Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Citizens Development Company Site
Operable Unit No. 2
University Gardens, Nassau County New York

Site Number 1-30-070

March 2006

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* DENISE M. SHEEHAN, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Citizens Development Company Inactive Hazardous Waste Disposal Site
Operable Unit No. 2
University Gardens, Nassau County, New York
Site No. 1-30-070

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit No. 2 of the Citizens Development Company 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 (NYSDEC) for Operable Unit No. 2 of the Citizens Development Company inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. 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 release of hazardous waste constituents from this site have been addressed by implementing the interim remedial measures (IRMs) identified in this ROD. These IRMs have significantly reduced the threat to public health and the environment. The remedial actions will continue to be operated and soil, soil gas, indoor air and groundwater quality will be monitored to ensure the effectiveness of these actions in meeting the remedial goals.

Description of Selected Remedy

Based on the results of the Remedial Investigation for the Citizens Development Company site and the criteria identified for evaluation of alternatives, the NYSDEC has selected No Further Action with continued operation of the soil vapor extraction (SVE) systems and additional treatment of groundwater. The components of the remedy are as follows:

- Continued operation of the sub-slab and exterior SVE systems to mitigate vapor intrusion into the site building and adjacent buildings and to remediate residual soil contamination.

- 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 the necessary water quality treatment; and require the property owner to complete and submit to the NYSDEC a periodic certification.

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 3 1 2006

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

TABLE OF CONTENTS

SECTION		PAGE
1: SUMMARY OF THE RECORD OF DECISION		1
2: SITE LOCATION AND DESCRIPTION		2
3: SITE HISTORY		2
3.1:	Operational/Disposal History	2
3.2:	Remedial History	2
4: ENFORCEMENT STATUS		3
5: SITE CONTAMINATION		3
5.1:	Summary of the Remedial Investigation	3
5.2:	Interim Remedial Measures	6
5.3:	Summary of Human Exposure Pathways	7
5.4:	Summary of Environmental Impacts	7
6: SUMMARY OF THE REMEDIAL GOALS AND SELECTED REMEDY		7
7: HIGHLIGHTS OF COMMUNITY PARTICIPATION		10

Tables	-	Table 1:	Nature and Extent of Contamination
	-	Table 2:	Groundwater Quality Data
	-	Table 3:	Indoor Air Quality Data
Figures	-	Figure 1:	Site Location Map
	-	Figure 2:	Groundwater Elevation Contour Map
	-	Figure 3:	Soil Excavation & Soil Quality Data
	-	Figure 4:	Interim Remedial Measures
Appendices	-	Appendix A: Responsiveness Summary	
	-	Appendix B: Administrative Record	

RECORD OF DECISION

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

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Citizens Development Company (CDC) site, Operable Unit No. 2 (OU-2). The presence of hazardous waste has created significant threats to human health and the environment that are addressed by this remedy. 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 (RI). 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 has been selected as the remedy for this site.

The selected 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.

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 Flower Fashion, 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) 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 contained 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 ($\mu g/m^3$) 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^3 and 280 ug/m^3, 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^3 in the first floor and 1.6 ug/m^3 in the basement, well below the NYSDOH PCE guidance value of 100 ug/m^3 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^3 to 2,400,000 ug/m^3.

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^3 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 REMEDIAL GOALS AND SELECTED 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.

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

- 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.

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.

While previous applications of sodium permangante 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 has selected 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 selection is the NYSDEC's conclusion that No Further Action with continued operation of the SVE systems and additional groundwater treatment is protective of human health and the environment and will 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, will 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 has concluded 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 will 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 will 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 will 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 will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

SECTION 7: 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:

- Documents were placed in the repositories.
- A meeting/invitation fact sheet was distributed per the public contact list.
- A public meeting was held on March 14, 2006 to present and receive comments on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

In general, the public comments received were supportive of the selected remedy.

TABLE 1
Nature and Extent of Contamination

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

SOIL GAS	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	PCE	1,100 to 2,400,000	1.7 - 11	8 of 8

AIR	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	PCE	0.5 - 280	*	4 of 29

[a] ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil
ug/m^3 = micrograms per cubic meter, ND=non detect

[b] 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

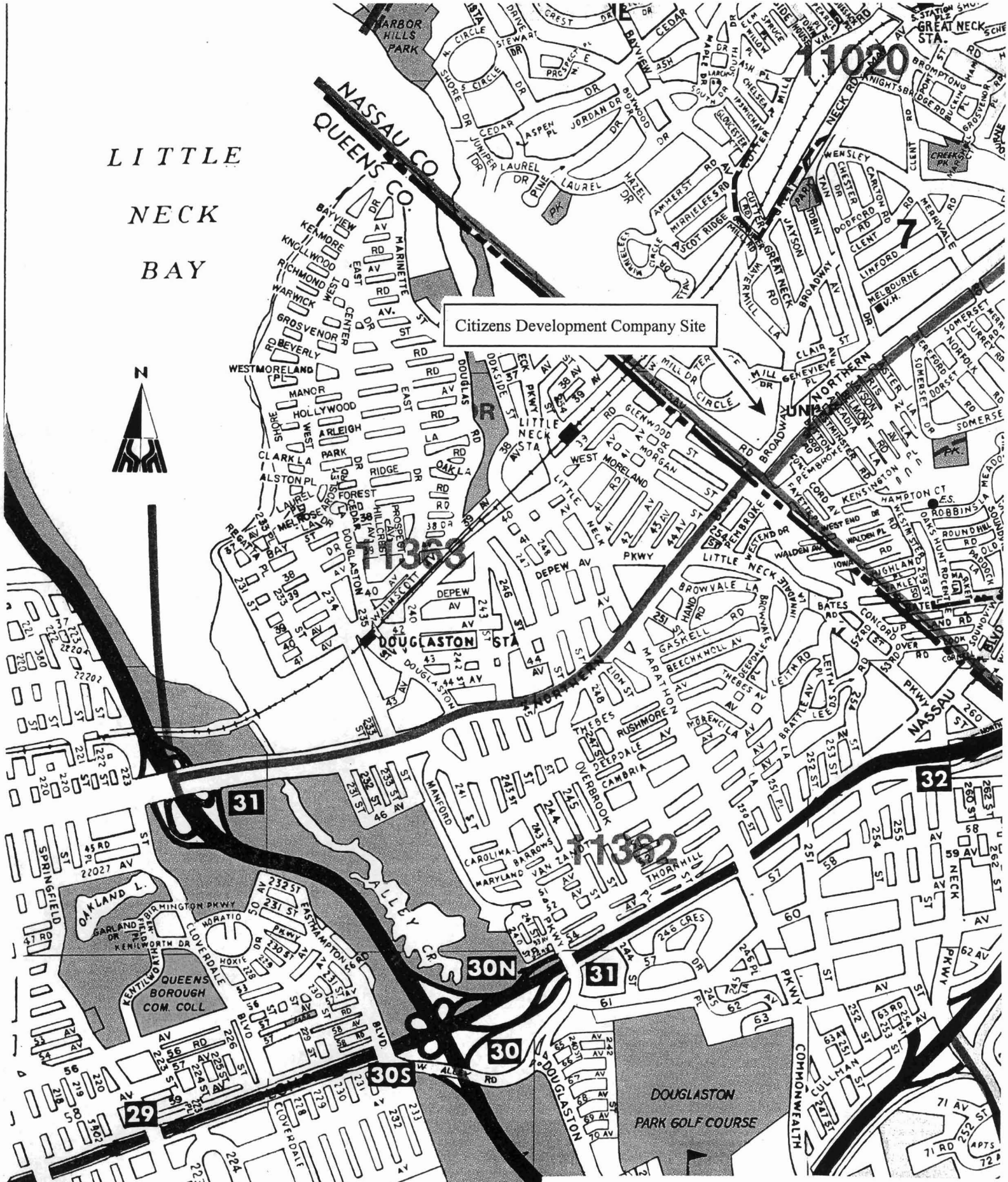
PCE concentrations in ppb
ND=non detect NS=not sampled

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

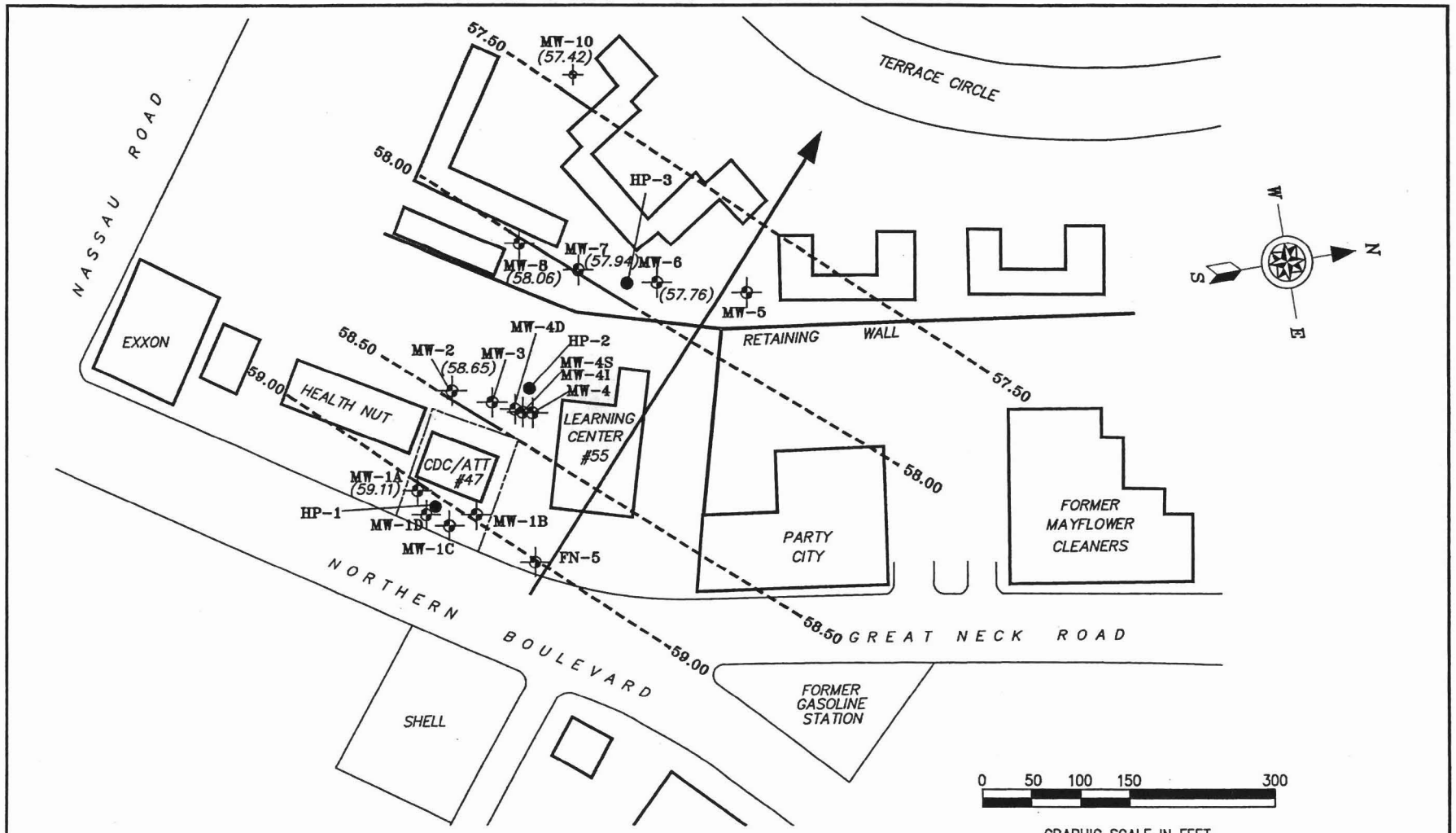
Sample #:	PDM-1	PDM-2	PDM-3	PDM-4	PDM-5	PDM-6*
Location:	AT&T	AT&T	Heath Nut	55 No. Blvd. NW test rm.	55 No. Blvd. Reception	Outdoors
Level:	(Ground Fl.)	(Downstairs)	(Ground Fl.)	(Downstairs)	(Downstairs)	NA
Date						
11/20/02	120	280	NA	170	150	7
12/02/03	27	18	4	47	47	6.4
06/15/04	22	27	6.6	39	39	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



Citizens Development Company Site
Figure #1



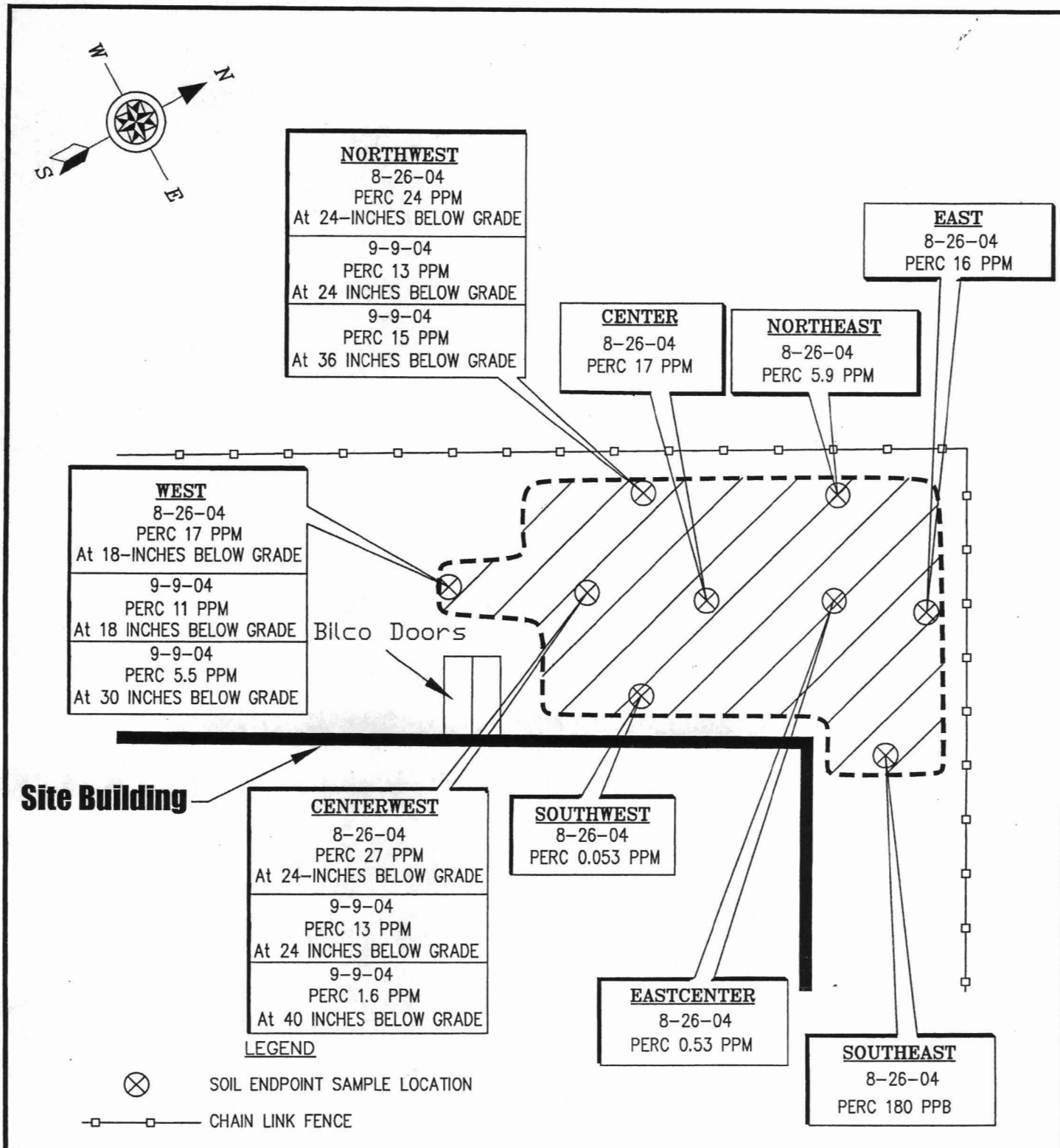
Legend

- 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

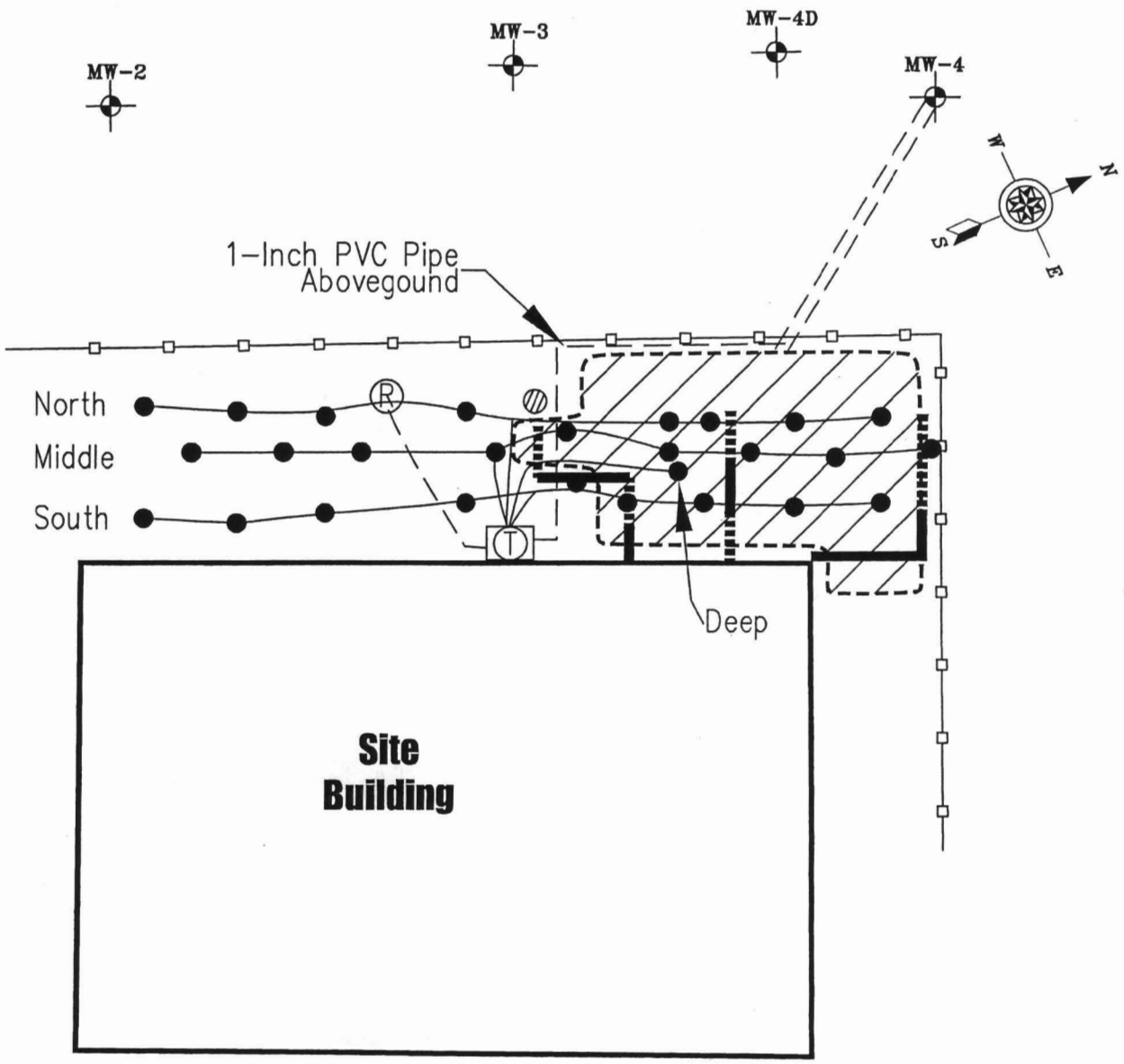
Note:
Map adapted from Civil and Environmental Engineers, Inc.
Site Area Map dated May 16, 2002.

CA RICH CONSULTANTS, INC.
Certified Ground-Water and Environmental Specialists
17 Dupont Street, Plainview, New York 11803

TITLE: Groundwater Elevation Contour Map June 14, 2005		DATE: 2/8/06
		SCALE: 1" = 150'
FIGURE: 2	CDC/FLOWER FASHION 47 NORTHERN BLVD. GREAT NECK, NY 11020	DRAWN BY: S.T.M.
DRAWING NO: PRAP-1A		APPR. BY: E.A.W.



CA RICH CONSULTANTS, INC.		
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
- (T) SODIUM PERMANGANATE DISTRIBUTION TANK
- (R) 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)

0 10 20 30 40

GRAPHIC SCALE IN FEET

CA RICH CONSULTANTS, INC.
Certified Groundwater and Environmental Specialists
17 Dupont Street, Plainview, New York 11803

Stephen J. Osmundsen, P.E.
Professional Engineer
513 Centre Island Road, Oyster Bay, New York 11771

TITLE: CDC IRM		DATE: 2/3/06
		SCALE: 1" = 16'
FIGURE: 4	CDC/FLOWER FASHION 47 NORTHERN BLVD. GREAT NECK, NY 11020	DRAWN BY: S.T.M.
DRAWING NO: PRAP-3A		APPR. BY: S.J.O.

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

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

The Proposed Remedial Action Plan (PRAP) for the Citizens Development Company site was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 27, 2006. The PRAP outlined the remedial measures proposed for the contaminated soil and groundwater at the Citizens Development Company 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 remedies.

A public meeting was held on March 14, 2006 which included a presentation of the Remedial Investigation as well as a discussion of the proposed remedies. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedies. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 27, 2006.

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

COMMENT 1: How often and for how long will indoor air be monitored?
RESPONSE 1: Indoor air will continue to be sampled until such time as post remedial monitoring demonstrates that operation of the soil vapor extraction systems (SVE) are no longer necessary.

COMMENT 2: Does the sub slab SVE system only protect the CDC facility building?
RESPONSE 2: Indoor air sampling within the CDC building and the CLC has demonstrated that the combination of the sub slab SVE system and the exterior SVE system have been effective in mitigating soil vapor intrusion within both buildings.

COMMENT 3: Is the Upper Glacial aquifer contaminated? How deep was groundwater sampled and was it contaminated?
RESPONSE 3: The water table exists approximately 40 feet below grade. Tetrachloroethene (PCE) levels at the water table were found to be as high as 45.4 ppb in December 2005. The groundwater standard for PCE is 5 ppb. Deeper groundwater samples collected at depths of 25 feet, 50 feet and 90 feet below the water table, in December 2005, revealed PCE levels below the standard.

COMMENT 4: What work was accomplished at the site in 1994?
RESPONSE 4: No work was accomplished in 1994. However, in January 1995, the NYSDEC approved plans for the excavation of contaminated soil from a basement floor sump and for the installation of a sub slab SVE system.

COMMENT 5: What is the source of contamination?
RESPONSE 5: The storage of contaminated filter media outside the facility appears to have been the cause of exterior subsurface soil contamination. Discharges of contaminated condensate into a basement sump appears to have been the cause of subsurface contamination within the facility.

COMMENT 6: What was the first symptom that brought attention to the site?
RESPONSE 6: The Nassau County Department of Health (NCDH) conducted soil sampling at the site in November 1983 that revealed elevated levels of PCE.

COMMENT 7: How much soil has been removed from the site?
RESPONSE 7: Approximately 156 cubic yards of contaminated soil has been excavated and disposed of off-site at a permitted disposal facility.

COMMENT 8: Why wasn't all the contaminated soil removed by the NCDH?
RESPONSE 8: Two additional contaminant source areas were discovered and remediated after the NYSDEC took over the project as lead agency.

COMMENT 9: At what depths are sodium permanganate being injected?
RESPONSE 9: Sodium permanganate is being injected at depths of two to five feet and seven to twelve feet below grade. There is also an injection point 35 feet to 45 feet below grade for the purpose of injecting sodium permanganate directly into affected groundwater.

COMMENT 10: In 1999, groundwater at HP-2I revealed PCE at 740 ppb. Was this the only spike in PCE in deeper groundwater downgradient of the site?
RESPONSE 10: In 1999, PCE was detected at 100 ppb in HP-2S.

COMMENT 11: In December 2005, monitoring well MW-4 had 45 ppb of PCE. Are there any plans to further treat groundwater?
RESPONSE 11: At least one additional application of sodium permanganate is scheduled. An evaluation of groundwater quality after that application will dictate the need for future applications.

COMMENT 12: Are the spikes in groundwater quality the source of contaminants in indoor air?
RESPONSE 12: Residual subsurface soil contamination is the likely source of contaminants in indoor air.

COMMENT 13: Will sodium permanganate impact the Water Authority of Great Neck North's (WAGNN) wellfield?
RESPONSE 13: The radius of influence of the sodium permanganate is limited and is not expected to impact the wellfield.

COMMENT 14: How fast does groundwater travel?
RESPONSE 14: An average rate of groundwater flow is approximately one foot per day.

COMMENT 15: The cone of influence relative to the wellfield is approximately 0.5 miles. The WAGNN has expressed concern about chlorides, a degradation product of the in-situ groundwater treatment. Can chlorides be added to the analyte list for groundwater sampling?

RESPONSE 15: Chlorides will be added to the groundwater analyte list.

COMMENT 16: Who owns the site? Are they applying to the Brownfields Cleanup Program (BCP)?
RESPONSE 16: The site is owned by the Citizens Development Company. The NYSDEC is unaware of any plans to apply to the BCP. As a Class 2 site, the site will not be eligible for the BCP.

COMMENT 17: What is the periodic certification?
RESPONSE 17: The property owner is required to submit a periodic certification to the NYSDEC certifying that the engineering controls are still in place and that they continue to protect public health and the environment.

COMMENT 18: Is groundwater pump and treatment being utilized?
RESPONSE 18: There is no groundwater pump and treatment at the site.

COMMENT 19: How does the SVE system at CDC compare to the SVE system at Stanton Cleaners?
RESPONSE 19: They are both utilizing the same technology, however, the Stanton Cleaners system is constructed on a larger scale in order to deal with a larger source area.

COMMENT 20: How often is the CDC SVE system checked?
RESPONSE 20: The system is checked monthly to ensure that it is operating properly.

COMMENT 21: Can the WAGNN get copies of site related data.
RESPONSE 21: Yes, the WAGNN will be provided with copies of past and future site related data.

COMMENT 22: Is there an end date for the project?
RESPONSE 22: There is no projected end date for the completion of the project. The project will be completed when the remedial objectives, to the extent practicable, are met.

Part 2: The following comments were raised by Ms. Shirley Siegal on behalf of the Stanton Cleaners Area Community Group, Inc., in a letter dated March 20, 2006.

COMMENT 1: What kind of system will you use in your site management plan to receive information on malfunctions, vandalism, etc.?
RESPONSE 1: The site management plan will require periodic inspections and monitoring of the equipment to ensure that it is working properly.

COMMENT 2: Should monitoring wells be deeper at the CDC site?
RESPONSE 2: Three wells have been constructed at the site within the deeper aquifer. Samples collected from these wells in December 2005 revealed PCE levels below the groundwater standard of 5 ppb.

COMMENT 3: Has NYSDOH met with the people who work at the #47 and #55 Northern Boulevard regarding indoor air quality?
RESPONSE 3: In a letter dated December 30, 2002, the NYSDOH notified the occupants of both facilities of the indoor air quality.

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

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

1. "Operable Unit 2 Remedial Investigation Report", December 2001, JR Kolmer + Assoc.
2. "Annual Groundwater Monitoring Report", March 2003, CA Rich Consultants, Inc.
3. "Interim Remedial Measures Work Plan", May 2004, CA Rich Consultants, Inc.
4. "Semiannual Groundwater Monitoring Report", July 2004, CA Rich Consultants, Inc.
5. "Interim Remedial Measures Supplemental Work Plan", August 2004, CA Rich Consultants, Inc.
6. "Interim Remedial Measures Report - Part A", January 2005, CA Rich Consultants, Inc.
7. "Semiannual Groundwater Monitoring Report", January 2005, CA Rich Consultants, Inc.
8. "Interim Remedial Measures Report - Part B", April 2005, CA Rich Consultants, Inc.
9. "Semiannual Groundwater Monitoring Report", July 2005, CA Rich Consultants, Inc.
10. "Annual Groundwater Monitoring Report", January 2006, CA Rich Consultants, Inc.
11. "Proposed Remedial Action Plan - Operable Unit No. 2", February 2006, NYSDEC