Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

123 Post Avenue Site
Operable Unit No. 2
Westbury, Nassau County New York
Site Number 1-30-088

March 2004

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

DECLARATION STATEMENT - RECORD OF DECISION

123 Post Avenue Inactive Hazardous Waste Disposal Site
Operable Unit No. 2
Westbury, Nassau County, New York
Site No. 1-30-088

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit 2, off-site groundwater, of the 123 Post Avenue 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 2 of the 123 Post Avenue 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 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 123 Post Avenue (OU-2) Site and the criteria identified for evaluation of alternatives, the NYSDEC has selected in situ chemical oxidation to address off-site groundwater contamination. The components of the remedy are as follows:

- A remedial design program to verify the components of the conceptual design.
- Injection of chemical oxidants into the northern portion of the contaminant plume (Zone 1) to reduce the highest levels of VOCs in groundwater.
- Installation of groundwater and soil vapor monitoring points to evaluate the effectiveness of this approach and determine the potential for soil vapor impacts. If necessary, perform additional injections of chemical oxidants.

- Evaluate the application of the Zone 1 chemical oxidant technology to groundwater remediation in Zone 2. In the event this technology is determined to have limited application within Zone 2, other in situ technologies will be evaluated.

- Evaluate the potential for soil vapor intrusion into buildings in the OU-2 area and take measures to mitigate impacts that are identified.

- Institutional controls will be imposed in the form of existing use restrictions preventing the use of groundwater without necessary water quality treatment.

- The operation of the components of the remedy will continue until the remedial objectives have been achieved.

- A long-term monitoring program will be instituted to evaluate the effectiveness of in situ chemical oxidation.

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 2 9 2004

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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RECORD OF DECISION

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Operable Unit No. 2
Westbury, Nassau County, New York
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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 123 Post Avenue Site, Operable Unit (OU)-2 (off-site groundwater). 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, illegal dumping and poor housekeeping have resulted in the disposal of hazardous wastes, including volatile organic compounds (VOCs) related to dry cleaning activities, in particular tetrachloroethene (PCE) and its breakdown products trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE). These wastes have contaminated the groundwater downgradient of the site and have resulted in:

- a significant threat to human health associated with potential exposure to off-site groundwater.

- a significant environmental threat associated with the impacts of contaminants to the groundwater resource which is a Sole Source Aquifer designated by the United States Environmental Protection Agency (USEPA).

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy:

- A remedial design program to verify the components of the conceptual design.

- Injection of chemical oxidants into the northern portion of the contaminant plume (Zone 1) to reduce the highest levels of VOCs in groundwater.

- Installation of groundwater and soil vapor monitoring points to evaluate the effectiveness of this approach and determine the potential for soil vapor impacts. If necessary, perform additional injections of chemical oxidants.

- Evaluate the application of the Zone 1 chemical oxidant technology to groundwater remediation in Zone 2. In the event this technology is determined to have limited application within Zone 2, other in situ technologies will be evaluated.

- Evaluate the potential for soil vapor intrusion into buildings in the OU-2 area and take measures to mitigate impacts that are identified.

- Institutional controls will be imposed in the form of existing use restrictions preventing the use of groundwater without necessary water quality treatment.

- The operation of the components of the remedy will continue until the remedial objectives have been achieved.

- A long-term monitoring program will be instituted to evaluate the effectiveness of in situ chemical oxidation.

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

The site is an active dry cleaner located at 123 Post Avenue in Westbury, Nassau County, New York (see Figure 1). The site is approximately 0.2 acres in size and is occupied by one building that was constructed in 1949 with at least one expansion in 1957. The property is bounded by a small shopping center to the north, Long Island Rail Road (LIRR) tracks to the south, Post Avenue to the east and an apartment complex to the west. The site has been occupied by a dry cleaner since at least 1957. According to Nassau County records, the building was connected to the municipal sanitary sewer system in 1979 or 1980. Prior to this time, wastewater generated at the site was apparently discharged to an on-site sanitary system.

The study area for OU-2 extends from north of the 123 Post Avenue Site to just south of Old Country Road (see Figure 1) downgradient of the site. The portion of the study area between the LIRR tracks and Old Country Road is primarily residential. Commercial businesses, an assisted living facility, offices and a parking lot occupy the western side of Post Avenue within the study area, and a LIRR station, a cemetery and a church occupy the eastern side of Post Avenue. Commercial businesses occupy the area along and south of Old Country Road.

Two water supply wells were identified within the study area. Westbury Water District Well No. 11 is located on the north side of Old Country Road approximately 2,000 feet south/downgradient of the 123 Post Avenue Site (see Figure 1). This well is screened in the Magothy aquifer from 474 to 535 feet below ground surface. The second supply well is at the Big M Car Wash, located directly west of Well No. 11 at the intersection of South Grand Street and Old Country Road (see Figure 1). The water extracted from this well is used for car washing only. Potable water at the car wash is supplied by the Westbury Water District.

Operable Unit (OU) No. 2, which is the subject of this ROD, consists of off-site 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 1 which addresses the on-site soil and groundwater contamination. A Record of Decision (ROD) for OU-1 was issued in March 2003.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The 123 Post Avenue Site has operated as a dry cleaning facility since the 1950s. The site was placed on the New York State Registry of Inactive Hazardous Waste Disposal Sites (Registry) in December 1998, based on a Nassau County Department of Health (NCDH) facility inspection in July 1995, and subsequent investigations by the NCDH and the potentially responsible party (PRP), which showed elevated levels of site-related PCE in soils and groundwater. The Registry site number is 1-30-088.

In response to a pending property transaction, additional environmental investigations were conducted in October 1997 at 117 Post Avenue, located directly south and downgradient of the 123 Post Avenue Site. This groundwater investigation, which included the installation of 7 monitoring wells, revealed shallow groundwater contamination (principally PCE) on this property at elevated levels. The source of contamination was suspected to be the 123 Post Avenue Site.

In May 1998, TCE was detected in Westbury Water District Well No. 11 at a concentration of 1.0 part per billion (ppb), which is below the New York State drinking water standard for TCE of 5 ppb. Since then, TCE has consistently been detected in Well No. 11 at levels below the drinking water standard. TCE is a breakdown product of PCE and is also commonly used as a degreasing agent in industrial applications.

The NCDH collected a groundwater sample from the supply well at the Big M Car Wash on October 31, 2000. PCE was detected in this sample at 1.3 ppb, below the New York State groundwater standard for PCE of 5 ppb.

3.2: Remedial History

In 1998, 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.

In August 1998 (prior to the implementation of the on-site RI/FS or this RI/FS), excavation of contaminated soils beneath the two floor drains located inside the dry cleaner facility was performed. Following excavation, residual soil contamination was detected, with levels of PCE up to 270 parts per million (ppm) in on-site soils. Due to concerns about undermining the building foundation, additional excavation could not be conducted.

Based on these results, the responsible party constructed a soil vapor extraction (SVE) system at the site to address the residual soil contamination. The SVE system has been in operation since May 2001; in a continuous mode during the heating season and a pulse mode during the non-heating

season due to persistent low levels of PCE impacting adjacent structures in the winter months. The responsible party is proposing to conduct additional investigations to determine if another contaminant source exists which may be contributing to these continuing impacts. No off-site remedial actions have been implemented to date.

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: Choe Realty, LLC, a limited liability company organized under the laws of the State of New York, and the current owner of the site.

The NYSDEC and Choe Realty, LLC entered into a Consent Order on September 25, 2000. The Order obligates the responsible parties to implement a full remedial program for OU-1.

The PRPs declined to implement the RI/FS for OU-2 (off-site groundwater) when requested by the NYSDEC. 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 NYSDEC 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 OU-2 RI was to define the nature and extent of any off-site groundwater contamination resulting from previous activities at the site. The RI was conducted between March 2001 and October 2001. The field activities and findings of the investigation are described in the RI report. Two additional rounds of groundwater sampling were conducted in September 2002 and November 2003, after completion of the RI. The results from these additional sampling events are included in the discussion of the nature of contamination in Section 5.1.2.

The following activities were conducted during the RI:

- A survey of public and private water supply wells in the area around the site;
- Soil conductivity logging to determine subsurface geologic conditions using the direct push technique;
- Collection of 89 discrete groundwater samples from 20 locations using the direct push technique to determine the horizontal and vertical extent of the groundwater plume migrating from the site;

- Installation of 5 soil borings and 5 permanent monitoring wells at selected direct push boring locations for collection of groundwater samples for long-term monitoring of the plume;
- Geophysical logging at 3 of the 5 monitoring well boreholes for geologic characterization;
- Surveying of the 5 new monitoring wells;
- Sampling of the 5 new monitoring wells.

To determine whether the off-site groundwater contains contamination at levels of concern, data from the investigation were compared to the following standards, criteria and guidelines (SCGs) for groundwater:

- NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

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 below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

The Upper Glacial sediments within the study area generally consist of fine to coarse sand with varying amounts of silt and gravel. The primary geologic unit observed during the field investigation was fine-to-medium grained sand, which extends to a depth of at least 115 feet below ground surface throughout most of the study area. A clay layer was identified below the glacial sediments in the central and southern portions of the study area. The clay layer was encountered at approximately 115 feet below ground surface in the borings for permanent wells OU2-3 and OU2-4 (see Figure 2).

Groundwater within the study area is found at depths ranging from approximately 38 to 45 feet below ground surface. Groundwater flow is toward the south-southwest.

The public water supply wells in the vicinity of the study area draw water from the Magothy aquifer. The nearest downgradient public water supply well is Westbury Water District # 11 well (N-5654) which is located 2000 feet south-southwest of the dry cleaner within the study area (see Figure 1). This well draws water from a depth of 474 feet to 535 feet below ground surface and yields approximately 2,000,000 gallons per day. The nearest private well downgradient of the dry cleaner is a shallow well operated by the Big M Car Wash. This well is also located within the study area, just west of Westbury Water District Well # 11 (see Figure 1). The car wash well is screened from 54 feet to 64 feet below ground surface and yields approximately 37 gallons per minute from the Upper Glacial aquifer. The water from this well is used for car-washing only.

5.1.2: Nature of Contamination

As described in the RI report, many groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the category of contaminants that exceeds

the SCGs is VOCs. The VOCs of concern are the dry cleaning solvent PCE and its breakdown products TCE and cis-1,2-DCE. Although other VOCs were sporadically detected in groundwater during the OU-2 RI, the frequency of the detections and the detected concentrations were much less than for the identified VOCs of concern. In addition, remediation for the VOCs of concern would also remediate the other detected VOCs.

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 groundwater. For comparison purposes, where applicable, SCGs are provided for each compound.

Table 1 summarizes the degree of contamination for the contaminants of concern in groundwater and compares the data with the SCGs for the site. As described above, the only medium that was investigated during the OU-2 RI/FS was off-site groundwater. The following is a summary of the findings of the investigation.

Groundwater

Based on the results from groundwater samples collected during the OU-2 RI, a plume of contaminated groundwater was identified. The plume configuration indicated that the source of the contamination was the dry cleaner at 123 Post Avenue. The predominant VOCs identified within the plume are PCE, TCE and cis-1,2-DCE. These compounds were detected at the highest concentrations (up to 11,295 ppb) nearest the dry cleaner, at the property immediately south of the dry cleaner (117 Post Avenue) and along the adjacent street to the south (Madison Avenue). In general, total concentrations of the VOCs of concern decrease downgradient to the south-southwest. In addition, the depth of the zone most highly impacted by the VOCs of concern increases with distance from the dry cleaner to the south. The plume configuration, based on groundwater data collected during the RI, is shown in plan view on Figure 3 and in a cross-section parallel to the groundwater flow direction on Figure 4.

As described above, two additional rounds of groundwater samples were collected from the monitoring wells, in September 2002 and November 2003, after completion of the RI. As shown in Table 1, concentrations of the VOCs of concern detected during these two sampling events were generally less than were detected during the RI, especially in the northern portion of the plume. Based on these results, it is apparent that the area of highly contaminated groundwater is migrating downgradient toward the south-southwest.

The groundwater sample collected from the supply well at the Big M Car Wash by the NCDH in October 2000, contained PCE at 1.3 ppb. While this concentration is less than the SCG for PCE of 5 ppb, the PCE detection suggests that the contaminant plume from the dry cleaner has slightly impacted the well at the car wash.

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 implemented for off-site groundwater during the RI/FS.

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 the human health exposure assessment that is presented in Section 5.0 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.

Potential exposure pathways at the 123 Post Avenue OU-2 site involve use of contaminated groundwater and inhalation of vapors in air.

There are currently no private drinking water supply wells in OU-2, but groundwater could be used in the future. Potential exposure pathways involve ingestion of and direct contact with contaminated water, as well as inhalation of vapors that could volatilize from the water. Although possible, it is not likely that the contaminated water would be used for drinking because a public water supply serves the area. The public water supply is routinely monitored and treated, if necessary, to ensure that it complies with federal and state drinking water standards.

Inhalation of contaminated indoor air may be possible because of the concentrations of contaminants in groundwater at the site. Near the upgradient portion of the groundwater plume, where there is contamination at the water table, the contaminants could volatilize into soil gas and affect indoor air quality.

5.4: Summary of Environmental Impacts

This section summarizes the 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-related contamination has impacted the groundwater resource in the Upper Glacial aquifer. While not a drinking water source in the study area, the Upper Glacial aquifer is the source for the water utilized for car washing activities at the Big M Car Wash. In addition, the entire groundwater resource of Long Island is a USEPA-designated Sole Source 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 375-1.10. 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.

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

- potential exposures of persons downgradient of the site to the dry cleaning solvent PCE (and its breakdown products TCE and cis-1,2-DCE) which are present in groundwater and soil vapor.

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

- ambient groundwater quality standards for the VOCs of concern.

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 OU-2 for the 123 Post Avenue Site were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

The contaminated groundwater within the study area is overlain by a densely populated area which is primarily residential. Consequently, the approach to remediation of the site was to identify and evaluate alternatives which would be able to meet the remedial action objectives for the site in consideration of the restrictive aboveground space limitations dictated by the characteristics of the study area. Further, due to the elevated levels of VOCs in the shallow groundwater near the source area, the remedial action objectives must address the potential for soil vapor intrusion in this area. As such, with the exception of the no-action alternative, all alternatives would include evaluation of the potential for soil vapor intrusion into buildings, and mitigation of indoor impacts, if necessary.

A summary of the remedial alternatives that were considered for this site are 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 at the site.

Alternative 1: No Action with Long-term Groundwater Monitoring

Present Worth: *$172,000*
Capital Cost: *$0*
Annual OM&M:
(Years 1-30): *$13,600*

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.

Long-term groundwater monitoring would involve quarterly sampling of one upgradient well located on the 123 Post Avenue property, and three downgradient wells (OU2-2, OU2-3 and OU2-4) for the first 10 years, semiannually for the next 10 years, and annually for the following 10 years. Analysis of groundwater samples would be for VOCs only.

Alternative 2: In situ Chemical Oxidation with Long-term Groundwater Monitoring

Present Worth: *$953,000*
Capital Cost: *$875,000*
Annual OM&M:
(Year 1): *$12,000*
(Years 2-10): *$3,000*

In situ chemical oxidation would involve injection of chemical oxidants into contaminated groundwater. Chemical oxidants react with the chlorinated solvents to produce carbon dioxide, water and other innocuous substances. For the 123 Post Avenue Site - Operable Unit 2, this alternative would be implemented in two phases. The first phase would be performed in Zone 1, which is defined as contaminated groundwater between monitoring wells OU2-1 and OU2-2 (see Figure 3). The second phase would include remediation of Zone 2, which is defined as contaminated groundwater between monitoring wells OU2-2 and OU2-3. Remediation of Zone 2 would be performed when remediation of Zone 1 has been completed.

Remediation of Zone 1 would include construction of 14 injection wells within the right of way along Madison Avenue and in the parking area of the assisted living facility at 117 Post Avenue. Each injection well would be constructed using the hollow stem auger method and would comprise

permanent well points that could be utilized for monitoring and for additional injections, if necessary. The injection wells would be constructed of polyvinyl chloride (PVC) and would be accessed through flush-mounted, lockable manholes.

The chemical oxidants would be injected into each of the 14 injection wells within Zone 1 at least once. Additional rounds of injections may be necessary at some or all injection wells to further reduce the level of VOCs in groundwater in this zone depending on the results of the monitoring program.

Remediation of Zone 2 would be designed based on the results of Zone 1 remediation. Due to the potential for residual chemical oxidant to impact the water supply well at the downgradient Big M Car Wash (discolored water if permanganate is utilized), the volume and depth of injection of chemical oxidants into groundwater would need to be carefully monitored. It is estimated that remediation of Zone 2 would include construction of approximately 19 additional injection wells. Chemical oxidants would be injected into each of these wells at least once during the remedial phase for Zone 2.

Since all work would be completed in situ, there would be no aboveground treatment facilities required. Additional sampling of groundwater and soil gas within each of the treatment zones would be required. It is assumed that five additional monitoring wells would be constructed for this purpose. Samples from the five new monitoring wells and four of the existing monitoring wells would be analyzed for concentrations of VOCs, metals, chloride and chemical oxidants, as well as color, temperature and pH, one week and one month after each injection for both Zone 1 and Zone 2. The existing wells to be sampled would be determined based on the remediation area being monitored.

Chemical oxidation is essentially an instantaneous process, once the oxidant comes into contact with a contaminant, and therefore, remediation would be completed once well construction, chemical oxidant injection and monitoring of this alternative have been completed. Construction of the injection wells for Zone 1 would be completed within 2 months. Construction of the injection wells for Zone 2 would be completed within 3 to 4 months. Therefore, construction, injection and monitoring could be completed within one year of mobilization to the site.

Following treatment, groundwater monitoring would be required to evaluate the effectiveness of this alternative over time. Post-remediation groundwater monitoring would include sampling of one upgradient well and three downgradient wells. The specific wells to be sampled would be determined based on the remediation area being monitored. During the active remediation period (Year 1), the wells would be sampled four times per year. For the next nine years (Years 2 through 10), sampling would be conducted on an annual basis. Groundwater samples would be analyzed for VOCs only.

Alternative 3: In situ Bioremediation with Long-term Groundwater Monitoring

Present Worth: *$865,000*
Capital Cost: *$667,000*
Annual OM&M:
(Year 1): *$39,200*

(Years 2-8): *$22,200*
(Years 9-20): *$5,200*
(Years 21-30): *$2,600*

In situ bioremediation of the contaminated groundwater downgradient of the 123 Post Avenue Site would require the creation of anaerobic conditions within the contaminated zone. Creation of anaerobic/reducing conditions would require the addition of a product such as lactate. Lactate could be delivered to the subsurface in the form of a proprietary Hydrogen Release Compound (HRC-X) as marketed by Regenesis, Inc.

HRC-X would be injected into the subsurface to create a network of permeable treatment barriers within the groundwater plume perpendicular to the groundwater flow direction. Treatment of the contaminant plume would occur as groundwater migrates through the permeable barrier. Similar to Alternative 2, two zones (Zone 1 and Zone 2) have been identified for this remedial approach. Within each zone, 30 injection points would be constructed in three rows of 10 to create the permeable barrier network. The approximate row spacing would be 150 to 200 feet for Zone 1 and 280 feet for Zone 2. Each row would be approximately 100 feet long. HRC-X is normally applied to the subsurface using the direct push method. Drive rods would be pushed to the bottom of the contaminated zone and the HRC-X would be injected through the rods as they are withdrawn.

It is assumed that only one injection of HRC-X would be required. However, additional injections throughout the entire zone or in limited areas could be necessary based on the results of groundwater monitoring.

Bioremediation of chlorinated solvent contamination in groundwater sometimes results in slow or incomplete degradation of PCE breakdown products TCE, 1,2-DCE and vinyl chloride. Formation of these breakdown products is likely during the remediation process. Groundwater monitoring would be conducted during the active remediation phase to monitor for the presence of these compounds, as well as to evaluate the effectiveness of the groundwater remediation program. Four existing and five newly installed monitoring wells would be sampled once per month for the first year. The existing wells to be sampled would be determined based on the area being monitored.

After the first year, contaminant concentration trends would be evaluated and the sampling frequency adjusted accordingly. It is expected that the sampling frequency would be reduced to four times per year for the remainder of the active remediation period (Years 2 through 8).

Injection of the HRC-X would be completed within three months. Remediation of the plume could take up to eight years. During this time, the contaminant plume would continue to migrate downgradient. Following the remediation period, groundwater monitoring would be conducted semiannually for the next 12 years (Years 9 through 20) and annually for the following 10 years (Years 21 through 30). Groundwater samples would be analyzed for VOCs only.

Alternative 4: Ozone-enhanced Air Sparging with with Long-term Groundwater Monitoring

Present Worth: *$1,956,000*
Capital Cost: *$1,415,000*
Annual OM&M:

(Years 1): *$239,000*
(Years 2-3): *$166,000*
(Years 4-10): *$3,000*

Ozone-enhanced air sparging includes injection of ozone at low pressure into the saturated zone through sparge points. The ozone reacts with the chlorinated contaminants to form byproducts, such as dilute hydrochloric acid and carbon dioxide.

Similar to Alternatives 2 and 3, this alternative would be implemented in Zone 1 and Zone 2. Approximately five ozone delivery locations would be established within Zone 1. Each location would consist of one borehole or sparge well containing one shallow and one deep sparge point. Based on the low-pressure injection, it is unlikely that either ozone or contaminant vapors would migrate beyond the saturated zone into the vadose zone, however, for this phase of the work, a soil vapor extraction system would be installed to ensure that any vapors that may migrate to the vadose zone would be controlled.

All piping for the system (both sparging and vapor extraction), would be installed below ground. Since the treatment unit for Zone 1 would be placed on a pallet, some aboveground space would be needed.

Remediation of Zone 2 would include construction of four transects along each of the four streets that run perpendicular to the plume within this zone. Each transect would be comprised of three sparge wells, each with one deep and one shallow sparge point. All piping would be installed below ground and connected to the ozone/air sparge control units. These units, typically the size of an electrical box, would be installed on utility poles or on the ground within the grass median between the sidewalk and roadway. The sparge wells would be accessed through flush-mounted, lockable manholes. Each unit would be equipped with an automatic alarm system to monitor the system and report any system failures.

Groundwater monitoring would be conducted during remediation activities in Zone 1 and Zone 2 in order to evaluate the effectiveness of the system. Existing and newly installed monitoring wells would be sampled once per week during remediation of Zone 1 and quarterly during remediation of Zone 2.

It is assumed that construction of the remediation system for Zone 1 could be completed within one month and that remediation of Zone 1 could be completed within four months after operation of the system begins. Construction of the remediation system for Zone 2 could be completed within five to six months and remediation of Zone 2 could be completed within 3 years.

Post-remediation groundwater monitoring required under this alternative would include sampling of one upgradient and three downgradient monitoring wells for seven years following completion of system operation. The sampling frequency for the monitoring wells would be once per year. The groundwater samples would be analyzed for VOCs only.

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 State. 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 Guidelines (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 NYSDEC 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 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 2.

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 NYSDEC addressed the concerns raised. In general, the public comments received were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected Alternative 2, In situ Chemical Oxidation with Long-term Groundwater Monitoring 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 2 has been selected because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It will achieve the remediation goals for the site by remediating the contaminated groundwater within the site area. Alternative 4 would also comply with the threshold selection criteria, but at a higher cost with more disruption to the community. Alternative 3 may comply with the threshold criteria, but to a lesser degree due to the potential for the increase in concentrations of PCE breakdown products and further migration of the contaminant plume.

Because Alternatives 2, 3 and 4 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.

Alternatives 2 (in situ chemical oxidation), 3 (in situ bioremediation) and 4 (ozone-enhanced air sparging) all have short-term impacts, however, Alternative 4 has more significant short-term impacts than the other alternatives due to the need for trenching and aboveground space for the remediation systems.

Achieving long-term effectiveness is best accomplished by complete destruction of the chlorinated solvents without production of breakdown products (Alternatives 2 and 4). However, Alternative 4 may have potential impacts associated with the generation of ozone in a residential area. Although Alternative 3 may be effective, the potential for incomplete dechlorination and production of PCE breakdown products diminishes the long-term effectiveness and permanence of this alternative.

Alternative 4 would be the most effective in reducing the toxicity, mobility or volume of VOCs in groundwater since it would be an active system that would likely be able to treat the entire contaminant plume. Although Alternative 2 would also be effective in reducing the toxicity, mobility and volume of the VOCs in groundwater through in situ chemical oxidation, it may not be able to treat the entire plume due to the potential for discoloration of the water extracted from the downgradient car wash well. Alternative 3 would be the least effective at reducing the toxicity, mobility and volume of the VOC plume due to the potential for incomplete dechlorination of PCE and the potential for production of PCE breakdown products, as well as the continued downgradient migration of the contaminant plume.

All of the alternatives are implementable. Alternative 3 is the easiest to implement due to the use of the direct push method for injection of the HRC-X. Alternative 2 would be easier to implement than Alternative 4 due to the trench construction associated with the active remediation system and the aboveground space requirements for Alternative 4.

Alternative 3 is slightly less costly to implement than Alternative 2 due to the use of the direct push method for HRC-X injection rather than the installation of permanent wells for injection points. The cost for Alternative 4 is the highest due to the costs for construction, and operation and maintenance of the active system

The estimated present worth cost to implement the remedy is $953,000. The cost to construct the remedy is estimated to be $875,000 and the estimated average annual operation, maintenance, and monitoring costs for 10 years is $3,000.

The elements of the selected remedy are as follows:

- A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

- Install chemical oxidation injection points and any necessary groundwater and soil vapor monitoring points in Zone 1. After installation is complete, inject chemical oxidants into the contaminant plume to reduce the highest levels of VOCs in groundwater.

- Monitor the effectiveness of this treatment method at reducing the levels of VOCs to groundwater standards. If necessary, perform additional injections of chemical oxidants.

- Evaluate the application of the Zone 1 chemical oxidant technology to groundwater remediation in Zone 2. In the event that it is determined that this technology would not be effective at remediating the contaminant plume within Zone 2, or would impact the Big M Car Wash by discoloration of the groundwater, other in situ technologies will be evaluated for Zone 2.

- Evaluate the potential for soil vapor intrusion into buildings in the OU-2 area and take measures to mitigate impacts that are identified.

- Institutional controls will be imposed in the form of existing use restrictions preventing the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Nassau County Department of Health.

- 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.

- Since the remedy results in untreated hazardous waste remaining at the site, a long-term monitoring program will be instituted. Groundwater monitoring will include sampling of one upgradient well and three downgradient wells four times per year during the active remediation period (Year 1). For the next nine years (Years 2 through 10), sampling will be conducted on an annual basis. Groundwater samples will be analyzed for VOCs and other

monitoring parameters to demonstrate adequate treatment. This program will allow the effectiveness of the in situ chemical oxidation to be monitored and will be a component of the operation, maintenance, and monitoring program 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 fact sheet was issued in January 2001, at the onset of the study, which summarizes the site work plan for Operable Units 1 and 2.
- A public meeting was held on February 6, 2001 to present a summary of the site work plan for Operable Units 1 and 2.
- A public meeting was held on March 9, 2004 to present and receive comment on the Operable Unit 2 PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the Operable Unit 2 PRAP.

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

TABLE 1
Nature and Extent of Contamination

Direct Push Groundwater Samples Collected March 27, 2001 Through May 6, 2001

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND to 8,200	5	38 of 89
	Trichloroethene	ND to 66	5	8 of 89
	cis-1,2-Dichloroethene	ND to 280	5	11 of 89

Monitoring Well Groundwater Samples Collected June 27, 2001 and August 10, 2001

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	0.6 to 11,000	5	4 of 5
	Trichloroethene	ND to 44	5	2 of 5
	cis-1,2-Dichloroethene	ND to 250	5	3 of 5

Monitoring Well Groundwater Samples Collected September 30, 2002

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND to 1,400	5	3 of 4
	Trichloroethene	ND to 170	5	2 of 4
	cis-1,2-Dichloroethene	ND to 3,200	5	2 of 4

Monitoring Well Groundwater Samples Collected November 13, 2003

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	1 to 4,900	5	3 of 5
	Trichloroethene	ND to 70	5	2 of 5
	cis-1,2-Dichloroethene	ND to 740	5	2 of 5

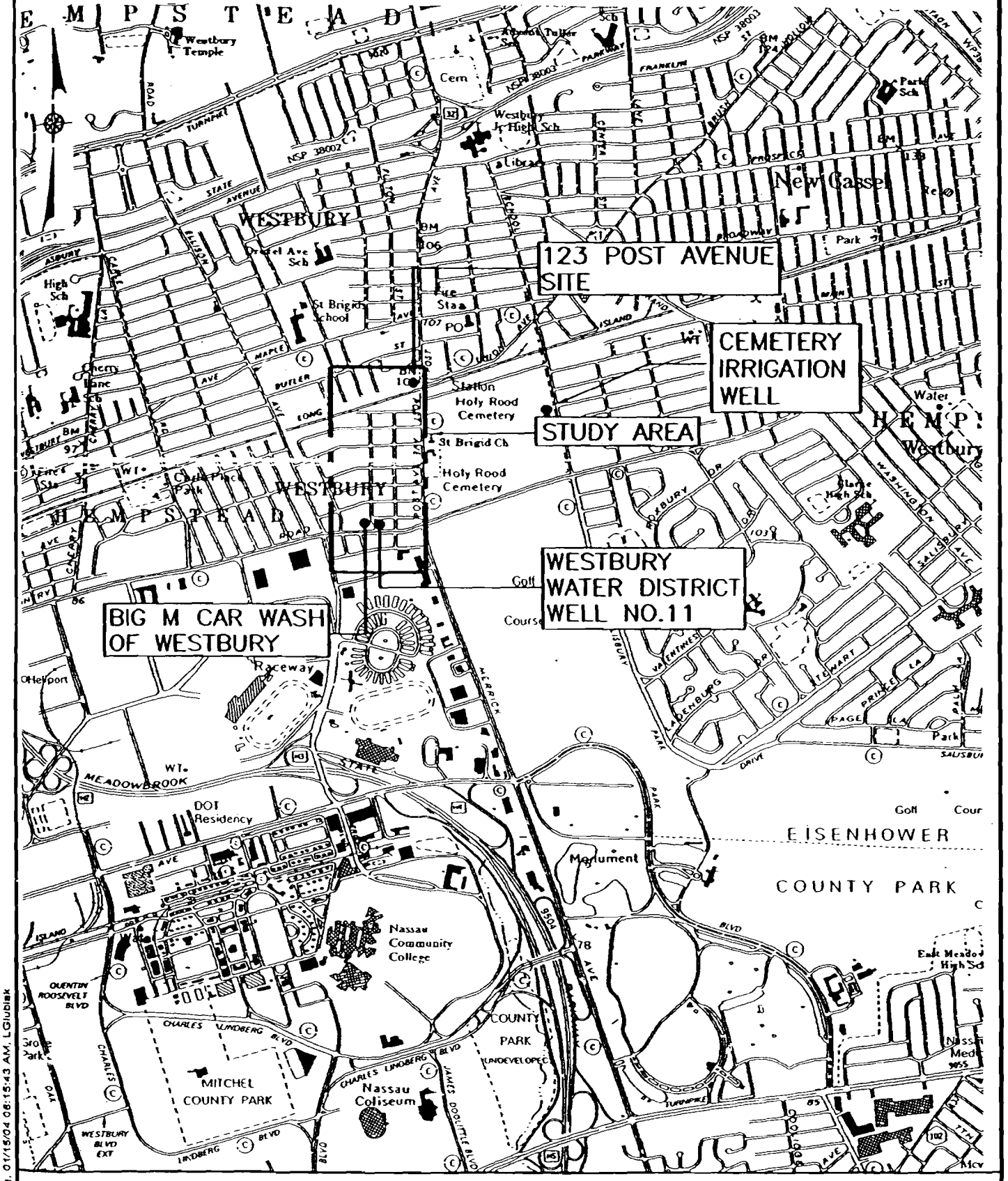
[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in groundwater.

[b] SCG = standards, criteria, and guidelines; NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

ND = Not detected.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Action with Long-term Groundwater Monitoring	$0	$13,600	$172,000
In situ Chemical Oxidation with Long-term Groundwater Monitoring	$875,000	$12,000 (year 1) $ 3,000 (years 2-10)	$953,000
In situ Bioremedition with Long-term Groundwater Monitoring	$667,000	$39,200 (year 1) $22,200 (years 2-8) $5,200 (years 9-20) $2,600 (years 21-30)	$865,000
Ozone-enhanced Air Sparging with Long-term Groundwater Monitoring	$1,415,000	$239,000 (year 1) $166,000 (years 2-3) $3,000 (year 4-10)	$1,956,000



123 POST AVENUE FEASIBILITY STUDY–OPERABLE UNIT 2
WESTBURY, NEW YORK

SITE LOCATION MAP

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

FIGURE 1

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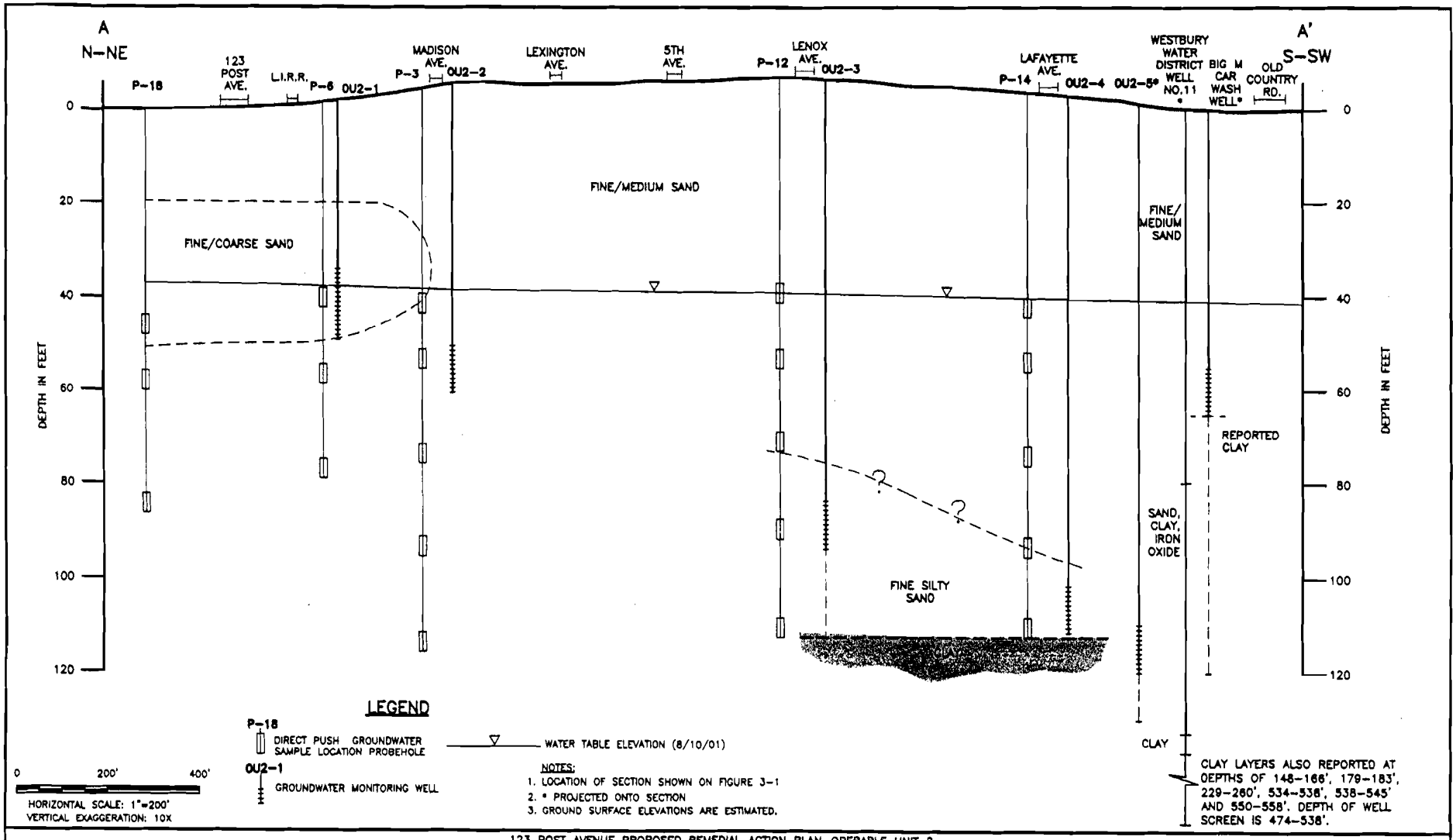

123 POST AVENUE PROPOSED REMEDIAL ACTION PLAN-OPERABLE UNIT 2
WESTBURY, NEW YORK

CROSS SECTION DEPICTING STUDY AREA GEOLOGY

Dvirka and Bartilucci Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 2

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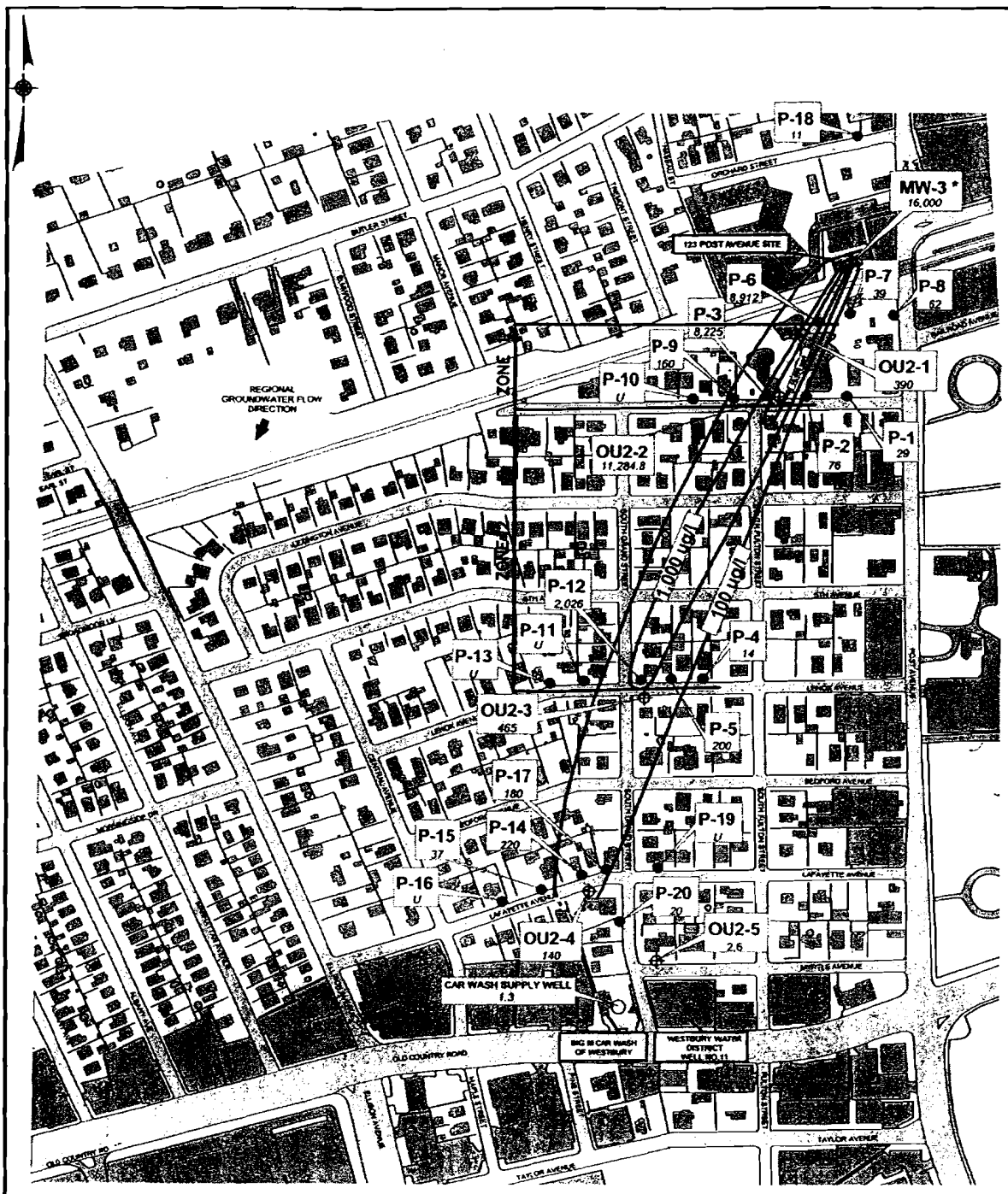

LEGEND

- ● GROUNDWATER PROBE HOLE LOCATION
- ⊕ PERMANENT MONITORING WELL LOCATION AND DESIGNATION
- P-4 / 14 PROBE HOLE DESIGNATION / MAXIMUM TOTAL PCE, TCE AND 1,2-DCE CONCENTRATION (ug/l)
- U UNDETECTED
- • ON-SITE WELL SAMPLED BY OTHERS ON OCTOBER 3, 2000

0 200' 400'

HORIZONTAL SCALE: 1"=200'

123 POST AVENUE PROPOSED REMEDIAL ACTION PLAN-OPERABLE UNIT 2
WESTBURY, NEW YORK

HORIZONTAL EXTENT OF PCE, TCE AND 1,2 DCE IN GROUNDWATER

FIGURE 3

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. CRUIUCH ASSOCIATES, P.C.

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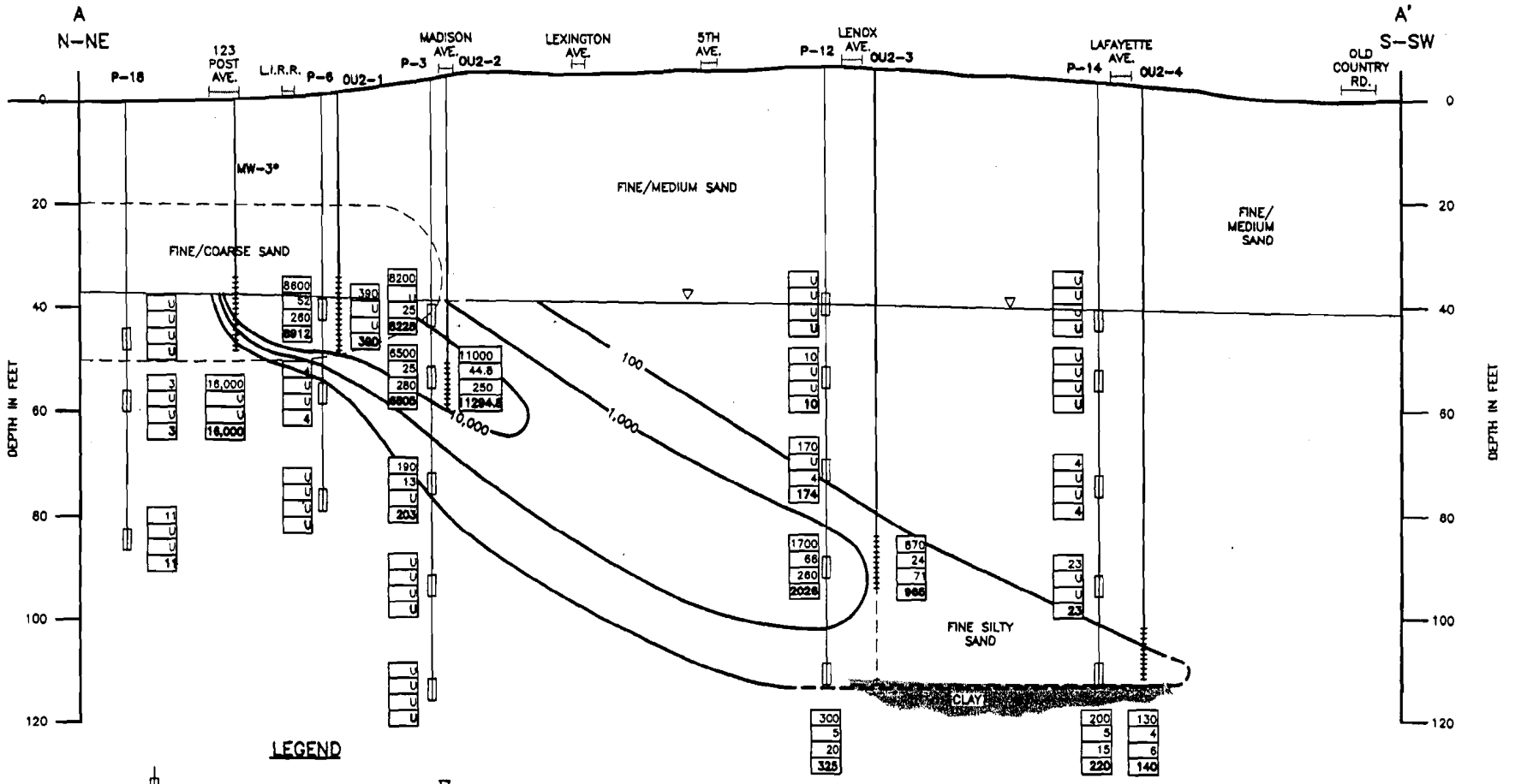

123 POST AVENUE PROPOSED REMEDIAL ACTION PLAN-OPERABLE UNIT 2
WESTBURY, NEW YORK

DISTRIBUTION OF PCE, TCE AND 1,2 DCE IN GROUNDWATER

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 4

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APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

123 Post Avenue Site
Operable Unit No. 2
Village of Westbury, New York
Site No. 1-30-088

The Proposed Remedial Action Plan (PRAP) for the 123 Post Avenue (OU-2) 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 19, 2004. The PRAP outlined the remedial measure proposed for the contaminated soils, groundwater and indoor air at the 123 Post Avenue (OU-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 9, 2004, which included a presentation of the Remedial Investigation (RI) 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 22, 2004.

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: This dry cleaner began operations as early as 1957, however the NYSDEC did not become involved until 1995. During this period, residents may have been exposed. Have residents in the area been notified about this contamination?

Response 1: The NYSDEC did not become aware of the magnitude of the environmental impacts of many dry cleaners until the late 1980s to the mid-1990s. The problems at dry cleaners are not always visually evident and can go on undetected for some time before problems surface. The Nassau County Department of Health (NCDOH) has a program called Article XI which went into effect in 1986 and regulates the storage and handling of toxic chemicals, such as PCE. There has been an active monitoring program since this time. In the early 1990s, at the request of the League of Women Voters in Great Neck, NY, the NCDOH started inspecting dry cleaners, working cooperatively with the USEPA, Region 2. Environmental concerns surfaced at the 123 Post Avenue site following a site inspection by NCDOH in 1995 under EPA's Underground Injection Control Program. Through public outreach efforts, the neighboring community has been kept up to date on the environmental remediation efforts at this site by the State and Nassau County through public meetings and fact sheets.

Comment 2: Is the Westbury Water District Well # 11 still in operation and does it require treatment? Have contaminants increased in this well?

Response 2: This well continues to operate without treatment because the water meets NYS drinking water standards. Groundwater contamination emanating from the 123 Post Avenue site appears to be confined to the Upper Glacial aquifer, to a depth of 110 feet below grade. Public water supply Well # 11 produces drinking water from the Magothy aquifer at a depth

of 535 feet below grade. A clay layer separates these two aquifers, retarding or significantly limiting movement of contaminants into the Magothy.

Comment 3: What is the level of contamination in Well # 11?

Response 3: This well is contaminated with trichloroethene (TCE) at concentrations of about 1 ppb (the drinking water standard is 5 ppb for TCE). While TCE is a natural breakdown product of PCE, the source of these low levels of TCE is uncertain.

Comment 4: How does permanganate work on PCE and other chemicals? Does it break it down so it can be dissolved in water or air?

Response 4: The reaction between the chemical oxidant and the chemicals impacting this site occurs very rapidly, resulting in a complete breakdown of these contaminants to almost exclusively carbon dioxide and water.

Comment 5: How will gases associated with the use of HRCX be vented from this site?

Response 5: HRCX is not the chemical proposed for use at this site. Liquid permanganate will be introduced into the contaminated groundwater through a series of about 12 injection wells within Zone 1. The permanganate rapidly reacts with the contaminants and the harmless byproducts will be dissolved in the groundwater. The only off-gas which might be liberated above the ground surface will be carbon dioxide; however, a series of monitoring wells will be installed to monitor chemical changes in the environment. We will also be monitoring for VOCs within these wells as well as within adjacent structures to insure that the remedial processes are having no adverse environmental impacts. In the unlikely event that we do see impacts, measures will be taken immediately to stop the release of VOCs or to implement a system which intercepts these vapors.

Comment 6: You mention that 135 Post Avenue (the senior complex) was significantly impacted by contamination from 123 Post Avenue. Could you please discuss this?

Response 6: It has become routine to evaluate the potential for contaminant vapors to impact indoor environments adjacent to dry cleaners. We sampled indoor air in nearby structures in February 2001 and found elevated levels at several locations within the strip mall immediately north of the dry cleaner. Additional sampling in March 2001 identified elevated levels within one of the apartments at 135 Post Avenue, the multistory apartment complex immediately northwest of the dry cleaner. In response to these impacts, portable granular activated carbon (GAC) systems were installed in the affected areas as an interim measure until a more permanent system could be installed. In May 2001, the responsible party installed a soil vapor extraction (SVE) system to remove VOC contamination within onsite soils. This remedial system immediately resulted in VOC concentrations dropping to acceptable levels. This system is still operating and will continue to operate until remedial goals have been achieved.

Comment 7: Did you test additional areas on Post Avenue for air contamination?

Response 7: We did enough testing in the structures north of the site to be confident that impacts were unlikely further north from the site, so no additional testing was conducted. In addition, when the senior housing facility located at 117 Post Avenue was being designed, the NCDOH, NYSDOH and NYSDEC worked with the developers to design and install a passive venting system which would intercept any VOCs which could potentially impact this structure. Several rounds of samples have been collected since construction was completed and no significant impacts to indoor air have been detected.

Comment 8: What chemical are you putting into the ground to solve the groundwater problem and does this chemical have a long history of use?

Response 8: The chemical proposed for use at this site is potassium permanganate. This chemical belongs to a family of chemicals called oxidants which break the molecular bonds of the contaminant, resulting in the transformation of these solvents to innocuous byproducts, primarily water and carbon dioxide. This treatment technology is a relatively new approach in the environmental field that has been used successfully by NYSDEC.

Comment 9: If vapors do escape, how will you take care of this? How many years will it take to clean the groundwater?

Response 9: The oxidants being proposed react very quickly with the site related contaminants, so that the reactions from a single injection would be complete in a matter of days or weeks. Following injection, groundwater and soil vapor will be monitored to determine the effectiveness of the treatment and the necessity for additional treatments. In addition, indoor air quality will be monitored to insure that no adverse impacts are occurring. If impacts are observed, measures will be taken to mitigate these impacts, such as changing the type of oxidant, chemical dosage or installing an SVE system. It is anticipated that remediation of the site, using this technology, will be completed within two or three years, as compared with a more conventional technology, such as extraction and treatment, which can take decades to complete.

Comment 10: Will you be notifying the community when work will be going on?

Response 10: Before the remedial action is implemented, we would, at a minimum, mail a fact sheet to everyone on the mailing list. Prior to mobilization into the field to implement the remedy, we would directly contact those residents which will be most affected by our work.

Comment 11: Nassau County Health Department has had staff cut backs. How often does the health department inspect this dry cleaning facility to see that it is being operated in a safe manner?

Response 11: The NCDOH inspects dry cleaners annually. If problems are identified, more frequent inspections are conducted. The floor drains which were used in the past at 123 Post Avenue to dispose of PCE were sealed following the remediation of contaminated soil beneath the drains. In addition, the NCDOH reviews manifest records for all chemicals delivered to and removed from the site. Further, frequent sampling of onsite soil vapors as part of the operation of the SVE remediation system would detect any abnormal disposal activities.

Comment 12: Was soil testing done on the northern and eastern properties and at the 135 Post Avenue apartment building?

Response 12: Soil testing was only conducted on the dry cleaning property. Experience has shown that when chemicals are dumped on soil, they tend to move vertically through the soil column until they encounter a barrier, are completely absorbed by soils or reach the groundwater. Given this behavior, these types of chemicals are not typically found in soils away from the disposal area. The investigation tested soils from the disposal area, outward, until no detectable levels were encountered.

Comment 13: When will Zone 2 be treated and how will Zone 2 be evaluated to determine the appropriate treatment technology? How long will Zone 2 be tested before DEC decides if this technology is appropriate?

Response 13: If the permanganate technology works for Zone 1, which bench scale studies indicate it will it is likely to be applicable for Zone 2. Its effectiveness is likely to be determined after one two injections which will be conducted over a few months. If permanganate does not achieve the level of effectiveness which is expected, other technologies will be immediately evaluated.

Comment 14: Is it possible to intercept the PCE, once its been dumped on the ground, before it impacts groundwater? How long does it take to reach the groundwater?

Response 14: The NCDOH, under the UIC program, has been successful in some cases in removing contaminated soil before the contaminants reach groundwater. How quickly PCE moves through the subsurface soils, and the likelihood that it will impact the groundwater, depend on the nature of the soils above groundwater, the distance it must travel to the groundwater the amount of PCE, and over how long of a period PCE was dumped. Given porous soils and a very shallow water table, impacts could occur in days. Places where the water table is 10 feet below ground surface and the soils are fine-grained or clayey, PCE may never reach the groundwater.

Comment 15: If something happens that shows that this process does not work, how are you going to address the problem? During remediation, what if soil vapors impact homes in the treatment area?

Response 15: Both the NYSDEC and the NCDOH have had direct experience with the use of permanganate and similar oxidants, with very good success. Because these oxidants react quickly, we should know in a few months if the treatment approach will be successful. If permanganate fails to meet our remedial objectives, other technologies will be evaluated for their suitability. During the course of remediation, vapor monitoring data will be collected and evaluated. In the unlikely event that impacts are occurring at levels which are of concern measures will be taken immediately to mitigate these impacts. One likely approach is the construction of a soil vapor extraction (SVE) system, similar to the system currently in operation onsite, to intercept and treat contaminated soil vapor.

Comment 16: Who is paying for the cleanup both onsite and offsite?

Response 16: Choe Realty, LLC, the corporation that owns the Site, is performing the Remedial Investigation/Feasibility Study (RI/FS) for Operable Unit 1 (OU-1) of the Site. OU-1 consists of the soil and groundwater contamination within the boundaries of the Site. However, the Department was unsuccessful in its attempts to negotiate a RI/FS Consent Order for OU-2 of the Site. OU-2 consists of the offsite groundwater contamination. Accordingly, the RI/FS for OU-2 is being implemented using State Superfund monies. The Department will continue in its effort to recover the monies expended from the State Superfund

Comment 17: Mr. Corbin commented that the current owner of the site really needed to be commended for cleaning up the onsite contamination that he inherited when he purchased the site.

Response 17: The State appreciates the cooperation of the current owner of the site in addressing the onsite contamination.

Comment 18: I want to congratulate you all. It has been a very informative meeting.

APPENDIX B

Administrative Record

Administrative Record

123 Post Avenue Site
Operable Unit No. 2
Village of Westbury, New York
Site No. 1-30-088

Remedial Investigation/Feasibility Study Work Plan, Operable Unit 2, 123 Post Avenue, Westbury, New York, March 2001. Prepared for the New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

Remedial Investigation Report, Operable Unit 2, 123 Post Avenue, Westbury, New York, July 2002. Prepared for the New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

Request for Proposals, Bench Scale Treatability Study, Scope of Work and Proposal Submittal Requirements, Operable Unit 2, 123 Post Avenue, Westbury, New York, May 2003. Prepared for the New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

Request for Proposals, Ozone Enhanced Air Sparging/Soil Vapor Extraction Pilot Study, Scope of Work and Proposal Submittal Requirements, Operable Unit 2, 123 Post Avenue, Westbury, New York, May 2003. Prepared for the New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

Feasibility Study Report, Operable Unit 2, 123 Post Avenue, Westbury, New York, January 2004. Prepared for the New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.

Fact Sheet, Proposed Remedial Action Plan, 123 Post Avenue Inactive Hazardous Waste Disposal Site, Operable Unit 2, Site ID # 1-30-088, Village of Westbury, Nassau County, February 2004. Prepared by the New York State Department of Environmental Conservation.

Proposed Remedial Action Plan, 123 Post Avenue Site, Operable Unit 2, dated February 2004. Prepared for the New York State Department of Environmental Conservation by Dvirka and Bartilucci Consulting Engineers.