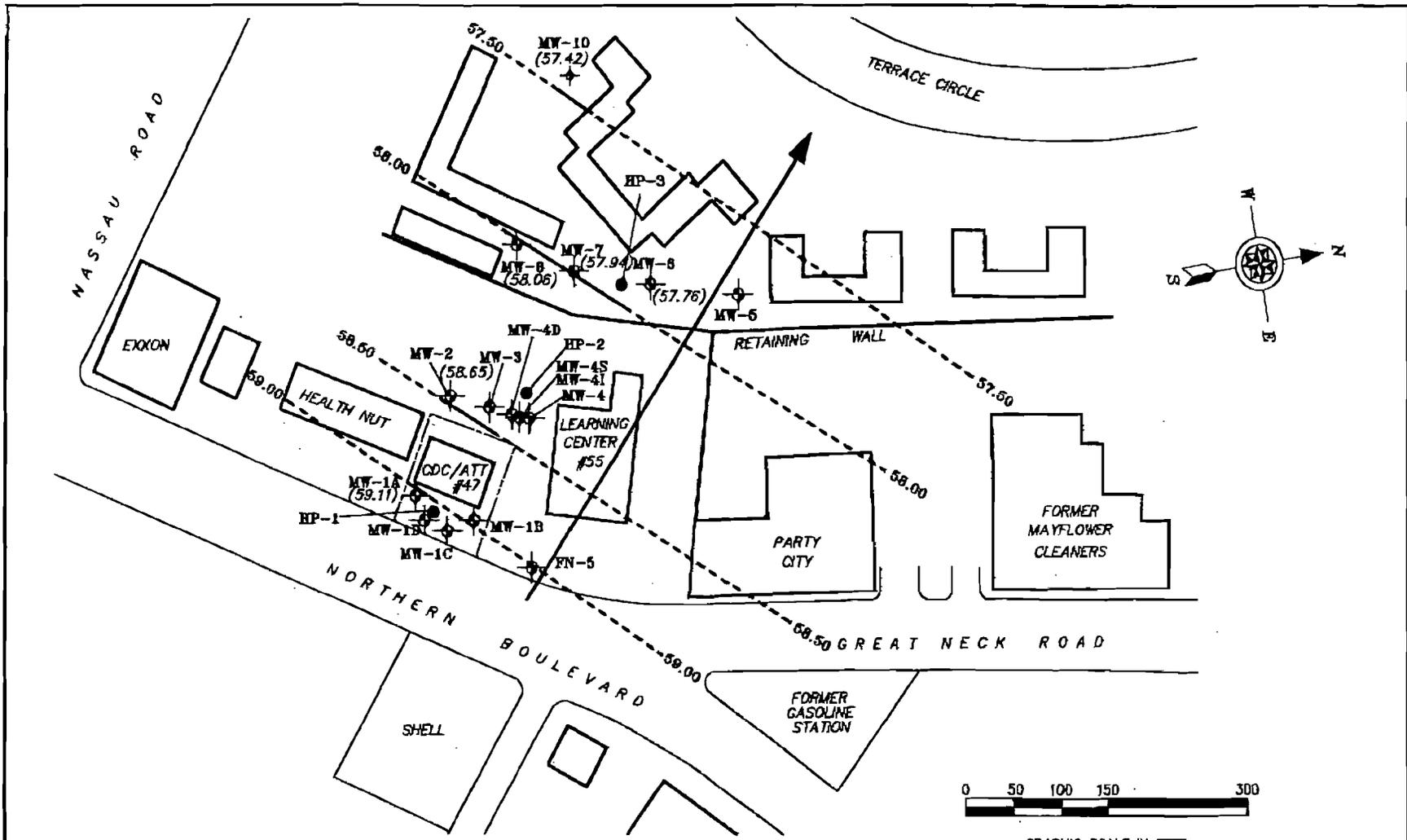
29

30S

11364

Citizens Development Company Site  
Figure #1





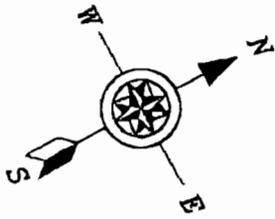
GRAPHIC SCALE IN FEET

**Legend**

-  GROUNDWATER MONITORING WELL
-  (59.11) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
-  HYDRO PUNCH LOCATION
-  GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (DASHED WHERE INFERRED)
-  GENERAL DIRECTION OF GROUNDWATER ELEVATION FLOW
-  CONTOUR INTERVAL 0.5 FEET

Note:  
 Map adapted from Civil and Environmental Engineers, Inc.  
 Site Area Map dated May 16, 2002.

<b>CA RICH CONSULTANTS, INC.</b>		Certified Ground-Water and Environmental Specialists 17 Dupont Street, Plainview, New York 11803	
<b>TITLE</b> Groundwater Elevation Contour Map June 14, 2005		<b>DATE</b> 2/8/06	
<b>FIGURE</b> 2		<b>SCALE</b> 1" = 150'	
<b>DRAWING NO.</b> PRAP-1A		<b>DRAWN BY</b> S.T.M.	
CDC/FLOWER FASHION 47 NORTHERN BLVD. GREAT NECK, NY 11020		<b>APPR. BY</b> E.A.W.	



**NORTHWEST**  
 8-26-04  
 PERC 24 PPM  
 At 24-INCHES BELOW GRADE  
 9-9-04  
 PERC 13 PPM  
 At 24 INCHES BELOW GRADE  
 9-9-04  
 PERC 15 PPM  
 At 36 INCHES BELOW GRADE

**EAST**  
 8-26-04  
 PERC 16 PPM

**CENTER**  
 8-26-04  
 PERC 17 PPM

**NORTHEAST**  
 8-26-04  
 PERC 5.9 PPM

**WEST**  
 8-26-04  
 PERC 17 PPM  
 At 18-INCHES BELOW GRADE  
 9-9-04  
 PERC 11 PPM  
 At 18 INCHES BELOW GRADE  
 9-9-04  
 PERC 5.5 PPM  
 At 30 INCHES BELOW GRADE

Bilco Doors

**Site Building**

**CENTERWEST**  
 8-26-04  
 PERC 27 PPM  
 At 24-INCHES BELOW GRADE  
 9-9-04  
 PERC 13 PPM  
 At 24 INCHES BELOW GRADE  
 9-9-04  
 PERC 1.6 PPM  
 At 40 INCHES BELOW GRADE

**SOUTHWEST**  
 8-26-04  
 PERC 0.053 PPM

**EASTCENTER**  
 8-26-04  
 PERC 0.53 PPM

**SOUTHEAST**  
 8-26-04  
 PERC 180 PPB

**LEGEND**

⊗ SOIL ENDPOINT SAMPLE LOCATION

—□— CHAIN LINK FENCE

⊖ SOIL EXCAVATION AREA

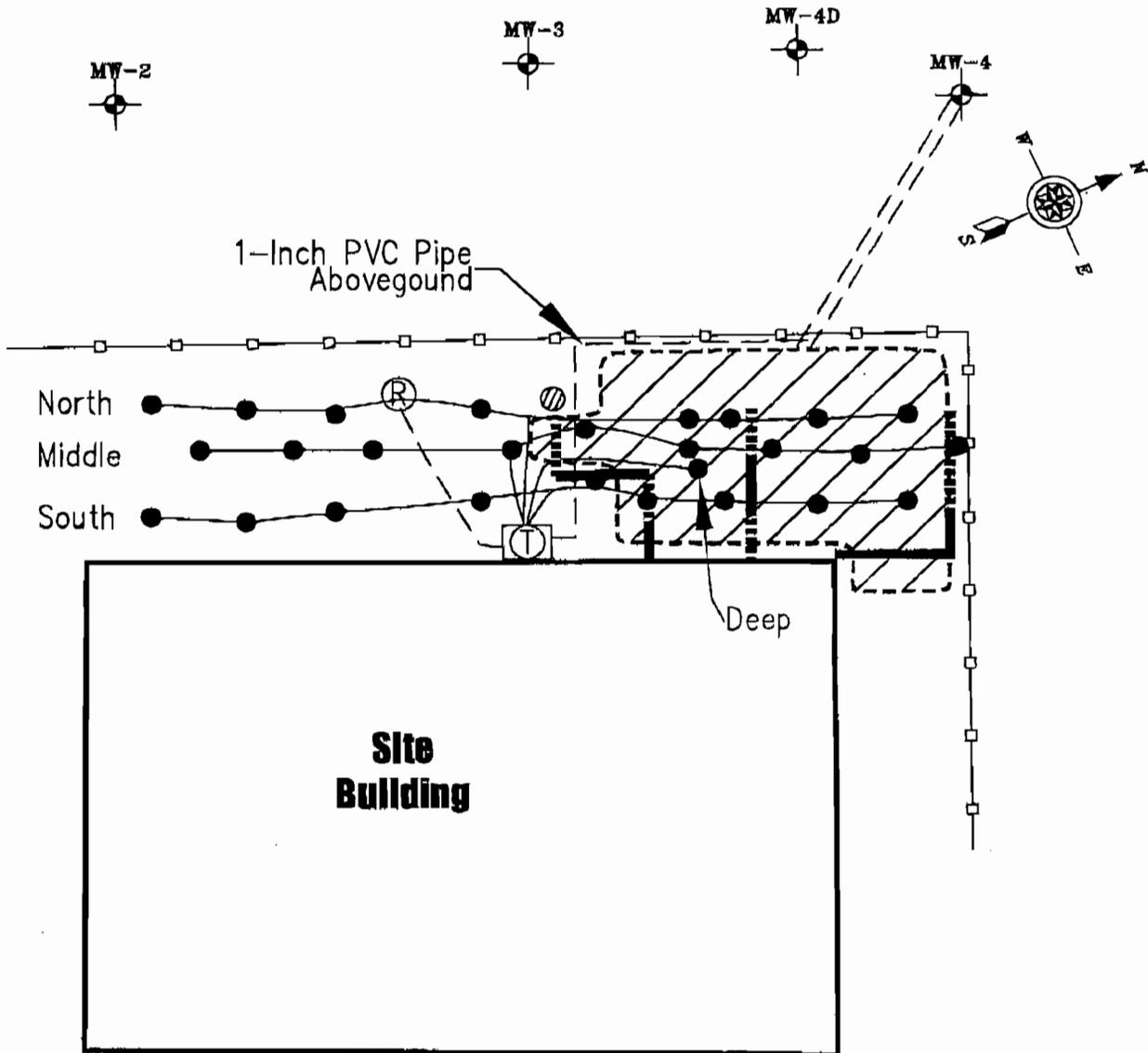
NYSDEC CLEANUP LEVEL: 1.4 PPM

ALL CONCENTRATIONS SHOWN IN PARTS PER MILLION (PPM)

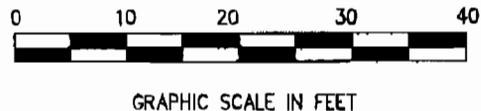


GRAPHIC SCALE IN FEET

<b>CA RICH CONSULTANTS, INC.</b>	
Certified Groundwater and Environmental Specialists 17 Dupont Street, Plainview, New York 11803	
TITLE:	PCE In Soil Endpoint Samples Aug. 26, 2004 & Sept. 9, 2004
DATE:	2/9/06
SCALE:	As Shown
FIGURE:	3
DRAWING NO.:	PRAP-2A
CDC/FLOWER FASHION 47 NORTHERN BLVD. GREAT NECK, NY 11020	
DRAWN BY:	S.T.M.
APPR. BY:	E.A.W.



- LEGEND**
- GROUNDWATER MONITORING WELL
  - FORMER STORM WATER DRYWELL
  - SODIUM PERMANGANATE INJECTION POINT
  - SODIUM PERMANGANATE DISTRIBUTION TANK
  - EXISTING RECOVERY WELL
  - 2-INCH DIAMETER 20 SLOT PVC PIPE FOR SVE
  - 2-INCH DIAMETER PVC PIPE FOR SVE
  - SOIL EXCAVATION AREA
  - CDC INTERIM REMEDIAL MEASURES (IRM)



<b>CA RICH CONSULTANTS, INC.</b> Certified Groundwater and Environmental Specialists 17 Dupont Street, Plainview, New York 11803	
<b>Stephen J. Osmundsen, P.E.</b> Professional Engineer 513 Centre Island Road, Oyster Bay, New York 11771	
TITLE: CDC IRM	
DATE: 2/3/06	
SCALE: 1" = 18'	
FIGURE: 4	DRAWN BY: S.T.M.
DRAWING NO: PRAP-3A	APPR. BY: S.J.O.
CDC/FLOWER FASHION 47 NORTHERN BLVD. GREAT NECK, NY 11020	